

IN THE MATTER of the Resource Management Act
1991

AND

IN THE MATTER of the Proposed Canterbury Land
and Water Regional Plan

**STATEMENT OF EVIDENCE OF GERARD MATTHEW WILLIS
FOR THE GROUP 2 HEARING**

1. INTRODUCTION

- 1.1 My full name is Gerard Matthew Willis. I hold the qualifications and have the experience set out in my statement of evidence for the Group 1 hearing.
- 1.2 Although this is not a Court hearing, I have read the Environment Court's Code of Conduct for Expert Witnesses, and I agree to comply with it. My qualifications as an expert are set out above. I confirm that the issues addressed in this brief of evidence are within my area of expertise, except where I state I am relying on what I have been told by another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

2. SCOPE OF EVIDENCE

- 2.1 This evidence provides a planning assessment of those provisions on which Fonterra and/or DairyNZ submitted that fall within the Hearing Group 2 category as described in the Schedule of Hearing Topics provided by the Commissioners.
- 2.2 For convenience I follow the structure used in the Council's Section 42A Report. Thus the evidence addresses, in this order:
- (a) Animal and vegetable waste (Rules 5.33 and 5.34);

- (b) Stock holding areas and animal effluent (Rule 5.35 and 5.36);
- (c) Stock exclusion from water bodies (Policy 4.26 and Rule 5.133);
- (d) Nutrient management including:
 - (i) Nutrient definitions
 - (ii) Policies
 - (iii) Rules
 - (iv) Schedule 7
 - (v) Nutrient Allocation Zone Mapping; and
- (e) Farms in transition at the time of Plan notification.

2.3 Where necessary, I include amended provisions within the body of this evidence that I recommend to give effect to matters raised in this evidence. Noting that the Section 42A Report recommends numerous, and often substantial, changes to the proposed wording, I have also included those changes where I have no reason to disagree with them. Where I have done so I show:

- (a) the proposed plan wording in Black font;
- (b) the Section 42A Report wording in Blue font (underscored); and
- (c) my additional amendments in Red font (underscored).

3. THE PLANNING FRAMEWORK

3.1 I have described the planning framework in my evidence provided in Hearing Group 1. I do not repeat that here, but confirm that in my view the relevance of those various matters remains unchanged.

4. ANIMAL AND VEGETATIVE WASTE

Rules 5.33 and 5.34

- 4.1 Rule 5.33 relates to the disposal of animal or vegetative waste. It is clear to me that the rule is intended to control the discharge of solid effluent waste such as scrapings from herd homes or feedlots or the material removed from stone traps (that trap solids before effluent enters a effluent storage pond). Vegetative material might include bark or wood shavings used in calf rearing sheds for example. I understand that usual practice is that such waste is typically applied to land before ground is worked up for a crop (thus allowing the material to be worked into the soil).
- 4.2 The Fonterra submission raised two concerns with the Rule:
- (a) That Condition 1 of the rule that such waste not be “hazardous waste” was unworkable since the definition of hazardous waste includes material that includes pathogens – something that is an inevitable component of animal waste;
 - (b) That the Rule could be interpreted as controlling the discharge of waste/effluent directly from the animal to the pasture – something that would be unworkable.
- 4.3 While I consider it unlikely that the rule is intended to make all discharges of animal waste or all discharges directly from animals discretionary activities under Rule 5.34, I do agree with the Fonterra submission that these matters should be clarified in the Rule.
- 4.4 I note that the Section 42A Report appears to dismiss the Fonterra concern on the basis that Section 15(1) of the RMA does not require a resource consent or rule to cover such a discharge unless the discharge is to land in circumstances that may enter water. With respect, that rationale is difficult to follow since Rule 5.33 expressly authorises (but places conditions on) discharges “into or onto land in circumstances where a contaminant may enter water”. As I noted above, I think it unlikely and certainly unintended but I do agree that it is possible for the rule to be interpreted to suggest the rule controls where and how often animals (under the control of farmers) may deposit waste.

4.5 I also agree with Fonterra's concern about the reference to hazardous waste and hence the presence of pathogens. As noted by Mr Cullen (Paragraph 4.2 of his evidence), animal and vegetative waste from the sources described (yard scrapping, stone traps, animal rearing sheds etc) will contain pathogens associated with the decomposition of feed in the gut of an animal. In that sense the condition is simply unrealistic. In my opinion the risk of pathogens in waste needs to be, and is, managed by appropriate separation and exclusion conditions. On that point I note also the additional conditions recommended for inclusion in the Section 42A Report. I have no basis to disagree with those additional conditions.

4.6 In my opinion these are matters that can be easily resolved by minor amendment to Rule 5.33 as follows:

5.33 *The discharge of solid animal waste (excluding the discharge directly from animal to pasture), or vegetative material containing animal excrement or vegetative material, including from an intensive farming process or industrial or trade process, into or onto land, or into or onto land in circumstances where a contaminant may enter water is a permitted activity provided the following conditions are met:*

1. *The material does not contain any hazardous substance ~~or hazardous waste~~;*
2. *The material does not include any waste from a human effluent treatment process; and*
3. *The material is not discharged:*
 - (a) *onto the same area of land more frequently than once every two months;*
 - (b) *onto land where solid animal waste, or vegetative material containing animal excrement or vegetative material from a previous application is still visible on the land surface;*
 - (c) *onto land when the soil moisture exceeds field capacity*
 - (d) *within 50 metres of a surface water body listed in Schedule 17; or*
 - (e) *within 20 m of a bore used for water abstraction, a surface water body not listed in Schedule 17 or the Coastal Marine Area; or*
 - (e) *within a group or community drinking water supply protection area as set out in Schedule 1.*

- 4.7 It is not clear to me that there is any genuine added risk created by the deletion of the reference to hazardous waste. However if there is some risk associated with material sourced from industrial or trade processes then an additional condition might be added to read as follows:

1A Any material originating from an industrial or trade process does not contain hazardous waste.

- 4.8 A corresponding amendment will need to be made to Rule 5.34 as follows:

5.34 *The discharge of solid animal waste (excluding the discharge directly from animal to pasture), or vegetative material containing animal excrement or vegetative material, including from an intensive farming process or industrial or trade process, into or onto land, or into or onto land in circumstances where a contaminant may enter water that does not meet one or more of the conditions in Rule 5.33 is a discretionary activity.*

5. STOCK HOLDING AREAS AND ANIMAL EFFLUENT

Rule 5.35 and 5.36

- 5.1 Rule 5.35 unusually relates to both land use and discharge to land that may enter water. It makes the use of land for stock holding and for farm dairy effluent management (essentially milking sheds/yards, feedpads, wintering pads, parts of farm raceways, effluent storage ponds and “treatment”) a restricted discretionary activity. It also makes discharges of animal effluent to land a restricted discretionary activity.
- 5.2 The Fonterra submission opposes this rule on various grounds. In broad terms I agree with the Fonterra submission on this point.
- 5.3 Much of my concern relates to the rule’s control of land use. It is first important to point out that requiring consent (of any type) for the use of land for stockholding or effluent management is an entirely new approach.
- 5.4 Under Rule WQL24 of the NRRP, the use of land for a stockholding area was a permitted activity subject to conditions. Those conditions relate to the prevention of discharges and to the sealing of areas when located over unconfined or semi-confined aquifers.

