

Report No:	REP11-08-10
File No:	L218
Date:	25 August 2011
Decision Required	

REPORT SUMMARY

Report to: Environment & Planning Committee
Meeting Date: 25 August 2011
Report Author: Mary-Anne Baker
Subject: **MANAGING FIRE RISK TO RURAL DWELLINGS**

EXECUTIVE SUMMARY

The Council made Change 19 to the Tasman District Council Resource Management Plan (TRMP) in May 2010 to alter the fire fighting connection on water storage tanks for rural dwellings from a 50mm camlock coupling to a 100 mm female thread coupling.

Further assessment as to the effects of this change led to a conclusion that the amendment proposed by Council is not the best solution for managing fire risks for rural dwellings.

This report considers the issues related to managing fire risks and suggests alternative management options.

RECOMMENDATION/S

That the Environment & Planning Committee receives the report.

DRAFT RESOLUTION

THAT the Environment & Planning Committee receives the REP11-08-10 Managing Fire Risk to Rural Dwellings and adopts the recommendations.

Report No:	REP11-08-10
File No:	L218
Report Date:	12 August 2011
Decision Required	

Report to: Environment & Planning Committee
Meeting Date: 25 August 2011
Report Author: Mary-Anne Baker, Policy Planner
Subject: **MANAGING FIRE RISK FOR RURAL DWELLINGS**

1. Purpose

- 1.1 The Council made Change 19 to the Tasman District Council Resource Management Plan (TRMP) in May 2010 to alter the fire fighting connection on water storage tanks for rural dwellings from a 50mm camlock coupling to a 100 mm female thread coupling.
- 1.2 Further assessment as to the effects of this change led to the conclusion that the amendment proposed by Council (which was originally prompted by requests from the New Zealand Fire Service and Waimea Rural Fire Authority) is not the best solution for managing fire risks for rural dwellings.
- 1.3 The scope of the proposed Plan Change and the fact that there is only submission in support means that the issue cannot be suitably resolved through the submission process.
- 1.4 This report considers the issues related to managing fire risks and suggests alternative management options.

2. Background

- 2.1 The TRMP rules for new dwellings in unreticulated areas in the rural zones require water that is both reliable and potable to be provided for domestic supply. In addition, at least 23,000 litres (23 cubic metres) of on-site water storage is required for managing fire risk. The domestic supply could also be met by water from the storage tank.
- 2.2 As originally notified, the storage tank was required to be fitted with a 50mm camlock coupling that enabled connection with fire-fighting appliances. This connection is a standard fitting on rural fire fighting trucks and would enable rural fire-fighting units to access the available water. The rural fire fighting response and capability is managed by the Waimea Rural Fire Authority (WRFA).
- 2.3 Since then, the New Zealand Fire Service (NZFS) has clarified their primary responsibility as the first response to any structural fire (in both rural and urban areas). They are supported in this response by the rural units. The NZFS units are differently equipped with bigger pumps and they generally use a 100mm fitting to enable rapid pumping of water necessary to manage structural fires.

- 2.4 The NZFS has also further developed the NZFS Fire Fighting Water Supplies Code of Practice (SNZ PAS 4509: 2008). This Code of Practice assists in the management of fire risk (in both urban and rural areas) and contains a range of measures designed to provide appropriate levels of protection for house fires in the absence of a reticulated supply.
- 2.5 In response to requests by both the NZFS and the Waimea Rural Fire Authority, the Council made a change (Change 19) so the camlock fitting requirement was amended to a 100mm female thread coupling to enable the NZFS units (as primary response units for structural fires) to have quick and appropriate access to the stored water. Note that while there is a substantial population of existing tanks with 50mm camlock connections already in our rural areas, the fire fighting response (whether urban or rural) still can account for this with adapters on existing fittings, but the Fire Service considers this arrangement less than ideal.
- 2.6 The WRFA made a submission to support this change.

3. Present Situation/Matters to be Considered

3.1 Fire Fighting Connections

- 3.1.1 Upon further investigation into fire risk and options for management, it is clear that simply requiring a 100mm fitting on a 23,000l water storage tank as originally sought by WRFA and the NZFS is not the only, or even the most appropriate, solution in all situations.
- 3.1.2 A 100mm female thread coupling attached directly to a water tank (and nearly all water storage tanks are plastic) requires a substantial change to the design of the tank. A 100mm fitting and tap is a hefty piece of equipment requiring plastic tanks to be reinforced and a supporting bracket provided.
- 3.1.3 This provision for fire-fighting is only one of several options provided for in the NZFS Code of Practice. The assessment of fire risks by the NZFS has been reviewed and amount of water that needs to be available to manage a fire in a rural dwelling has been increased to 45,000litres (45 cubic metres). This is based on fire fighting for 30 minutes at 25 litres per second. This amount of water would generally require two tanks. (note that any necessary fitting for fire appliance access can then be placed part way between the two tanks and the additional support and reinforcement would not be required for each tank).

