Investigating the regional variation in rules and best management practices for forestry in New Zealand

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Under the \textit{Resource Management Act 1991} (NZ), the interpretation and implementation of environmental policy is primarily the responsibility of local government. The management of forestry operations may be influenced via two written means: statutory rules published in regional and district plans, and recommended best management practices (BMPs) published in guidelines. There are concerns that inconsistency between jurisdictions’ rules have a negative impact on the forestry industry; both in terms of cost and achieving positive environmental outcomes. This research investigated and quantified the variation in Permitted Activity rules and BMPs between the sixteen Regional Councils of New Zealand. Specifically, all rules and BMPs associated with culvert installation and earthworks were categorised and compared. It has been found that there is significant variation in these regional rules and BMPs. It includes variation in both the level of control, i.e., the number of rules and BMPs per council, and the nature of control, i.e., the proportion of rules or BMPs utilised. Further, the rules and BMPs of one council are seldom the same as another. This variation is apparent on both a national scale and when considering only neighbouring pairs of councils.

Keywords: Resource Management Act; environmental standards; earthworks; culverts

Introduction

Resource management activities in New Zealand, including forestry, are governed by the \textit{Resource Management Act 1991} (NZ). Under the Act, the interpretation and implementation of policy is primarily the responsibility of local government, rather than central government (Furuseth 1995). The purpose of the Act, detailed in s.5, is to “promote the sustainable

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management of natural and physical resources”, which includes “avoiding, remedying or mitigating any adverse environmental effects of activities on the environment”.

There are two levels of local government in New Zealand: Regional Councils and territorial authorities. Some territorial authorities also have the responsibilities of a Regional Council and these are known as unitary authorities. Both types of local authorities publish resource management plans, statutory documents which underpin local authorities’ implementation of the Act. These plans contain rules, often specified as conditions under which activities in the environment may take place. Some local authorities publish additional documents which detail practices determined by a council to be the most practicable means of avoiding, remedying, or mitigating an activity’s adverse environmental effects. These documents have a variety of titles, including ‘guidelines’, ‘codes of practice’ and ‘technical publications’. These terms all describe what will be referred to hereafter as ‘best management practices’ (BMPs).

There are concerns within the forestry industry that variation in environmental rules and BMPs between the 16 regional/unitary councils and 61 territorial authorities extant in New Zealand makes it very difficult to plan operations or assess compliance. To investigate this variation, the environmental regulations promulgated by local governments were examined, with a focus on forestry earthworks operations.

Regional Councils serve a number of functions which territorial authorities do not, including: soil conservation; maintenance and enhancement of water quality, quantity and ecosystems; setting minimum or maximum water body flow levels; and controlling discharges of contaminants to water, land and air (Resource Management Act 1991 (NZ), s. 30 & 31). This research focuses only on the sixteen councils which have Regional Council responsibilities (Chatham Islands Council was excluded), as their functions are more closely linked to the environmental effects of forestry earthworks operations.

**Regulatory Variation and Effects**

Under the Resource Management Act 1991 (NZ), local government was expected to set environmental rules and guidance based on locally specific values. There are many core, nationally applicable values such as water quality and the protection of soils, which should have led these entities to develop nationally consistent rules. Most local authorities displayed a reluctance to collaborate during the development of their rules following the introduction of the Act (Dixon, Ericksen et al. 1997), resulting in variation in rules across the districts and regions of New Zealand.
Inter-regional inconsistency of regulation is not necessarily a flaw of the Act, but rather a reflection of its purpose. According to Furuseth (1995), the underlying belief of this resource management approach is that decisions should be made by those communities which will be most affected. In fact, regional variability is considered the “correct result” of the reform process (Furuseth 1995, p. 188).

Nevertheless, a number of forestry companies have raised concerns that this variation has a negative impact on the forestry industry. Companies have suggested that the complexity of the resource management framework has led to increased administrative and operational expenses, greater focus on paperwork than field outcomes, confusion over rules in different jurisdictions, and a reduction in the industry’s ability to attract investors (Johnston 2010, Maunder 2010, PF Olsen Ltd 2010, Strang 2010). Many forestry companies operate across a number of jurisdictions. Although some companies’ estates consist of several forests spread across New Zealand, other estates or parts of estates can consist of one contiguous forest spread over several regions and districts (e.g. Kaingaroa Forest). To address this, this research investigated variation on both a national scale and between neighbouring councils.