- 5.5 Similarly, under Rule WQL26 of the NRRP, the use of land for storing animal effluent (i.e. farm dairy effluent ponds) was also a permitted land use subject to conditions. Those conditions related to storage capacity, location and lining.
- 5.6 Under Rule WQL25 of the NRRP, discharge of animal effluent to land on land parcels larger than 4 hectares is a *controlled activity* if it meets all conditions (and restricted discretionary or discretionary depending on which conditions it does not meet).
- 5.7 While I accept that discharges from animal holding areas and from effluent storage areas creates a water quality risk that needs to be managed, I am not of the opinion that the appropriate means of doing this is to control land use by way of requiring restricted discretionary consent. I say that for three reasons.
- 5.8 First, the rule necessitates that all existing (and previously lawful) milking sheds, races, feed pads and storage ponds (and possibly paddocks where effluent is discharged) will need to secure a land use consent (within six months) to remain lawful. That will impose a very significant burden on existing farmers (and indeed the Council) for an unknown benefit.
- 5.9 Second, the conditions that need to be placed on *land use* are in my opinion clear and “standard” in nature. Little, if any, site-by-site assessment is required. Some risks that are sought to be managed by the land use consent (such as pond storage capacity) may be adequately addressed by the discharge to land consent (or in farm environment plans in respects of existing farms with existing discharge consents). That being the case, permitted activity status for the land use aspects of this activity is appropriate.
- 5.10 Third, Rule 5.35 potentially adds significantly to the number and complexity of consents that would need to be held by a dairy farmer. Potentially, a Canterbury dairy farmer will need¹ a:
- (a) land use consent for nutrient loss (under Rules 5.43-5.47);
 - (b) land use consent for stockholding areas and for effluent “collection, storage and treatment” (under Rule 5.35);

1. Other discharges consents could be required if permitted activity conditions associated with other typical farm activities are unable to be complied with.

- (c) discharge to land consent for animal solid animal waste (if my recommendation for the previous section is not adopted)
- (d) discharge to land consent for farm dairy effluent application to land; and
- (e) water take consent (if not part of an irrigation scheme)

- 5.11 This creates complexity – particularly given the inter-relationship between these rules and shared objectives. A consent for nutrient loss might, for example, also control the risk of discharges from stockholding areas and the application of farm dairy effluent (both of which I understand affect the nitrate loss rate of a farm). Certainly the matters of discretion listed in Rules 5.47, for example, are broad enough for these matters to be controlled in that way. This would create an unwieldy and potentially duplicative or contradictory consenting regime.
- 5.12 Fourth, the above issue is compounded by uncertainty in Rule 5.35 about what the phrase “use of land for the ...treatment of animal effluent” might encompass. It is not clear to me, for example, whether this means that the land on which effluent is discharged would need a land use consent. I understand from the evidence of Mr Cullen (paragraph 5.5) that discharge to land can be regarded as “treatment” as the soil does essentially “treat” a number of contaminants (nutrients are taken up by plants, BOD and E.coli levels are reduced as the discharge passes through the soil profile). If that interpretation is taken then every paddock on which effluent is discharged would need to be subject to a land use consent.
- 5.13 The Fonterra submission provided a number of options to remedy this issue. Its first preference was that both land use and discharge be permitted activities (subject to conditions).
- 5.14 The option I favour is to separate Rule 5.35 into two rules. One land use rule that permits certain land uses subject to appropriate conditions and one discharge to land rule that provides for discharges that meet conditions to be controlled activities (and restricted discretionary activities if they cannot).
- 5.15 I note that the Section 42A Report recommends a similar approach although proposes two separate land use rules; one for stock holding and the other for effluent collection, storage and treatment. (I would have thought those two

activities could have been combined into a single land use rule but I accept that is not critical).

- 5.16 The other concern I have is that the Section 42A Report proposes an additional condition be placed on the permitted land use being that pond storage not exceed 1500m³ in capacity.
- 5.17 Mr Cullen's evidence (paragraph 5.27) is that the risk posed to groundwater from ponds is related to the quality of their design and construction and not their capacity.
- 5.18 In fact I understand that the biggest risk to water quality associated with effluent ponds is that they are of insufficient capacity to cope with volumes and storage requirements at times of high rainfall. In that sense a maximum capacity limit seems counter-productive and likely to act as a disincentive for farms to install ponds with a capacity greater than 1500m³. As Mr Cullen suggests (paragraph 5.15), farms that are on the threshold of needing a 1500+m³ storage pond may be incentivised to install the minimum they can get away with simply to avoid the need for another resource consent.
- 5.19 For those reasons I support the Section 42A Report's proposed permitted land use Rules 5.35 and 5.35B noting a single rule would seem possible and with the exception of the 1500m³ pond capacity.
- 5.20 If it was maintained as a separate rule, I propose Rule 5.35B would read:

5.35B The use of land for the collection, storage and treatment of animal effluent is a permitted activity, provided the following conditions are met:

1. The land used for the collection, storage and treatment of animal effluent is not:

(a) within 20 m of a surface water body (other than a wetland constructed primarily to treat animal effluent), a bore used for water abstraction or the Coastal Marine Area;

(b) within 50m of the boundary of the property;

(c) within a group or community drinking water supply protection area as set out in Schedule 1; and

2. The collection, storage and treatment system is sealed.

such that seepage into land does not exceed one millimetre per day; and

~~3. The total volume of animal effluent stored on a property is no greater than 1,500 m³.~~

Effluent discharge

- 5.21 I have greater difficulty with the Section 42A Report recommendation for a restricted discretionary activity rule for the discharge to land of animal effluent.
- 5.22 In my opinion the rule should be a controlled activity rule and default to a restricted discretionary activity rule if certain standards and terms of the controlled activity rule cannot be met (and non complying if other core requirements cannot be met). As noted above, that is similar to the current approach of the NRRP². I reach that view on the basis of Mr Cullen's evidence (paragraph 5.18) that there are clear metrics of effluent application rate and depth that are broadly applicable and if complied with would limit the scope of any adverse effects of such a discharge. In my view those metrics can be specified as requirements or conditions of a controlled activity. I have included these conditions in my proposed controlled activity Rule set out below.
- 5.23 The second issue is that raised in the Fonterra submission. Namely, the condition requiring discharges not occur "beyond the boundary of the site". There are two sub issues here.
- (a) This "beyond the boundary of the site" condition may limit where a discharge may occur on a single farm. According to Section 2 of the Plan, a site is a single certificate of title or land parcel for which a separate certificate of title could be issued without further consent. As I understand it, that means that a single farm could be made up of multiple "sites" (as farms often comprise multiple titles). Thus, as drafted, the effluent discharge rule (Rule 5.35 in the plan and notified and Rule 5.36 in the Section 42A Report version), would not allow the discharge of farm dairy effluent across a farm of multiple titles except by way of non-complying activity consent. I can see no planning justification for that approach (and suspect it is unintended).

2. Although the NRRP also had discretionary and prohibited status depending on which conditions could not be met.

- (b) A discharge beyond the boundary of a property might be acceptable where it takes place based on an arrangement struck between neighbours. In that case defaulting to a non-complying activity would be quite unnecessary and inappropriate. I agree with that point also.

The principle to be reflected in the Rule, in my opinion, is that effluent should not be discharged beyond the boundary of the *property* from which the effluent was generated except by agreement between landholders. As I understand it, in terms of property law, such a discharge could not occur without agreement of the adjoining landowner in any event. The Section 42A Report for the Group 1 hearings recommended a definition of “property” as follows:

Any contiguous area of land held in one, or more than one ownership, that is utilised as a single operating unit, and may include one or more certificates of title.