- 3.1.4 There are also several other technologies available to manage fire risk in rural dwellings. Home sprinkler technology now available is extremely efficient and cost effective in managing fire risk and is being promoted by the Fire Service. This option does not require extra storage water as it can be operated through the home plumbing system.
- 3.1.5 It is clear that just by requiring a tank and a specified fitting, that the fire risk is not always well addressed by the home owner. Not only does the tank have to be in the right place in relation to the dwelling and access by a fire truck, it has to be full of water at the time of a fire. While the Code specifies setbacks and distances (as well as design of road access to enable the truck to reach the house and to manoeuvre on-site once it gets there), the TRMP is silent on these aspects of fire risk management. If the tank is also used for domestic water supply, there is always a risk that the tank will be close to empty during dry periods.

3.2 NZFS Fire Fighting Water Supplies Code of Practice

- 3.2.1 The Code provides guidance on how water can be used to provide alternative fire-fighting water sources that the Fire Service can use in the event of a fire. The approach taken in this document is based on fire engineering principles using options for either a prescriptive or specific engineering solution. The Code provides techniques to define a sufficient fire-fighting water supply that may vary according to circumstances. Other options available to home owners to address fire risk include sprinklers, ponds, rivers and swimming pools. Territorial authorities and building owners may choose to exceed the provisions. SNZ PAS 4509 is written in a way that will encourage flexibility and provide different options.
- 3.2.2 The increased water storage for adequate management of fire fighting risks for dwellings to 45 cubic metres requires two tanks to provide this amount of water.

3.3 Reasons for Managing Fire Hazards in Rural Dwellings

- 3.3.1 The TRMP contains an Objective (5.5.2) to reduce risks to public health and safety, property and the environment, arising from fire. It contains policies aimed at managing risk of fire spreading (5.5.3.1) *To avoid, remedy or mitigate the likely adverse effects on land uses from fire, arising from the location of buildings or flammable vegetation*, and (8.2.3.15) *To limit the potential for the spread of fire in or to areas of natural character in the coastal Environment & on the margins of lakes, rivers and wetlands.*

- 3.3.2 The main methods are promotion of public awareness about fire risks in rural areas, and methods to avoid or mitigate fire risks, such as retention of defensible space around buildings. Rules also require water storage to help address fire risks from dwellings.
- 3.3.3 The plan states that fire is a risk to people, property and natural resources. Reducing the probability of fire spreading, and requiring access for fire-fighting, is promoted in the Plan.
- 3.3.4 Requirements for provision of fire- fighting water with new rural dwellings can increase protection from fire and enables people and communities to provide for their safety while avoiding, remedying or mitigating any adverse effects of activities on the environment.

3.4 Managing the fire risks.

- 3.4.1 The risks and associated costs of a house fire are mainly to the home owner; however, there is also risk of fire spreading to neighbouring dwellings or to vegetation. There are costs to the community resulting from uncontrolled fires as well as costs to fire service staff and volunteers. Information about the number of rural dwelling fires will be tabled at the meeting. Note that while frequency of fires may be relatively low, the consequences of an uncontrolled rural fire can be very significant.
- 3.4.2 A plan rule requiring provision of water storage for fire risk management ensures a homeowner is able, in part, to manage the risks. As noted above, the current plan provision is restrictive in that other options potentially available are not provided for, and in any case does not fully address the risk (especially in relation to the tank being full, in the right place and accessible to fire trucks). The proposed 100mm fitting to allow connection with fire trucks also unnecessarily restricts choices and increases costs.
- 3.4.3 The best approach is for potential home owners to address fire risk at the time of building - and make decisions then about how to provide for it based on options available (stored water, natural water sources) and preferences (home sprinkler systems). For example, the requirement for increased water storage to 45 m³ may have implications for adequate space to place storage tanks on some existing properties. Visual and space requirements may prompt consideration of sprinkler systems instead of water storage.
- 3.4.4 In an ideal world, the level of risk management adopted by the homeowner would be reflected in insurance cover premiums. However, the current insurance system does not reflect degree of fire risk management adopted by the home owner or the risk to neighbouring land and therefore does not prompt adoption of comprehensive fire risk management actions.