Central government has taken action to address these concerns. Under the Act, there is provision for National Environmental Standards (NESs). These are promulgated by central government to ensure that the decision-making process for a particular resource is consistent across New Zealand. Put simply, “they create a level playing field” (MfE 2013a). The Proposed NES for Plantation Forestry (PNESPF) was introduced in 2010, intended to “improve national consistency in local authority plan rules relating to plantation forestry and provide certainty for those involved in managing plantation forests” (MfE 2013b). The PNESPF is yet to be implemented.

Regional differences in forestry rules have already been analysed as part of the development of the PNESPF. The New Zealand Ministry for the Environment (MfE) carried out a survey of plantation forestry rules across regional, unitary and district authorities. The resultant Review of Authority Rules (ROAR) allows rules’ stringency across different authorities to be compared (MfE 2013a). Another review commissioned by the MfE indicated that there is variation in regional forestry rules (Devlin 2009). However, these reviews neither outlined nor quantified all the variations between councils.

**Research Objectives**

The objective of this research is to investigate how rules and BMPs affecting forestry vary across the regions of New Zealand. Rules and BMPs cover many different facets of forestry.
This research focuses just on culverts and earthworks operations. Every region has rules or
guidelines for these operations, and they are a common activity (which can have significant
adverse environmental effects if poorly conducted) at forestry operations across the country.
This research will address how much variation exists in the rules and BMPs for forestry
earthworks across, and between neighbouring, regional and unitary councils of New Zealand.

**Methods**

To quantify variation between rules and BMPs requires that textual information be compared.
This is different to comparing quantitative data and necessitated a system be developed to
facilitate comparison. Further, as regional plans and BMP documents do not necessarily
follow standard formats or use particular keywords, one could not simply compare two
sections of text and deem them ‘different’ if the words were not exactly the same.

A methodology was developed which required the texts to be read and interpreted
before being sorted into a database for comparison. Due to the number of exclusions which
had to be considered, no automated or software options were deemed suitable, this process
was performed manually with a protocol developed to ensure the comparison remained
objective.

**Sources of Evidence**

The rules and BMPs examined were obtained from the regional plans and BMP documents
published by the sixteen regional authorities of New Zealand. These documents were sourced
from the websites of each council, which contain libraries of council publications.

**Exclusions**

Based on the experiences of a short pilot study, it was decided that some rules would be
excluded from this research.

1. Rules regarding waahi tapu (sites sacred to Maori) and archaeological sites were
   excluded because these sites are regulated by the *Historic Places Act 1993* (NZ).
2. Where a council specified special rules for specific zones or areas, these were not
   included. Many of these rules reflect values of areas of importance, and are specific to
   each region. As such, this study focussed only on the ‘general’ rules for each region.
3. The rules examined from regional plans were sourced from the lowest level of control
   under the *Resource Management Act 1991* (NZ). Under the Act, there is a hierarchy
   of stringency of control, from Permitted (least controlled) through Controlled,
Restricted Discretionary, Discretionary, Non-complying and Prohibited Activities (most controlled). Where possible, rules for Permitted Activities were examined. If the activity was not Permitted, then Controlled Activity rules were examined, and so on. Restricted Discretionary, Discretionary and Non-complying Activity rules are more difficult to compare, as councils use their discretion in granting these resource consents, so there are few written rules to compare. The text included as BMPs in this study were those which directed a particular practice should be adopted, or which detailed outcomes which should be achieved or avoided. Text which encouraged one to ‘consider’ options, discussed the merits of several options, or provided background information on adverse environmental effects, was excluded.