5.24 In summary, I support:

- (a) Rule 5.35 as proposed in the Section 42A Report
- (b) Rule 5.25A as proposed in the Section 42A Report
- (c) Rule 5.35B of the Section 42A Report with the exception of condition (c).
- (d) Rule 5.35C of the Section 42A Report
- (e) The following cascade of Rules in place of the Rule 5.36 and Rule 5.36A as described in the Section 42A Report:

5.36 The discharge of animal effluent or water containing animal effluent and other contaminants onto or into land where a contaminant may enter water is a ~~restricted discretionary controlled activity~~ provided the following conditions are met:

1. The discharge of animal effluent or water containing animal effluent and other contaminants:

- a. Is not directly to, or within, 20m of a surface water body (other than a wetland constructed primarily to treat animal effluent), a bore used for water abstraction of the Coastal Marine Area;
- b. Does not occur beyond the boundary of the ~~site~~ property on which the effluent is generated

except where written approval of the affected landholders has been obtained;

- c. Is not within a group or community drinking water supply protection area as set out in Schedule 1;
- d. Has backflow prevention installed if the animal effluent or water containing animal effluent is applied with irrigation water;
- e. Is not onto potentially contaminated land; and
- f. Is not onto frozen or snow covered ground.

~~2. A Farm Environment Plan is prepared, implemented and audited in accordance with Schedule 7 Parts A and G~~

2. The discharge shall be via a spray irrigation system and all tanks, pipes, sumps and channels shall be sealed to prevent leakage onto or into land.

3. The nitrogen application rate for animal effluent shall not exceed a total nitrogen loading of 150kg/ha/yr; and the rate of application of nitrogen in effluent shall not exceed 100kg/ha over any consecutive three month period.

4. The effluent application depth (including any irrigation water applied with the discharge or within 24 hours before or after the discharge) shall not exceed the soil moisture deficit or the applicable depth specified in the Table 2 (whichever is the lesser).

Table 2 – Effluent application depths

Category	A	B	C	D	E
Soil and landscape feature	Artificial drainage or coarse soil structure	Impeded drainage or low infiltration rate	Sloping land (>7°) or land with hump & hollow drainage	Well drained flat land (<7°)	Other well drained but very stony ^x flat land (<7°)
Max depth: High rate tool	10 mm	10 mm	10 mm [*]	25 mm [#] (10 mm at field capacity)	10 mm
Max depth: Low rate tool	25 mm	25 mm	10 mm	25 mm	10 mm

^{*} This method only applicable where instantaneous application rate < infiltration rate

[#] 25 mm is the suggested maximum application depth when a suitable SWD exists (≥ 15 mm). Field capacity should not be exceeded by more than 10 mm using a high rate irrigator.

Advisory note

Low rate tool is system which can apply <10mm per hour on an instantaneous basis).

Process for determining soil and landscape features categorisation is described by Houlbrooke et al³.

The CRC will exercise control over the following matters:

1. Effluent storage capacity to allow for withholding of effluent during periods when soil moisture deficit is insufficient to allow for effluent irrigation to occur.

Advisory note: This capacity will be determined by utilising Massey University Dairy Effluent Storage Calculator or similar methodology which takes the following into account:

- i. The volume of animal effluent, washdown water and associated contaminants directed to storage.
 - ii. The length of time that animal effluent, washdown water and associated contaminants must be stored between emptying events.
 - iii. The amount of water that will be added directly onto the storage surface during storage period (rainfall).
 - iv. Volume of runoff from rainfall onto all areas that drain into storage, during storage period
 - v. Contingency for large storm events
 - vi. Soil moisture levels (rainfall and evapotranspiration rates)
 - vii. Contingency for breakdowns and maintenance.
2. Methods to store effluent and application rates in times of adverse weather conditions, including frozen ground, or in cases of equipment failure
 3. The proximity of any discharge to any identified site of significant indigenous biodiversity
 4. The adequacy of design, construction, systems and management processes to minimise fugitive discharges from the system, including, but not limited to, any design leakage from the effluent storage areas, flow paths and mitigation in case of equipment failure or breakage.

5.36A The discharge of animal effluent or water containing animal effluent and other contaminants into or onto land where a contaminant may enter water that does

3. Houlbrooke, D; Laurenson, S; Carrick, S; Categorising the environmental risk from land application of liquid wastes based on soil properties (2011).

not meet Conditions 2-4 of Rule 5.35A is a restricted discretionary activity.

The CRC will restrict discretion to the following matters:

1. Measures to avoid, mitigate or remedy adverse effects on aquatic ecosystems and human or animal drinking water;
2. Measures to store effluent and application rates;
3. Methods to store effluent and application rates in times of adverse weather conditions, including frozen ground, or in cases of equipment failure;
4. The proximity of any discharge site to any identified site of significant indigenous biodiversity;
5. The adequacy of design, construction, systems and management processes to minimise fugitive discharges from the system, including, but not limited to, any design leakage from the stockholding and effluent storage areas, flow paths and mitigation in case of equipment failure or breakage;
6. The extent to which the proposed activity is consistent with the objectives and policies of this Plan relating to Ngāi Tahu values, human and animal health and drinking water quality, including Policy 4.11.

5.36B The discharge of animal effluent or water containing animal effluent and other contaminants into or onto land where a contaminant may enter water that does not meet Condition 1 of Rule 5.35A is a non-complying activity.

6. STOCK EXCLUSION

- 6.1 As notified, Policy 4.26 sets out the approach to be taken to the exclusion of livestock from water bodies. It states:

To avoid damage to the banks of waterbodies, sedimentation and disturbance of the water body, direct discharge of contaminants, and degradation of aquatic ecosystems:

- (a) *intensively farmed stock is excluded from water bodies and wetlands; and*
- (b) *stock is excluded from sensitive sites; and*
- (c) *access to banks and beds by other stock is limited to stock species that prefer to avoid water and at stocking rates that avoid evident damage.*

- 6.2 The Fonterra submission expressed concern about the use of the term “sensitive sites” being a term not defined in Section 2 of the Plan.

- 6.3 In my opinion, Policy 4.26 must be read and understood in conjunction with its implementing rules. As I understand the linkage between the policies and rules:
- (a) Policy 4.26(a) is implemented by Rule 5.133;
 - (b) Policy 4.26(b) by Rule 5.134; and
 - (c) Policy 4.26(c) by Rule 5.135 (although this is less clear).
- 6.4 That being the case, it is reasonably clear to me that the reference to “sensitive sites” in Policy 4.26 is intended as a generic descriptor for:
- (a) fish spawning sites;
 - (b) water supply intakes;
 - (c) swimming sites; and
 - (d) spring fed plains rivers.
- 6.5 It is also apparent the dairy cows are to be excluded from all rivers (in accordance with Rule 5.133), not just the sensitive sites within river beds. Therefore the “stock” targeted by Policy 4.26(b) are not dairy stock (which are already excluded comprehensively under 4.26(a) but all other, non dairy, livestock.
- 6.6 However, I do support Fonterra’s call for clarification of Policy 4.26 because as currently drafted, it does appear that item (b) imposes an additional obligation to item (a). That is, in addition to being excluded from all river and lake beds, intensively farmed stock are to be excluded from “sensitive sites” potentially outside of river and lake beds.
- 6.7 As noted earlier, the rules indicate that is not the intent of the policy but nevertheless the policy remains able to be “had regard to” in the consideration of consent applications and there remains, therefore, the potential for confusion about the applicability of the policy and, in particular, whether stock could be excluded from areas other than the bed of a lake or river or a wetland.
- 6.8 The Section 42A Report makes a number of changes to Policy 4.26. One of those changes adds some clarity to “sensitive areas”. These changes largely

address the issues raised by Fonterra although, in my opinion, further clarity as to the intent of the policy could be achieved by the addition of further minor wording as follows:

4.26 ~~To avoid d~~ Damage to the bed and banks of waterbodies, sedimentation and disturbance of the water body, direct discharge of contaminants, and degradation of aquatic ecosystems is avoided by:

(a) ~~excluding intensive stock~~ intensively farmed stock is excluded from lakes, rivers ~~water bodies~~ and wetlands; and

(b) ~~excluding stock is excluded~~ from swimming, salmon spawning and other specified sensitive areas within water bodies and wetlands; and

~~(c) access to banks and beds by other stock is limited to stock species that prefer to avoid water and at stocking rates that avoid evident damage.~~

Rule 5.133

6.9 The Fonterra submission raises a related point in respect of Rule 5.133. That rule prohibits access by any “outdoor intensively farmed” stock to the bed of any lake or river or to a wetland.