3.4.5 The NZFS also has some information to show that people will not always make good decisions about managing risks unless required to by regulations or plan rules.

3.4.6 Finally, there seems to be very little information available for people to understand the risks and to make appropriate choices. There is a small footnote in the Plan directing people to seek advice from the NZFS who provide a very good and free advisory service. However, there is scope for better information to be provided and the NZFS is working with Council and the WRFA to produce a combined brochure to describe risks and measures to address them (including the information about defensible areas and flammable vegetation already in the WRFA brochure)

4. Financial/Budgetary Considerations

4.1 While there are little or no budget implications for Council, expect for any plan change process costs, the greatest impact will be for people building new houses in unreticulated rural areas. There may be minor costs for Council associated with preparation of any advocacy/best practice material.

4.2 The previous plan provisions (prior to Change 19) impose a relatively low cost requirement on home owners for a 23m³ tank (that can also serve as house water supply) and a 50mm camlock coupling. The Change 19 costs are relatively higher as the 100mm fitting requires reinforcing of plastic tanks.

4.3 Alternatives aimed adequately addressing fire risk to the dwelling can mean substantially higher costs to homeowners, as well as impose site and design restrictions for the new dwelling which may be more or less severe depending on the size, shape and location of the site.

5. Options

5.1 The Council needs to consider if the present approach is the most appropriate. In summary, the current approach includes:

- a 23000 m³ storage requirement,
- a requirement for a 100 mm coupling (as proposed) on the tank
- stored water can also be used for domestic supply,
- there is no direction as to where the tanks should be sited
- there is no scope for flexibility or for other measures to be adopted.

5.2 The options include:

1. Status Quo

Continue with status quo (as proposed with new 100mm coupling)

2. Require fire risk to be managed, but with flexibility in options chosen

Require fire fighting risks to be managed by a rule that allows some flexibility as to choice of system. The rule would require a specified flow rate or volume, (45m³) of water onsite (and may include natural sources as well as other storage options like dams, swimming pools and river sources). Location requirements might also be specified (e.g. no further than 90 metres from the house) - or the provision of a home sprinkler system. This would be consistent with the design requirements of the NZFS 4509: 2008.

3. Not impose any fire risk management requirements

Not include any rules for managing fire risk but continue to promote adoption of good fire protection solutions and to prepare a brochure for home owners/designers with details about fire hazards and how they can be managed.

4. Specify an alternative level of fire protection

The original plan requirement was for a 23m³ water storage tank which can also act as water supply for the house. While the proposed specification for a new 100mm coupling may be inappropriate, the lesser degree of fire protection as provided by the 23m³ storage tank could still be required by Council. (Council could also require that the tank is in addition to any house water supplies to ensure the tank has a better chance of being full should there be a fire.)

The NZFS, the recognised experts in managing fire risk, have most information on which to base this decision, and this is reflected in the code of practice (NZS PAS 4509). A lesser level of protection - such as continuing with 23m³ as the minimum storage volume is less than that required to adequately manage a house fire, but does provide some assistance. The question about how to provide for NZFS appliance connections still remains, but is potentially better addressed by the Fire Service than specified by the Council in rules.

- 5.3 The costs and benefits are summarised in Table 1. The choices are essentially about the extent to which Council will impose costs of managing fire risks on the homeowner and how much this risk is left to be addressed by the homeowner voluntarily. Note that effective and efficient decisions about fire risk and water storage options are best addressed at the time a house is built and ensuring this occurs avoids greater costs for future owners.

- 5.4 If the adverse effects of the fire were solely a concern of the homeowner, then option 3 would be suitable. However, costs of fires are not just felt by the present homeowner. The risk of fire spreading is one of the adverse effects of fire hazards recognised by the Council in the TRMP. Adverse effects and the costs of fires on communities and fire- fighting services as well as costs of providing for fire protection by future owners of the property are also relevant considerations for the Council.
- 5.5 Note also that in providing for reticulated water supplies for urban areas, Council also builds into them capacity for fighting fires in recognition of the community benefits of fire risk management.
- 5.6 Given the Fire Service advice about the low rate of uptake for adequate fire management options if the choices are left as voluntary, there is a need to consider regulation to ensure a suitable level of fire risk management is adopted by homeowners.