**Categorisation**

It was not possible to fit each council’s rules and BMPs into predetermined categories due to their number and variety. Instead, one council’s documents were examined first, and a category was created for each rule and BMP encountered. For each council examined thereafter, its rules/BMPs were either placed into these existing categories, or a new category was created. Examples of categories include ‘Minimum Culvert Diameter’, ‘Maximum Fill Height’, ‘Water Quality – Visual Clarity’, and ‘Contaminants – Refuelling’. The order in which councils were examined was maintained to avoid sorting bias.

A rule or BMP may fit into more than one category if it has multiple foci. For example, a rule which states “The activity shall not cause or induce erosion to land or to the bed or banks of any surface water body, where the erosion is persistent or requires active erosion control measures to bring it under control” (Bay of Plenty Regional Council 2008, p. 170) was included in three different categories, which are ‘Erosion – Land’, ‘Erosion – Surface Water Body Bed’ and ‘Erosion – Surface Water Body Banks’. It is important to note that categorisation under multiple categories may only occur if the rule has multiple foci, and does not merely mention elements of other categories. For example, the rule which states “The activity shall not obstruct or divert the flow of water in such a manner that it results in damming, flooding or erosion” (Bay of Plenty Regional Council 2008, p. 171) is categorised only under ‘Obstruction/Diversion’. However, if the rule had stated “The activity shall not cause damming, flooding or erosion” then it would be categorised under ‘Damming’, ‘Flooding’ and ‘Erosion’.
Classification

The classification of each rule or BMP is made up of two elements. The first element indicates whether a rule / BMP is prescriptive or outcome-based, whilst the second element indicates whether or not a rule / BMP is the same as that of another council.

Prescriptive or Outcome-based

The first element in the classification is the letter ‘O’ or ‘P’ (Table 1), which indicates whether the rule or BMP is prescriptive or outcome-based. This classification is based on the principle outlined by Williams, Baldwin et al. (1999), who stated that prescriptive codes of practice are audited by checking whether prescriptions have been complied with, while outcome-based codes are audited by checking if the desired outcome has been achieved (or the undesired outcome has been avoided).

Table 1: Examples of classification of rules and BMPs as prescriptive or outcome-based, note that outcomes are underlined.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Rule / BMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>“Watercourses should be crossed at right angles to the stream.”</td>
</tr>
<tr>
<td>P</td>
<td>“Avoid construction during fish spawning and migration periods”</td>
</tr>
<tr>
<td>O</td>
<td>“... is of sufficient size to contain the bankfull flow without causing flooding onto neighbouring properties.”</td>
</tr>
<tr>
<td>O</td>
<td>“...the culvert shall not cause or induce erosion of the bed or banks of any surface water body.”</td>
</tr>
</tbody>
</table>

In some cases, rules or BMPs may be prescriptive but also outline an (un)desired outcome. In these instances, they were classified as prescriptive if the prescription gave enough detail to allow an assessment of compliance to be made without waiting for an outcome. If a rule or BMP prohibited a particular activity or practice, that rule was classified as a prescription.

Numbering

Each rule and BMP was also assigned a number, which indicates whether it is the same as, or different to, another in the category. Some key elements which determine if two rules or BMPs were classified as the same (i.e. assigned the same number) are: the method by which
outcomes are measured (such as parameters for measuring the visual clarity of water); the wording/phrasing used; and similarity in quantitative specifications.

**Collation of Dataset**

The documents were examined systematically to ensure that each rule and BMP was categorised and classified. The resultant datasets consist of the classified rules and BMPs, by council and category (Table 2 shows an example of part of the dataset for culverts). If a council did not have a rule or BMP for a particular category, that cell was left blank.