6.10 I support that rule in principle as it is consistent (in principle) with the Sustainable Dairy: Water Accord, as discussed by Mr Ryan in the Group 1 hearings. However, I also agree with the Fonterra submission when it points out that, depending on interpretation, the “bed” of a river can extend well beyond its normal wetted area. In that sense beds can form part of a working production landscape. Mr Cullen provides an example from the Canterbury region of farmed areas potentially caught by the definition of bed (see paragraph 7.3 of Mr Cullen’s evidence).

6.11 I note that the Chapter 6 of the Natural Resources Regional Plan (NRRP) describes how the definition of bed is not clear, particularly in Canterbury, as braided rivers have shifted course over time leaving channels and terraces that are now often farmed. That same description also explains how case law has identified that:

“... land which is not in the main channel of the river (the area where the river normally flows), but has depressions through which flood water would flow in times of ordinary flooding is considered as river bed. This

means that the “bed” can cover a very wide area. The court has applied this interpretation regardless of whether the main channel has defined banks or not.”

(NRRP, page 6-3. See Appendix 1 for full excerpt).

- 6.12 It is instructive that the authors of the NRRP felt it necessary to give very detailed guidance within that plan on where a river “bed” might be said to begin and end. The notified Land and Water Plan contains no such guidance. Mr Cullen’s evidence applies this definition and identifies the anomalies that can result.
- 6.13 In my opinion, it is not good planning practice to have a prohibited activity rule where there is so much uncertainty around where it will and will not apply. In my opinion, the sorts of areas described by Mr Cullen as potentially coming within the definition of “bed” (being, in many cases, established grazing areas such as river terraces and farmed areas between river channels) ought not be subject to an absolute stock exclusion.
- 6.14 The solution put forward in the Fonterra submission of refining the rule such that it applies to the “active bed” seems to me an appropriate solution. The amendment required to Rule 5.133 would be straightforward:

*The use and disturbance of the **active** bed of a lake or river or a wetland by outdoor intensively farmed livestock for temporary or permanent stocking or temporary access is a prohibited activity.*

- 6.15 I note that the Section 42A Report proposes a number of other changes to Rule 5.133, including reference to “banks”. The Plan contains a definition of “bed” which draws on the RMA definition. That definition includes “banks”. In my opinion the definition of “active bed” I propose (see below) will include a practical allowance for “banks”. However like the concept of “bed” a “bank” can include landforms that are well distant from river courses and part of an established production landscape. As Mr Cullen states, the old river terraces of the Hawkins River are an example. I do not support stock exclusion from such areas.
- 6.16 In addition, the term “active bed” will need to be defined. Again, the Fonterra submission proposed a definition. While that definition is helpful it is narrow in its scope. In my opinion in the braided rivers of Canterbury purely unvegetated channels is not a sound descriptor for an “active bed”. On that basis, I propose

that the definition proposed in the Fonterra submission be broadened to include areas immediately adjacent to the wetted or rocky/unvegetated area that are comprised of river deposited material but may have a vegetative cover containing naturally occurring, predominantly native plant species. I also propose that land inside the landward toe of any stop bank also be included as “bed” (that distinction was also used in the NRRP).

6.17 One further change I would propose to the definition offered by Fonterra is the removal of the reference to “braided river systems” since I understand that there are many other types of rivers in Canterbury.

6.18 Therefore my proposed definition of “active bed” reads:

Active bed means that part of a river bed:

a. Permanently covered by water; and

b. Any area adjacent to, or within, a bed that is not covered by permanently flowing water but which is predominantly unvegetated and comprises sand, gravel, boulders or similar material; and

c. Any area adjacent to the area described in (b) above that is comprised of river deposited material and which has a vegetation cover that is naturally occurring and dominated by indigenous species; and

d. In the case of rivers bounded by a stop bank, that area on the river side of the landward toe of the stop bank.

6.19 The other issue with Rule 5.133 identified in the Fonterra submission relates to the lack of provision for the use of the bed for stock access to specific crossing points (i.e. approaches to bridges and culverts). My understanding from Mr Cullen’s evidence is that there are situations in Canterbury where stock do have to cross beds in order to access bridges. Under Rule 5.133 that would be a prohibited activity. Clearly, where there is an existing bridge giving stock access to the other side of a wetted river channel, Rule 5.133-5.135 could legally prevent that bridge being used and could “strand” a portion of a farm from grazing by dairy cattle. In my opinion that would be unreasonable (and negate the logic of granting consent for a bridge or culvert).

6.20 I note that the Section 42A Report proposes an additional rule (5.134A) making very occasional use and disturbance of a bed (four times per year) a

discretionary activity. It is not clear to me what activity this rules seeks to provide for but it would not address the issue identified by Mr Cullen.

- 6.21 The Section 42A Report also proposes changes to Rule 5.135 (being a permitted activity rule). However, the permitted status is qualified by condition 1 being that the “use and disturbance” of the bed is not prohibited or discretionary (under Rules 5.133-5.134A).
- 6.22 Rule 5.137 (Rule 5.136 in the Section 42A Report version) provides for use and disturbance that is not permitted under Rule 5.135 to be a discretionary activity. However, no cross reference is made to Rules 5.133- 5.134A hence the rules contradict each other.
- 6.23 In short, it is my opinion that the changes proposed by the Section 42A Report do not resolve the issues and considerable scope for misunderstanding and confusion remains.
- 6.24 In my opinion, greater clarity could be achieved by relatively minor changes to Rules 5.133 and Rule 5.135 so that they refer to “active beds”. If that was done then stock in the active bed more than four times a year (for a maximum of 1 hour) would be prohibited. Less than four times and it would be a discretionary activity.
- 6.25 Rule 5.135 would then permit stock in the bed (excluding any active bed where Rules 5.133 and 5.135 apply) subject to performance standards. That seems to be a responsible yet practical strategy. It could be achieved by the following amendments.

*5.133 The use and disturbance of the **active** bed (including the banks) of a river, that is greater than 1m wide or 100mm deep at the time when and place where stock access it, that does not comply with the conditions of Rule 5.134A or of a lake ~~or river~~ or a wetland by intensive stock and any associated discharge to water ~~outdoor intensively farmed livestock for temporary or permanent stocking or temporary access~~ is a prohibited activity.*

*5.134A The use and disturbance of the **active** bed (including the banks) of a river, that is greater than 1m wide or 100mm deep at the time when and place where stock access it, by intensive stock and any associated discharge to water is a discretionary activity if the following conditions are met:*

- 1. The use or disturbance and any associated discharge is not a prohibited activity under Rule 5.134;*

2. A Farm Environment Plan is prepared, complied with and audited in accordance with Schedule 7; and

3. The use and disturbance of the bed does not occur on more than four occasions per annum, for a duration not exceeding 1 hour on each occasion and the crossing stock is accompanied by a person at all times.

7. NUTRIENT MANAGEMENT DEFINITIONS

Definition of Change

7.1 One of the fundamental constructs of the plan is the concept of “changed” land use. As notified, the policies of Section 4 and the rules of Section 5 distinguish the pre-2017 period on the basis of (amongst other things) whether a land use is existing or would be “changed”.