6. Pros and Cons of Options

	Option 1: Status quo Retain existing water storage requirements as notified.	Option 2: Reflect the revised New Zealand Fire Service Fire fighting Water Supplies Code of Practice (SNZ PAS 4509:2008).	Option 3: Non-regulatory approach Provide information to property owners on the NZ Fire Service recommendations.	Option 4: Specify a lower level of fire fighting risk management (e.g. 23m³ storage)
Benefits	Provides for limited protection from fire risk for homeowner and neighbouring property.	Provides good level of protection to manage risk of fire to a dwelling based on knowledge about fire risks and measures to address it. Reduces risk of fire spreading from a house to the wider environment. Some flexibility provided for through Code of Practice output specifications (volume and location or home sprinkler) that allow some choice by landowners	Enables property owners to make their own decisions about the level of protection they want to install, and the risks they are prepared to accept. (from no fire risk management to installation of water storage or sprinklers)	Costs and site restrictions for home owners reduced. Some fire fighting capacity is provided by home owners. Avoids extra costs associated with the 100mm coupling imposed by Option 1

	<p>Option 1: Status quo</p> <p>Retain existing water storage requirements as notified.</p>	<p>Option 2: Reflect the revised New Zealand Fire Service Fire fighting Water Supplies Code of Practice (SNZ PAS 4509:2008).</p>	<p>Option 3: Non-regulatory approach Provide information to property owners on the NZ Fire Service recommendations.</p>	<p>Option 4: Specify a lower level of fire fighting risk management (e.g. 23m³ storage)</p>
<p>Costs</p>	<p>Volume of water stored may not be sufficient to control rural house fires or to manage risk of fire spread from the dwelling.</p> <p>Costs for current requirements: One tank - 23,000 litres reinforced (potentially for both fire fighting and domestic supply) - approx \$3700 Plus 100mm fittings and supporting brackets up to about \$500</p> <p>This requirement does not mean that water will actually be available if there is a fire if water is also used for domestic supply.</p> <p>Water may not be accessible to fire appliance if not also located correctly.</p>	<p>Lack of personal choice on the acceptable level of fire risk.</p> <p>Potentially higher costs - if water storage provided, two tanks would be necessary, and these may cause adverse amenity effects and require space which may be limited for some existing rural properties.</p> <p>Costs of compliance with the revised standard are now higher as water storage of about 45,000l is required for effective fire protection- two tanks would be required (but the reinforcing and supporting bracket may no longer be necessary) ~\$3000 per 23,000 tank</p> <p>A sprinkler systems costs about \$3500 (with sprinkler 10 heads for an average home). The same water supply as for the domestic water supply can be used.</p>	<p>Potential outcome is that the homeowners will not address risk of fire to their own dwelling.</p> <p>Increased risk of fire spreading from a property with no fire protection. Cost of fire damage and fire fighting costs have potential to increase substantially if fires escalate beyond one house.</p> <p>((NZ Fire Service officers advise that adequate fire protection is not usually installed if it is voluntary measure.)</p> <p>The NZFS advises that it will make submissions on resource consents and plan changes to ensure that any development addresses fire risks with appropriate measures. This will be a cost to applicants, the NZFS and the Council as each submission is responded. Resolution of submissions may lead to a similar outcome as a plan rule anyway.</p>	<p>Volume of water stored may not be sufficient to control rural house fires or to manage risk of fire spread from the dwelling.</p> <p>The question about the most appropriate connection at the tank for allowing access by fire fighting appliances still remains.</p> <p>There is no provision to ensure the tank is well sited, full and accessible to fire trucks, although this may be added as additional requirements by Plan rules.</p> <p>The NZFS advises that it will make submissions on resource consents and plan changes to ensure that any development addresses fire risks with appropriate measures. This will be a cost to applicants, the NZFS and the Council as each submission is responded. Resolution of submissions may lead to a similar outcome as a plan rule anyway.</p>