**Table 2:** Sample of rows from a dataset.

<table>
<thead>
<tr>
<th>Category</th>
<th>Council</th>
<th>Northland</th>
<th>Waikato</th>
<th>Bay Of Plenty</th>
<th>Gisborne</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction - Batter slopes</td>
<td></td>
<td></td>
<td></td>
<td>P1</td>
<td>P2</td>
</tr>
<tr>
<td>Construction - Bed disturbance</td>
<td></td>
<td></td>
<td></td>
<td>P1</td>
<td>P2</td>
</tr>
<tr>
<td>Construction - Culvert Length</td>
<td></td>
<td></td>
<td></td>
<td>P1</td>
<td></td>
</tr>
<tr>
<td>Construction - Earth Bunds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>P1</td>
</tr>
<tr>
<td>Construction - Flood flow</td>
<td></td>
<td></td>
<td>P3</td>
<td>P1</td>
<td>P2</td>
</tr>
<tr>
<td>Construction - Inlet / outlet protection</td>
<td></td>
<td></td>
<td></td>
<td>P1</td>
<td>P1</td>
</tr>
<tr>
<td>Construction - Invert depth</td>
<td></td>
<td></td>
<td></td>
<td>P2</td>
<td>P1</td>
</tr>
</tbody>
</table>

To understand how the dataset is organised, note that Table 2 shows an example of seven categories for culvert rules or BMPs. The first row in Table 2 shows that only two of the four councils (Bay of Plenty and Gisborne) had a rule for “Construction – Batter slopes.” The codes P1 and P2 for these respective councils shows that both used a prescriptive rule rather than an outcome-based (O) rule, and also that the rules adopted by these councils were substantively different—if they had been the same, both council’s rules would have been coded P1.

The comparison of texts to enable classification was achieved by compiling a database of rules and BMPs. This database followed the same format as Table 2, but included a copy of the text of relevant rules/BMPs beneath the classification. The full database is available as an appendix to the Thesis summarised by this paper (Pendly 2014).
**Analysis**

**Nationwide Variation**

The following analytical methods were used to answer the first research question: “How much variation exists in the rules and BMPs for forestry earthworks across the regional and unitary councils of New Zealand?”

1. Count the number of categories for which each individual council has rules/BMPs.
2. Count the number of categories which each individual council regulates using rules, and the number of categories regulated using BMPs.
3. Count the total number of rules/BMPs which regulate each category across the country, and count how many unique rules/BMPs are in force (i.e. number of different classifications in category).
4. Count the number of categories which are regulated by only prescriptive rules or BMPs, only outcome-based rules or BMPs, or a mixture of both, across the country.

The number of categories (measured by the analytical method 1. above) is a measure of the amount of different criteria applied by councils to culvert and earthwork activities. A large number of categories indicates that councils consider there are many different criteria that need to be applied.

In contrast, the number of categories which each individual council regulates using rules/BMPs (measured by the analytical method 2. above) is a measure of variation between councils. If councils were consistent across New Zealand, all councils would have rules or BMPs in all categories. If individual councils do not have rules in all categories, then they are diverging from what other councils use as criteria in their rules and BMPs.

Likewise, the analytical method 3. above is a measure of divergence between councils, in that a large number of different classifications in each category shows that councils are choosing to specify a rule or BMP for a specific category in different ways. If all councils used a consistent approach to regulating a particular criteria, then there would be a small number of rules, with identical wording and method (prescriptive or outcome-based) used by all councils.

**Variation between Neighbouring Councils**

The following methods were used to answer the second research question: “How much variation exists in the rules and BMPs for forestry earthworks between neighbouring regional
and unitary councils?" There are 23 pairs of neighbouring councils which share a border; these pairs were those for which these analyses were carried out.

1. Count how many categories one or both of the neighbouring councils have rules or BMPs for (=n).

2. Count how many categories for which:
   a. Both councils have the same rule/BMP (i.e. have the same classification),
   b. Both councils have different rules/BMPs (i.e. have different classifications),
   c. Council A has a rule/BMP but Council B does not, and,
   d. Council B has a rule/BMP but Council A does not.

Counts 2a. – d. above were expressed as percentages of n. This indicates how much similarity (2a.) and difference (2b.) there is in the rules and BMPs between councils, and also to what extent each council regulates in categories that its neighbour does not (2c. & 2d.).

Results

Nationwide Variation

After categorising and classifying the rules and BMPs for culverts, a total of 125 categories had been created. In all, 549 classifications (different rules or BMPs) were made across these categories. In the case of earthworks, 318 classifications were made across 79 categories.