7.2 The concept of changed is this context in the Plan as notified is defined as follows:

Means a change in land use, calculated on a per property basis that arises from either:

1. *a resource consent to use, or increase the volume of, water for irrigation on a property; or*
2. *an increase of more than 10% in the loss of nitrogen from the land used for a farming activity above the average nitrogen loss from the same land for the period between 1 July 2011 and 30 June 2013. The amount of nitrogen loss shall be calculated using the OverseerTM nutrient model for the 12 months preceding 1 July in any year and expressed as kilograms per hectare per year.*

7.3 In that sense the term “changed land use” is used in the Plan in a rather different way that would be the ordinary use of the term. Typically, in a planning sense, a change in use occurs when one activity is replaced by another (e.g. sheep farming to dairying) rather than when one aspect of the same established activity (e.g. N loss) intensifies as a result of a new or different management practice.

7.4 The approach adopted by the Plan is more akin to recognising a form of existing use right where an established use is not recognised as continuing to be legitimate if scale and intensity of effect significantly increases.

7.5 The approach adopted by the Plan is a novel planning approach but I do not challenge its legitimacy at the conceptual level. It is, in simple terms, an

alternative way of controlling the effects of the activity (as opposed to setting a performance standard/threshold on all new uses as occurred, for example, in Horizons One Plan).

- 7.6 I support the provision for some flexibility in the amount of nitrogen that can be lost from the farm before it is considered a “changed” land use. That support is based on my understanding that:
- (a) Farming systems of all kinds do have “natural” variability in N loss due to the fact that they are not static systems but rather they:
 - (i) have rotational requirements for crops to manage soil health and fertility and to provide for pasture replacement; and
 - (ii) must respond to both climatic variation (particularly droughts and floods where extra feed may need to be brought in) and market/price changes in some inputs relative to others.
 - (b) Overseer™ as the means to model N loss, while the best tool available, still has sources of inaccuracy and may be inaccurate by as much as 30% in any given year (see evidence of Dr Anthony Roberts). Although it has been accepted in both the Taupo Catchment (Variation 5 of the Waikato Regional plan) and in Horizons Region (One Plan), there is ongoing discussion amongst practitioners about the validity of Overseer as a means for regulatory compliance in district plans due to the fact the Overseer is a *long term average* model (rather than something that can be used to estimate short term/annual variability in N loss) and is subject to on-going refinement and calibration (something that can change the estimated N loss over time even in static systems).
- 7.7 The proposed baseline for measuring change is just two seasons (i.e. mid 2011 to mid 2013). That relatively short benchmarking period may not pick up the medium to long-term variation in N loss experienced on farms even with a static production levels.
- 7.8 Accordingly, the Section 42A Report recommends amending the definition of change significantly. It would:

- (a) Add the additional test of increase in the irrigated area on a property (rather than simply an increase in the volume of irrigation water)
- (b) Remove reference to “more 10% increase in loss of nitrogen” and replace it with reference to a “greater than 10% increase in the average annual stock units carried”.
- (c) Add a threshold test for horticultural or arable land that would allow those uses to increase their yield up to 20% before a “change” in land use is recognised.

7.9 While I support the amendments proposed in the Section 42A report in part, based on the evidence of Mr Cullen, I consider that further refinement is required. Mr Cullen points out (paragraph 6.3 of his evidence) that a dairy farm can increase its stocking rate while maintaining, or even reducing the nitrogen loss by changing the farming system to, for example, use of herd homes or loafing pads. In short, there is not necessarily a direct relationship between stock numbers and nitrogen loss.

7.10 For that reason, it is my opinion that the definition of “change” should retain the 10% nitrogen loss⁴ threshold as an alternative means of compliance to the 10% increase in stocking rate.

7.11 My proposed definition of change is based on that proposed in the Section 42A Report but with the amendment indicated below.

Change in farming activity means any one or more of:

- 1. irrigation of all, or any part of, a property that was un-irrigated at 11 August 2012;*
- 2. an increase in the consented volume of water available to be used on the property compared with that consented at 11 August 2012;*
- 3. greater than a 10% increase in the annual average stock units carried on the property, compared with the annual average stock units averaged over 1 July 2010 to 30 June 2013*
- 4. greater than a 20% increase in the annual horticultural or arable yield, compared with the annual horticultural or arable yield averaged over the period 1 July 2010 to 30 June 2013.*

4 The Fonterra submission sought a 20% tolerance level within the definition of “changed”. I accept there may be a case for that, however, I understand that Fonterra is no longer seeking 20% but is content with the 10% (on the basis that other changes it seeks would, if accepted, provide the flexibility it seeks).

Except that in the case of the farming of livestock, a change does not occur if the loss of nitrogen from the property used for that farming activity does not increase by more the 10% above the average nitrogen loss from the same property for the period between 1 June 2011 and 31 May 2013. The amount of nitrogen loss shall be estimated using the OverseerTM nutrient model for the 12 months preceding 1 July in any year and expressed as kilograms per hectare per year.

and "Changed" in relation to the nutrient management policies and rules has the same meaning.

8. NUTRIENT MANAGEMENT POLICIES

Changes Proposed in the Section 42A Report

- 8.1 I note that the Section 42A Report proposes amendment to the full suite of nutrient management policies. Those relating to the Red Zone, though not entirely consistent with those suggested by Fonterra, do include some of the key elements. In particular, I note that the Section 42A Report adopts the approach of requiring land use change in both the Orange and Red Zones to either:
- (a) Result in no net increase in nutrients discharges from the property; or
 - (b) Adopt advanced mitigation practices such that the property operates in the top quartile of "nutrient discharge minimisation practices" (for properties in the orange zone) or the top 10% (for properties in the Red Zone).
- 8.2 The term "advanced mitigation farming practices" is defined by reference to a list of 22 on-farm practices.
- 8.3 In broad terms I agree with the proposal advanced in the Section 42A Report and support proposed new policies 4.31, 4.32 and 4.33. However, two matters need to be resolved in order to provide sufficient certainty.
- 8.4 The first issue is that it is unclear to me how a farm could be objectively assessed as being top 25% of 10% of nutrient management practices. In contrast, it is very clear to me how a farm might be assessed as being within the top 25% or 10% of nitrogen loss performance as modelled using OverseerTM. From the evidence of Dr Roberts, I understand that while

Overseer™ has some limitations that make it unsuitable for accurately modelling year on year change it is a very useful tool for long term modelling and for performance benchmarking. As Mr Cullen has pointed out Overseer™ is used within the nutrient module of Supply Fonterra and has been used by DairyNZ for its nitrogen loss benchmarking project.

- 8.5 The second is scale at which the top 25% and 10% of nutrient loss is assessed. That is, is it to be the region, sub zone, sub catchment or area of soil type? I understand from the evidence of Mr Cullen (paragraphs 8.6-8.7) that this will be an important consideration as there is considerable variation in nutrient loss performance across the region. Mr Cullen advises that soil type is one of the primary “natural” determinants of nitrogen leaching and hence there would appear to be logic in assessing performance against farms of similar location/soil type⁵.
- 8.6 For those reasons I propose that Policies 4.31 and 4.32 (as amended by the Section 42A Report) be further amended as follows:

4.31 In areas where regional water quality outcomes are at risk of not being met, as shown by an Orange colouring on the Series A Planning Maps, a changed or new farming activity will be required to show that there is no net increase in nutrients discharged from the property or that advanced mitigation farming practices are applied such that the property operates in the top quartile of ~~nutrient nitrogen discharge minimisation practices loss performance per hectare per year (estimated using Overseer™)~~ when measured against ~~practices in the relevant farming industry in areas of the same or similar soil type, and that in any event the regional water quality outcomes are still being met.~~

Policy 4.27A

- 8.7 The Addendum to the Section 42A Report proposes to insert a new Policy 4.27A. That policy sets out a broad planning strategy for the management of nutrient discharges from farming activities and, in particular, defines a role for Appendix 8 that had been omitted from the Section 42A Report version of the Plan.