	Option 1: Status quo Retain existing water storage requirements as notified.	Option 2: Reflect the revised New Zealand Fire Service Fire fighting Water Supplies Code of Practice (SNZ PAS 4509:2008).	Option 3: Non-regulatory approach Provide information to property owners on the NZ Fire Service recommendations.	Option 4: Specify a lower level of fire fighting risk management (e.g. 23m³ storage)
Effectiveness and Efficiency	The status quo option is one way of meeting the objectives of the Plan, but is potentially ineffective during dry periods and does not provide an adequate level of protection given the known effects of fire and fire fighting requirements. It may also not be efficient in that it constrains adoption of more cost effective options	This option is an efficient and effective way to address fire risks to rural dwellings and to adjacent property	This option is not effective because NZ Fire Service advice is that people will not voluntarily install water storage or home sprinklers for fire protection purposes.	This option is one way of meeting the objectives of the Plan, but is potentially ineffective during dry periods and does not provide an adequate level of protection given the known effects of fire and fire fighting requirements. It avoids the complication of the most appropriate fire connection but may result in water in a tank not being accessible to a truck during a fire.
Benefit and Costs Summary	The current option does not comply with the NZ Fire Service code of practice but it does provide some protection from fire. The requirement for a 100mm tank fitting is potentially an unnecessary cost as other methods are available.	There is a balance of environmental, social and economic benefits from this option for managing fire risks although the costs of installing proper measures are higher than the status quo	The fire risks associated with this option are likely to outweigh the benefits of personal choice and potential for economic savings for an individual at the time a house is being built.	The current option does not comply with the NZ Fire Service code of practice but it does provide some protection from fire.

7. Significance

- 7.1 The decision of how much fire risk management to impose on rural dwelling owners is significant to new home builders in rural, unreticulated areas of Tasman because it imposes significant additional costs onto the building of new dwellings and may introduce issues about options for siting and location of water storage tanks.

The management of fire risk is however, something the Council is required to address as an effect of providing opportunities for rural living.

The scope of Plan Change 19 and the submission received on it are too narrow to allow the Council to make a full and reasonable decision in respect of fire fighting risk management for new rural dwellings.

8. Recommendations

- 8.1 **That** Plan Change 19 be withdrawn in respect of the requirement for a 100mm tank coupling on rural unreticulated properties.
- 8.2 **That** option 2 as outlined in sections 5 and 6 be adopted by Council as the preferred option. The possible amendments to the TRMP that would support option 2 are included in Appendix 1.
- 8.3 **That** new plan provisions for the management of fire risk to new dwellings on rural properties based on the option preferred by Council be prepared for public consultation for a period until end September 2011.

9. Timeline/Next Steps

- 9.1 Report REP11-08-10 including the option preferred by the Council, will form the basis of public consultation on the management of fire risks on rural properties.
- 9.2 The results of public consultation will be reported back to Council at its October meeting.

10. Draft Resolution

THAT the Environment & Planning Committee receives the REP11-08-10 Managing Fire Risk to Rural Dwellings and adopts the recommendations

A handwritten signature in black ink, appearing to read "M Baker".

Mary-Anne Baker
Policy Planner

Appendices:

Appendix 1 - Draft Amendments to the TRMP in support of recommended option.

Draft Plan Amendments - Rural Fire Risk Management

1. For each applicable rule (17.5.3.2, 17.6.3.1, 17.7.3.2, 17.8.3.1) amend the provisions for fire fighting as follows:

(*) *Except where any dwelling is connected to a reticulated water supply:*

- *incorporating water mains fitted with fire hydrants; and*
- *the closest fire hydrant is no more than 135 metres from the dwelling,*

the dwelling is:

(i) ~~provided with on-site water storage of not less than 23,000 litres and whether the storage is provided by an above-ground or an underground tank, the tank is fitted with an accessible 100mm female thread coupling to enable connection with fire fighting equipment;~~

provided with water located within 90 m of the house which is accessible to fire fighting equipment with either

a volume of at least 45,000 litres or

a water supply that provides at least 25l/sec for 30 minutes

or

fitted with a sprinkler system designed, installed and maintained to NZS 4517:2002 Fire Sprinkler Systems for Houses

and

(ii) is connected to a reticulated supply that is capable of supplying a potable water supply, or if such a supply is not available, the dwelling is supplied from:

a rainwater supply; or

a surface water source; or

a groundwater source

that is both reliable and potable.

Note: ~~1. The storage tank can also be used for the purpose of domestic water supply.~~

2. Further advice about managing fire risk and storage of water for fire fighting can be obtained from the New Zealand Fire Service *or in the Council and NZFS guide:*

Managing Fire Risk to Your Home and Property

2. For each of the principle reasons for rules in the applicable sections (17.5.20, 17.6.20, 17.7.20 and 17.8.20) amend as follows:

Water Supply

Where water reticulation is available, new dwellings will be expected to connect to the service. In Rural and Rural Residential zones, except in locations where a high pressure reticulation is present, new dwellings are required to have access to install water or home sprinkler systems for the purpose of fire protection ~~or and to install water~~ collection and storage systems to ensure that a minimum water supply is available in times of drought ~~and for the purpose of fire fighting.~~