Number of Categories Addressed per Regional Council

The variation in the level and nature of regulation of each category was striking. Figures 1a (culverts) and 1b (earthworks) show the number of categories for which each Regional Council has a rule or BMP (or both, which is shown as a rule). The graphs would be uniform if there was no variation between regions; this is evidently not the case. The variation in proportions of rule and BMP use across the different councils is also apparent.
Some councils exercise a greater level of control than others, as is evident by the different numbers of rules / BMPs implemented by each. Individual councils addressed between 13.6% and 46.4% of the 125 culverts categories, and between 5.1% and 49.4% of the 79 earthworks categories. The average category was addressed by only one quarter of councils, for both culverts and earthworks. This shows that none of the councils are addressing the full scope of potential categories, and some are addressing significantly fewer categories than their counterparts.

Only 7.2% of culverts categories and 3.8% of earthworks categories were addressed by more than ten councils, with the majority of categories being addressed by three or fewer.
councils (culverts: 53%, earthworks: 59%). There were no categories addressed by all of the Regional Councils (Figure 2).

**Figure 2:** Frequency of number of councils to have a rule/BMP for any one category.

**Number of Rules and BMPs per Category**

There is potential for any one category to include up to sixteen rules/BMPs, assuming that every council had a rule/BMP and that it was different to every other. If there was no variation between regions, Figure 3 would show a frequency of 125 (culverts) and 79 (earthworks) categories which had only one rule/BMP. Instead, the number of different rules / BMPs per category ranged from one to eleven (Figure 3). The most varied category for culverts was ‘Flood Flow’, and for earthworks was ‘Water Quality – Visual Clarity’.

**Figure 3:** Frequency of number of rules/BMPs in any one category.
Few categories had no variation in rules/BMPs between multiple councils. In all, 37% of earthworks categories and 34% of culverts categories featured only one rule/BMP utilised by only one council. The exclusion of those categories addressed by only one council revealed that 13% (earthworks) and 10% (culverts) of categories featured total agreement, where a sole rule/BMP was applied by multiple councils. A further 42% (earthworks) and 30% (culverts) of categories featured partial agreement, where several councils applied the same classification, and other councils applied a different one. Total disagreement featured in 33% (earthworks) and 24% (culverts) of categories, with no common rules/BMPs between councils.

**Variation between Neighbouring Councils**

There was considerable variation in the number of categories addressed by the 23 pairs of neighbouring councils. If there was no variation, the same categories would be addressed by every pair of councils. None of the 23 pairs addressed all of the same categories. For culverts, the proportion of categories addressed by both neighbouring councils ranged from 28% to 66%, with an average of 45%. For earthworks, the range was 15% to 72%, with an average of 42%.

Many categories were addressed by only one council in each pair. The proportion of categories addressed by only one of the pair ranged from 57% to 96% for earthworks and 43% to 89% for culverts (67% to 89%, excluding the West Coast – Otago pair). Thus, for all bar one of the pairs, the majority of categories were addressed by only one of the two. In the majority of cases, councils disagreed on those occasions when both councils addressed a category. Across all neighbouring councils, the number of categories over which neighbours agreed ranged from 0 to 14 (culverts) and 0 to 11 (earthworks). Of the 23 neighbouring pairs, zero agreement featured for 3 (culverts) and 15 (earthworks) pairs. The average number of matching categories between two neighbouring councils was 3.2 (culverts) and 1.5 (earthworks). The highest degree of agreement between a pair of neighbouring councils was 25% (earthworks) and 35% (culverts), with the remainder all less than 17% (earthworks) and 11% (culverts). If there was no variation, the agreement between all pairs would be 100%, so it is evident that there is marked variation between neighbouring councils.

**Examples of Variation**

The following are examples of the variation between Regional Councils’ rules/BMPs. In some of the examples, councils are neighbours (indicated by a superscript to the council name).
Maximum Area of Soil Exposure

The maximum permitted area of soil exposed by earthworks operations was specified by five councils, each of which had a unique rule. The areas ranged from 500m$^2$ to 10,000m$^2$ (Table 3).

Table 3: Rules for the ‘Maximum Exposed Area of Soil’ category. Superscripts to council names indicate neighbouring councils.