5. The proposed definition of industry articulated good management practice included in the Fonterra submission attempted to address this issue by referring to “existing farms of the same or similar type, scale and location”.

- 8.8 In my opinion, the policy usefully explains the role of, and relationship between, farm environment plans, good practice limits and the collaborative planning processes that will develop catchment-specific solutions (which will manifest as sub regional chapters).
- 8.9 I do, however, have some concern about the reference in Rule 4.27 (4) to Schedule 8 being a “starting point for catchment specific limit setting”. For the reasons set out at paragraph 2.5 of my Group 1 hearing rebuttal evidence, I consider that the sub regional sections should be unfettered by what might be contained in the Plan’s region-wide or “default” provisions.
- 8.10 Furthermore, I am not sure the clause quoted is helpful as the phrase a “starting point” is open to various interpretations. For example, is it to be starting point for discussions in the sense that it is not presumptive of either an upwards or downwards adjustment. Or, is it a starting point in terms of a “bottomline”? In my opinion, the lack of clarity will make obtaining stakeholder buy-in to Schedule 8 limits more difficult.
- 8.11 I do not consider that the policy would be any less useful if the clause was simply deleted as shown below.

4.27A To meet water quality outcomes, implement an approach to the management of nutrient discharges from farming activities that incorporates:

- 1. Raising awareness, gathering information and encouraging good practice through the preparation, implementation and auditing of farm environment plans;*
- 2. Identifying relevant limits for nutrient discharges, based on good practice;*
- 3. Promulgating a plan change that introduces into Schedule 8 nutrient discharge limits based on good practice, along with a rule regime to implement the limits, so that the limits and rule regime have effect from 1 July 2017; and*
- 4. Engaging in catchment-based collaborative planning processes which will result in plan changes being promulgated to introduce catchment-specific solutions that prioritise those areas that currently do not meet water quality outcomes and, ~~when it is incorporated~~ catchment specific limits into this Plan; use Schedule 8 as the starting point for catchment specific limit setting.*

Policies 4.28 and 4.29

- 8.12 The Section 42A Report recommends deleting Policies 4.28 and 4.29 of the Plan as notified. I support that recommendation.
- 8.13 Both those policies refer specifically to nutrient discharge allowances (NDAs) being included in sub regional sections. The term nutrient discharge allowance is not defined by the plan but I understand it to mean a property specific entitlement to leach a certain amount of nitrogen over a defined period.
- 8.14 An NDA implies an allocation of a defined catchment load limit (defined in tonnes per year) to specific users. These property-specific NDAs then become conditions within which uses must operate. Fonterra's submission opposed reference to NDAs on the basis that using that term pre-judges what might be the best management approach in any particular sub region.
- 8.15 While I understand that it is likely that NDAs will be developed, I agree with the Fonterra submission that specifying the term in Policies 4.28 and 4.29 is presumptive and unnecessary.
- 8.16 It is possible, for example, for a plan to specify a catchment load limit but no NDA. The Proposed Hurunui and Waiau River Regional Plan is an example. It may well be that when the Hurunui and Waiau sub regional section is added that approach continues. There may be other sub regional areas where a similar approach is appropriate.
- 8.17 For that reason I agree with the Section 42A report recommendation to delete the policies.

Policy 4.36 – Nutrient discharges in catchments fully allocated for nutrients

- 8.18 Policy 4.36 effectively allows wastewater discharges from marae, community wastewater schemes, hospitals, schools and other educational institutions irrespective of the nutrient status of the catchment.
- 8.19 The Fonterra submission sought that the policy also recognise wastewater discharges from existing capital intensive facilities which process perishable food products.

- 8.20 This is a similar point as I discussed from paragraph 7.40 of my Group 1 hearing evidence. In that case I made the point in the context of Policy 4.6 which proposed that consents would not be granted if granting the consent would cause the limit to be breached or further over allocation to occur.
- 8.21 In that case the Section 42A Report accepted that an exception be noted in the policy recognising the new consents replacing expiring consents may be granted.
- 8.22 Policy 4.36 takes the next step by saying that certain discharges will be allowed. In my opinion such a policy has dubious planning merit since whether any discharge ought to be allowed will depend on the detail – in particular the quality of the discharge and its potential effect on the receiving environment.
- 8.23 That point noted, if this policy is to remain, there is in my opinion merit is giving the replacement of takes for existing capital intensive facilities equal recognition. That opinion is based on the following:
- (a) The planning inequity created by recognising, and giving an preferential right, to new industries that connect to community wastewater schemes that could (in my opinion) make the re consenting of existing industries not connected to community wastewater schemes more difficult.
 - (b) The evidence of Mr Goldschmidt that (paragraph references relate to Mr Goldschmidt's Group 1 hearing evidence):
 - (i) Fonterra is required by law to process milk and hence scaling down operations to allow for growth by community wastewater discharges is not an option (paragraph 7.5).
 - (ii) Discharges from, for example, the Darfield site are in fact cleaner than the receiving environment (paragraph 6.24).
 - (c) The evidence of Mr Butcher regarding the scale of Fonterra's existing processing assets, such as the \$500 million Darfield plant and the economic cost associated with closing a large dairy processing plant (See Mr Butchers Group 1 evidence paragraph 4.3).

Should the policy remain I proposed it be amended to read:

- 4.36 *Irrespective of the nutrient allocation status of a catchment as shown on the Planning Maps, to allow the following discharges:*
- (a) wastewater discharge from a marae;*
 - (b) community wastewater treatment schemes; ~~or~~*
 - (c) wastewater discharge from a hospital, a school or other education institution;*
or
 - (d) industrial wastewater discharge associated with the ongoing operation of large scale, capital intensive food processing facilities existing at the time of notification of this plan.*

9. NUTRIENT MANAGEMENT RULES

- 9.1 Rules 5.39-5.46 set out the regulatory regime for the management of nutrient loss associated with land use.
- 9.2 The Fonterra submission makes a number of detailed points regarding these rules.
- 9.3 I note that the Section 42A Report proposes that these rules be substantially rewritten. While that redrafting addresses a number of the points raised in the Fonterra one important issue remains. Otherwise, I support the recommendations.

Rule 5.42 as notified

- 9.4 In the Plan as notified, Rule 5.42 recognised that some existing water take consents (for irrigation) have nutrient management conditions that will require the irrigation company to manage nutrients within their control area to meet certain nutrient concentration levels; and that the potential exists for future surface water takes consents to have similar conditions imposed.
- 9.5 Where a property was subject to that control Rule 5.42 provided for the land use as a permitted activity.
- 9.6 Policy 4.34, as proposed to be redrafted by the Section 42A report, appears to continue to provide for that approach when it states:

- 4.34 *To minimise the loss of nutrients nitrogen to water prior to 1 July 2017, where the land owner holds an existing water permit to take and use water, or is a shareholder in an irrigation scheme that holds a water permit to take and use water, and there are conditions on the water permit that address nutrient*

management, any change in farming activities will be enabled subject to requirements to prepare and implement a farm environment plan that, as a minimum, enables compliance with the nutrient management conditions and ensures good practice is being achieved the regular audit of that plan and to record, on a per enterprise basis, nitrogen discharges.

- 9.7 Despite the retention of Policy 4.34 (albeit with some modification) there is no corresponding Rule that would give effect to the Policy (as Rule 5.42 as notified would do). It may be that this is simply an oversight of the Section 42A Report.
- 9.8 In any event, it is my opinion that, Policy 4.43 calls for a rule specifically recognising properties subject to nutrient management controls via a water take consent. In the absence of such a rule properties subject to constraints imposed via their irrigation companies face a “double jeopardy” situation and potentially conflicting nutrient loss targets. The approach would undermine the “collective responsibility” principle inherent in the approach of placing nutrient management limits on water take consents.
- 9.9 For that reason I propose that Rule 5.42 be retained as proposed – with necessary amendment to reflect the general approach proposed in the Section 42A Report. It would give effect to Policy 4.34 by reading as follows:

5.43A The use of land for a changed farming activity or a new farming activity is a permitted activity if the following conditions are met:

1. The land holder has been granted a water permit or holds shares in an irrigation company that has been granted a water permit, that authorises irrigation on the land and the land is subject to conditions that specify the maximum amount of nitrogen that may be leached.
2. The property is outside the Lakes Zone as shown on the Series A Planning Maps
3. A farm environment plan is prepared and audited in accordance with Schedule 7 Parts A and C.

- 9.10 The other important issue, raised by the Fonterra submission relates to the place of farm environment plans. That issue is now even more critical now that the Section 42A Report recommends greater use of farm environment plans in the nutrient management rules. That issue is discussed in the following section.

Timing of requirement for a farm management plan

- 9.11 The evidence of Mr Ryan (paragraph 2.140 and Mr Cullen (paragraph 10.19) is that there is currently insufficient capacity within the farm advisory industry to be able to provide the 7000 farm environment plans that are estimated to be required under Rules 5.41 to 5.43. In addition farm environment plan will be required for changes to land use under Rule 5.44 to 5.47.
- 9.12 Consistent with Mr Cullen's evidence I consider that an allowance should be made to enable the industry to prepare the farm implementation plans. The dairy sector will require around 100 plans in order for existing farms to remain permitted activities. It does not seem unreasonable to me to allow until 1 June 2015 for those plans to be put in place.
- 9.13 To achieve that I propose the following amendments to Rule 5.41 and I note that a similar change may be require to rule 5.52 (which does not apply to dairy farms):

5.41 The use of land for an existing farming activity that is not permitted by Rule 5.39, where the property is partly or wholly in an area coloured Red on the Series A Planning Maps, is a permitted activity provided the following conditions are met:

1. If there is no high nutrient risk farming activity occurring on the property, information on the farming activity, in accordance with Schedule 7 Part D is provided to the Canterbury Regional Council.
2. If there is high nutrient risk farming activity occurring on the property, then from 1 June 2015, a farm environment plan is prepared and audited in accordance with schedule 7 Parts A and C and the audit grade is "A-B" or better.

10. SCHEDULE 7

- 10.1 Although I am broadly in agreement with the Section 42A Report's recommendations for the redrafting of the nutrient management rules, it is important to note that they place added importance on farm environment plans. I support the use of farm environment plans as potentially effective tools for improving nutrient (and other contaminant) management. However it is important to ensure that such plans are workable and can be delivered and audited in a cost effective manner.

Part A - Industry schemes requiring farm environment plans

- 10.2 Part A of Schedule 7 provides for farm environment plans to be based on industry templates and guidance material that contains prescribed minimum components.
- 10.3 I support the Plan recognising industry schemes that contain the components to ensure effective and reliable farm-scale planning. However I consider that the description of a Farm Environment Plan could be improved to ensure that the industry programme includes not just the farm plan itself but the support and implementation components that will maximise the potential for success in driving performance on-farm.
- 10.4 In his evidence Mr Cullen sets out what he considers to be the critical attributes of a successful industry-based farm planning regime. Noting that evidence I provide below proposed redrafting to ensure that the Plan acknowledges and provides for (and only for) such schemes.
- 10.5 Although I propose a number of changes and additions to Part A (see below), the only issue where my proposed wording could be construed as less stringent than the Section 42A report proposal relates to auditing.
- 10.6 Again that is a matter on which I have relied on Mr Cullen's evidence that the audit approach of the Supply Fonterra programme would be a more cost effective but equally effective approach to take.

Part A – Farm Environment Plans

A Farm Environment Plan developed and implemented in accordance with ~~can be based on either of:~~

- 1. An ~~industry~~ managed programme that includes the following attributes ~~prepared Farm Environment Plan templates and guidance material that:~~*
 - (a) A requirement for a farm environment plan that includes the following minimum components:*
 - (i) The matters set out in 1, 2, and 3 of Part B below;*
 - (ii) Specified actions (if necessary) to address effects and risks identified in accordance with the methodology referred to be (b) that have a high likelihood of appropriately avoiding, remedying or mitigating those effects;*
 - (iii) Annual modeling of nitrogen loss and nitrogen use efficiency.*
 - (iii) Performance measures that are capable of being*

audited.

- (b) A methodology that will enable development of a plan that will identify environmental effects and risks specific to the property, ~~addresses those effects and risks and has a high likelihood of appropriately avoiding, remedying or mitigating those effects;~~
- (c) Advice and technical support (including, for example, guidelines and templates) for the development and implementation of farm environment plans
- (d) ~~Performance measures that are capable of being audited as set out in Part C below.~~ An audit system that audits implementation of specific components of plans on a random sample basis across Canterbury and on the basis of targeting high risk operations (and which is scalable to risks agreed with the Canterbury Regional Council); and
- (e) A system of actions and/or consequences for a farm if and when audit reveals non compliance by that farm with performance measures that have a high likelihood of ensuring corrective measures are adopted without delay; and

which has been approved as meeting the criteria in (1) and being acceptable to the Canterbury Regional Council by the Chief Executive of the Canterbury Regional Council.

OR

2. The material set out in Part B below

Part C – Farm Environment Plan Audit Requirements

- 10.7 As farm environment plans prepared in accordance with an industry-managed programme under Part A will contain their own audit procedures agreed by the Chief Executive of the Council they ought not be subject to the audit procedures set out in Part C.
- 10.8 For that reason I have proposed the following changes to Part C of Schedule 7.

Part C – Farm Environment Plan Audit Requirements

The Farm Environment Plan prepared in accordance with Part B must be audited by a Farm Environment Plan Auditor who is independent of the farm being audited (is not a professional adviser for the property) and has not been involved in the preparation of the Farm Environment Plan, either personally or as an employee or contractor of the industry group, supplier or consultancy that has prepared the Farm Environment Plan.

The Audit framework will give a grade of A, B or C for the Farm Environment Plan itself, and a grade of A, B or C for performance against the Farm Environment Plan actions.

The Farm Environment Plan will be assessed against the following minimum criteria:

- 1. Whether the Plan is technically sound and feasible
- 2. Does the Plan identify and address the principal environmental

- effects and risks?*
3. Does the Plan enable all statutory obligations, including resource consents, to be met?
 4. Is the detail in the Plan, actions and timeframes for achievement commensurate with the scale of the environmental effects and risks?

The farming activity occurring on the property will be audited against the following minimum criteria:

1. Compliance with all relevant statutory requirements;
2. An assessment of the performance against the targets, good practices and timeframes in the Farm Environment Plan;
3. An assessment of the robustness of the nutrient budget/s;
4. An assessment of the efficiency of water use (if irrigated).

Farm Environment Plans shall be audited annually and the audit results provided to the CRC no later than 31 December for the previous 1 July to 31 June year, or such other annual period nominated. Once a farm environment plan review and audit period is nominated, each successive audit may be no more than 12 months apart.

A grade of "A" for the Farm Environment Plan itself and "B" for performance against the Farm Environment Plan actions is considered an "A-B" grade in terms of Rules 5.39-5.51.