<table>
<thead>
<tr>
<th>Council</th>
<th>Classification</th>
<th>Rule (R) / BMP (B)</th>
<th>Maximum Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay of Plenty$^1$</td>
<td>P1</td>
<td>R</td>
<td>Within any 12 month period:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Slope 0 - 15°:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Slope &gt;15 - 25°:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Slope &gt;25 - 35°:</td>
</tr>
<tr>
<td>Waikato$^{1,2,3}$</td>
<td>P2</td>
<td>R</td>
<td>Within any 12 month period:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Slope &gt; 25°:</td>
</tr>
<tr>
<td>Auckland$^2$</td>
<td>P3</td>
<td>R</td>
<td>Slope: &lt;15°:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Slope: ≥ 15°:</td>
</tr>
<tr>
<td>Taranaki$^3$</td>
<td>P4</td>
<td>R</td>
<td>8,000m$^2$</td>
</tr>
<tr>
<td>Tasman</td>
<td>P5</td>
<td>R</td>
<td>Within any 12 month period:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10,000m$^2$</td>
</tr>
</tbody>
</table>

Fill Height over Culverts

There were two categories for fill height over culverts; one for maximum and another for minimum. A mixture of rules and BMPs were utilised in these categories, with nine councils addressing the maximum and six addressing the minimum fill heights. Whilst some councils set limits and conditions on fill height, others simply recommended complying with manufacturer recommendations (Table 4).
Table 4: Rules and BMPs for Minimum and Maximum Fill Height over Culvert categories.

<table>
<thead>
<tr>
<th>Council</th>
<th>Maximum Height</th>
<th>Minimum Height</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rule (R) / BMP(B)</td>
<td>Details</td>
</tr>
<tr>
<td>Otago(^{7,8})</td>
<td>R</td>
<td>1.5 metres above lowest part of bed.</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Check manufacturer’s recommendations</td>
</tr>
<tr>
<td>Northland</td>
<td>B</td>
<td>Check manufacturer’s recommendations</td>
</tr>
<tr>
<td>Waikato(^{1,4,9})</td>
<td>B</td>
<td>Check manufacturer’s recommendations</td>
</tr>
<tr>
<td>West Coast(^{2,6,7})</td>
<td>B</td>
<td>Check manufacturer’s recommendations</td>
</tr>
<tr>
<td>Bay of Plenty(^{1,3})</td>
<td>R</td>
<td>1.5 metres above culvert crest.</td>
</tr>
<tr>
<td>Canterbury(^{2,8,10})</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Gisborne(^3)</td>
<td>R</td>
<td>2.5 metres.</td>
</tr>
<tr>
<td>Taranaki(^{5,9})</td>
<td>R</td>
<td>1 metre above bed level.</td>
</tr>
<tr>
<td>Manawatu-Wanganui(^{4,5})</td>
<td>R</td>
<td>2 metres, unless a spillway is constructed for passage of 200 year flood without fill being overtopped.</td>
</tr>
<tr>
<td>Tasman(^{6,10})</td>
<td>R</td>
<td>2 metres, unless culvert is designed for 1% AEP flood flow and has secondary flow path.</td>
</tr>
</tbody>
</table>

Some councils included details on how to measure fill height — notably, Bay of Plenty measured it from the culvert crest, whereas Taranaki and Otago measured it from bed level. This rule has some interesting consequences for culverts in the latter two regions. Taranaki and Otago Regional Councils specified maximum fill depths of 1 and 1.5 metres above the bed level respectively (Table 4). Assuming a culvert diameter of 1 metre; which is the maximum permitted diameter in Taranaki (Taranaki Regional Council 2001, p. 137) (Otago does not specify a maximum culvert diameter); a culvert in Taranaki would have no fill over it, whilst one in Otago would have 500 millimetres over it. By comparison, the New Zealand Forest Road Engineering Manual recommends that the depth of fill over a culvert should be...
equal to the culvert pipe diameter (Gilmore, Mackie et al. 2011, p. 115), so under those guidelines culverts in Taranaki and Otago would be lacking 1 metre and 0.5 metres of fill respectively.

**Discussion**

*Differentiation of Rules and BMPs*

In analysing the results of this study, rules and BMPs were not considered separately. If rules and BMPs had been considered ‘different’ based simply on their source, it would have inflated disagreement between councils. BMPs were included in this study to acknowledge the use of non-statutory documents, so to automatically assign them different classifications would make little sense. However, the difference in legal status of rules and BMPs had to be recognised. If two councils had the same rule, but one had an additional BMP which would change the classification, that BMP was disregarded. If one council had a rule and another council had a different rule and a BMP which, on combination, made the classifications the same, that BMP would be included. This recognises that while a council may use fewer rules than another council and ‘fill the gaps’ through the use of BMPs, they do not alter the legal requirements outlined in a regional plan.

*Outdating of Research*

It should be noted that the results of this research were already outdated before publication. Regional plans are subject to change, with new plans being proposed and existing plans being modified. One such change was the notification of the draft *Auckland Unitary Plan*; becoming a proposed plan with legal effect on 30 September 2013 (Auckland Council 2013). Other plans and BMP documents may have been changed or replaced since this research was conducted. As such, this research is a snapshot of the regulatory environment during mid-2013.

*Justification of Variation*

The results of this research have shown that there is variation in the rules and BMPs of Regional Councils, which leads to the question of whether or not the variation is justified. One would expect minimal variation between Regional Councils’ Permitted Activity conditions for activities conducted in general areas. Although inconsistency of policy is not necessarily a flaw of the *Resource Management Act 1991* (NZ), but rather a reflection of its purpose (Furuseth 1995), it is questionable whether the variation could be justified by this
alone. For example, it seems unlikely that the communities of Taranaki, Bay of Plenty and Gisborne chose to disallow more than 1, 2 and 2.5 metres of fill over a culvert, respectively. It would be difficult to justify such trivial differences between rules using this argument, and even more difficult to argue against convergence of rules on that basis.

The variation in geomorphology across New Zealand could also be presented as justification. However, given that the rules relating to areas of special geomorphology were excluded from the study, it seems unlikely that this is the source of variation. It is possible that some of the variation could be attributed to differences in the overall geomorphology of one region compared to another. However, that seems unlikely given the low proportions of matching rules/BMPs between neighbouring councils.

This research cannot show conclusively whether or not the variation which exists between the Regional Councils’ rules and BMPs can be justified by regional differences in community and geomorphology. Nor can it identify the sources of that variation, or show whether or not the variation in rules and BMPs is simply arbitrary. However, it can be stated that the degree of variation found between Regional Councils is unexpectedly, and perhaps unjustifiably, high, especially given the parameters of this study.

**Convergence and Divergence**

An international study of pulp and paper mill environmental compliance (which included New Zealand mills) found evidence of convergence; when one jurisdiction tightened its rules, other jurisdictions followed suit. It is not uncommon for one authority to model their policies and rules on those of another authority, although there may be a time lag (Kagan, Gunningham et al. 2003).

Although convergence and divergence are analysed by comparing how rules have changed over time, which has not been done for this research, the (dis)similarities between Regional Councils can indicate whether or not convergence has occurred. Observations were made which allow the identification of some examples of convergence, and a discussion of potential drivers of, or barriers to, convergence.

**Rules**

One may expect that convergence between regional plans would have occurred in the last 22 years. However, this research shows there are very few matching rules between neighbouring jurisdictions, which in turn indicates limited convergence. The level of co-operation required to converge plans would be significant. The structure of regional plans is quite varied, so any
attempt to streamline the plans would likely require the adoption of a common structure along
with a rewrite of rules in the plans.

BMPs

It appears that convergence has occurred between the BMPs of Regional Councils. The
Auckland Regional Council’s *Technical Publication Number 90* (1999) has been adopted by
a number of others, either directly or through incorporation into their own BMP documents.
The Waikato Regional Council’s *Clean Streams* (Legg 2004) guideline has likewise been
adopted by a number of councils around the country, as has the Wellington Regional

Perhaps the prevalence of convergence in BMPs is due to their status. As BMPs are
not necessarily statutory documents it would be much easier for councils to converge their
BMPs than their regional plans.

There is also some evidence of divergence. The *Technical Publication Number 90*
(Auckland Regional Council 1999) was not the source of the Auckland region’s BMPs for
this research. Rather, the forestry-specific *Technical Publication 223* (Dunphy, Bryant et al.
2007) was used. A number of Regional Councils have converged their BMPs based on the
older document, whilst the publishing council has adopted a new document. There is already
evidence of convergence towards the new, with the Hawke’s Bay Regional Council using it
as the basis of its guideline (Shaver 2009).

Future Convergence

The issue which spurred this research is the inconsistency of environmental regulation
governing forestry across the jurisdictions of New Zealand. By pushing for an improvement
in consistency, the forestry industry is applying pressure for convergence to occur.

The adoption of a standardised set of BMPs would not completely address the issue of
inconsistency between Regional Councils. The limitations of this option have already been
analysed as part of the development of the PNESP. A key limitation identified by the MfE
was that BMPs do not have legal status, and as such “there is no guarantee that councils
would implement it and therefore long-term national certainty cannot be assured” (MfE 2010,
p. 116).

How, then, to achieve consistency? There are a number of different options, the merits
of which have already been analysed by the MfE (2010, Appendix 4). The PNESP outlines
standardised sets of activity conditions for both ‘earthworks’ and ‘river crossings’, among
other activities (MfE 2010). The results of this research have shown that the general
Permitted Activity conditions for these operations are inconsistent; the PNESPFF may be a viable option for setting a consistent basic standard for these operations.

**Effect on Industry**

Variation in regulation can lead to increased administrative and operational expenses, and requirements for multiple resource consents made investment less attractive to shareholders (Johnston 2010, PF Olsen Ltd 2010, Strang 2010). However, the number of resource consents required would not be altered by a reduction in variation between Regional Councils, but it may make the process of compiling those resource consent applications easier.

The results of this study revealed two interesting points regarding neighbouring Regional Councils. There is little common ground between councils in terms of the categories addressed, and there are even fewer matching rules and BMPs. It is easy to see how operating under multiple Regional Councils may be confusing for operational personnel and contractors.

**Subjectivity of Results**

Although every effort was made to conduct this study in an objective manner, categorising the rules and BMPs was conducted by only one person, the lead author. To gauge possible subjective bias, a peer review exercise was conducted to test both the methods and results of this study. Five experts from Regional Councils and the forestry industry volunteered to take part in an exercise categorising and classifying rules for general earthworks from a subset of councils.

The experts’ results were compared with the author’s and with each other. Total agreement was not achieved by any pair of study personnel, so it is not possible to rule out all subjectivity. For the majority of categories (71%) at least one expert was in agreement with the author’s classifications. Likewise, for 58% of categories the most common expert result concurred with the author’s results. It was established that the author’s interpretation of rules was not vastly different to that of the expert panel.

**Conclusion**

The results of this study show there is significant variation in the level and nature of regulation of culverts and earthworks operations. On a national level, the minority of categories featured total agreement i.e. a single rule or BMP being applied by multiple councils. It was most apparent in the analysis of neighbouring Regional Councils, with low
proportions of matching rules/BMPs between neighbours, including several pairs featuring nil agreement. Given that only the ‘general’ rules and BMPs were examined, and that those rules which applied to areas of special importance or value were excluded, one would expect there to be little variation. The level of control varies between Regional Councils, with some councils addressing more categories than others; whilst the nature of regulation varied in the proportions of rules and BMPs utilised.

Most categories were addressed by only a small number of councils, whilst few categories were addressed by the majority of councils. As such, few operational aspects must be considered when working with multiple councils, whilst individual councils require that certain aspects are managed which others do not. Considering the results for neighbouring councils, it was apparent that the majority of categories were addressed by only one of each pair of councils, showing that subscription to individual categories varied across regional boundaries.

In conclusion, the variation between Regional Councils’ rules and BMPs for earthworks and culverts is significant. Work on improving consistency of forestry regulation is ongoing, and it is clear that this variation is one aspect of the resource management framework which must be addressed.

References