Any audit result that does not result in an "A-B" grade may be submitted with a revision of the farm environment plan, a list of corrective actions and a follow-up audit that shows an "A-B" grade within 6 months of the original audit without penalty under Rules 5.39 to 5.51.

A Farm Environment Plan prepared in accordance with Part A (1) must be subject to the audit process as required by the industry-management programme approved by the Chief Executive of the Canterbury Regional Council.

Part D – Farming information

- 10.9 Part D of Schedule 7 sets out the farming information that is required to be supplied in accordance with Rule 5.39 to 5.51.
- 10.10 As I understand it, Rules 5.39 to 5.51 as proposed by the Section 42A Report require the information specified in Part D as an alternative to requiring the "record of the annual amount of nitrogen loss ...calculated using the OverseerTM nutrient model" as had been required under the corresponding rules of the Plan as notified.
- 10.11 In simple terms, Part D of Schedule 7 specifies the input data that would allow annual nitrogen loss to be estimated using OverseerTM. My understanding is that that only reason for requiring the information sought is so that an annual nitrogen loss may be modelled. That being that case, a simpler approach

would be to allow the Part D (information provision) requirement to be met, as an alternative to supplying the input data, by provision of the Overseer™ annual nitrogen loss modelling results (i.e. output data).

- 10.12 That seems to me more useful data for the Council to hold. It seems unrealistic to me to expect that the Council will be able to run the data from all farms in Canterbury through Overseer™ or otherwise analyse the information provided. It would be easier for all concerned if those who had Overseer output data provide that data to the Council as a means of compliance with Part D and make available input data to the Council on request. (I note that Mr Cullen has made a similar point at paragraph 9.5 of his evidence).
- 10.13 The final point that needs to be made is that Part D continues to refer to an annual reporting cycle that does not align with the dairy season.
- 10.14 My understanding from the evidence of Mr Cullen is that the dairy season is 1 June – 31 May and that nitrogen records kept in accordance with Fonterra's "Supply Fonterra" programme correspond to the dairy season. Keeping records for a period that differs from the dairying year is difficult for dairy farmers and will add unnecessarily to compliance costs.
- 10.15 I do note that the wording proposed in the Section 42A report for Part C of Schedule 7 does refer to "1 July to 31 June year, or such other annual period nominated" [my emphasis]. However that flexibility does not apply to Part D.
- 10.16 That part of Schedule 7 (as proposed in the s42A Report) states:
- The information is to be collated for the period 1 July to 31 June in the following year and be provided annually no later than the 31st of October.*
- 10.17 I am not aware that there is any particular rationale for the Plan to require the information on a 1 July- 30 June cycle and therefore Fonterra's request to have this adjusted to correspond with the recording under Supply Fonterra seems sensible.
- 10.18 For all those reasons I propose that Part D of Schedule 7 be amended as follows:

Part D – Farming Information

Whenever one of Rules 5.39-5.51 requires information to be submitted, the following information is to be provided either in writing or via the Canterbury Regional Council's website:

Either:

1. The following farm production input data:

- 1a The site area to which the farming activity relates;
- 2b A map or aerial photograph marked to identify the different blocks within the farm and the area in hectares of each;
- 3c Identification of any wetlands, watercourses, drains and swales on or adjacent to the property;
- 4d Monthly stocking rates (numbers, types and classes) including breakdown by stock class;
- 5e Annual yield of arable or horticultural produce;
- 6f A description of the farm management practices used on each block including:
 - (a)(i) Ground cover – pasture, crops, fodder crops, non-grazed areas (including forestry, riparian and tree areas);
 - (b)(ii) Stock management – lambing/calving/fawning dates and percentages, any purchases and sales and associated dates, types and age of stock;
 - (c)(iii) Fertiliser application – types and quantities per hectare for each identified block;
 - (d)(iv) Quantities of introduced or exported feed;
- 7g Farm animal effluent, pig farm effluent, feed pad and stand-off pad effluent management including:
 - (a)(i) Area of land used for effluent application;
 - (b)(ii) Annual nitrogen loading rate and nitrogen load rate per application;
 - (c)(iii) Instantaneous application rate;
- 8h Irrigation – areas, rates, monthly volumes and system type.

Or:

2. A record of the annual amount of nitrogen loss from the land estimated using Overseer™

The information described in 1 and 2 above is to be collated provided for the period:

- 1 July to 31 June in the following year; or
- in the case of dairy farms, for the period 1 June to 31 May the following year.

and be supplied provided annually no later than the 31st of October. Except that, if information is supplied in accordance with 2 above the information described in 1 above must be kept and made available to the Council on request.

11. NUTRIENT ALLOCATION ZONE MAPPING

- 11.1 The Fonterra submission sought that land use change in the Red Zone be a discretionary activity rather than non-complying. As I understand it, part of the

rationale for that position was that the Red Zone was not homogenous and that there likely to be opportunities for land use change within the Zone as defined that did not necessarily compromise the outcomes of Table 1.

- 11.2 Allowing for a case-by-case assessment of applications as discretionary activities is in my opinion as appropriate way to recognise the heterogeneity of an area where the differences cannot easily or practically spatially defined.
- 11.3 However, it is the evidence of Ms Hayward (paragraph 10.2) that two specific areas within the Red Zone where land use change may occur without compromising the outcomes of Table 1 and that these two areas are capable of being spatially defined. Ms Hayward suggests that the Temuka and Waimakariri/Ashley areas are more properly defined as “Orange” on the basis that the water quality status is more akin to other Orange zoned areas than that of the Red Zone.
- 11.4 On that basis, I propose that those two areas be shown as Orange rather than Red zone.

12. FARMS IN TRANSITION

- 12.1 My understanding from the evidence of Mr Griffiths and Mr Butcher is that 51 farms were in the process of converting to dairying (with a view to supplying Fonterra) at time the Plan was notified. Thirty-one of these farms are in the Red zone. By understanding the land use being replaced by these dairy farms, Mr Griffiths has estimated that 17 of these Red Zone farms will constitute a “change” in land use as I have proposed it be defined (i.e. the dairy operation will not be able to operate within the pre-existing nitrogen loss from the land plus 10%).
- 12.2 As a matter of planning practice, it is usual in my experience to make some allowance for activities caught by changes in planning rules if significant investment has been made in good faith. By “good faith” I mean investment has been made according to the rules the applied prior to the notification of the plan and the investor could not reasonably have known that the rules were about to foreclose the investment opportunity.

- 12.3 There will inevitably be some debate about how much prior knowledge a resource user might have of a pending rule change prior to making a decision to proceed with investment. However, ultimately a judgment must be made about what is fair and reasonable and what the effect/risk is of providing for the activity.
- 12.4 The Plan currently makes no allowance at all for land use change that was committed to but not completed prior to the date of notification/the date the rules took effect. While that approach may not be unreasonable when an activity moves from, say, permitted to controlled, it does seem to me much less reasonable in this instance where land use change has moved from being permitted to being non complying (as notified) or even discretionary (as proposed in the Section 42A Report). Furthermore, as previously discussed, the NPSFM creates a very constraining planning context around the consideration of activities in “over-allocated” catchments. There is potential, in my opinion, for investment to be stranded or written-off because consents for the activities proposed cannot be granted. At the very least, those in the process of changing land use face significant uncertainty.
- 12.5 Mr Griffiths has pointed out (section 4 of his evidence) the significant levels of investment that have been committed and which now face the uncertainty to which I refer.
- 12.6 There are a number of possible planning solutions to this situation. The Fonterra submission sought that an additional permitted activity rule be added simply permitting change to an existing farm activity if building consents for a dairy shed were obtained before 1 January 2013.
- 12.7 Some alternative means of providing for farms in transition were also suggested.
- 12.8 I have considered a range of planning options to address this issue and suggest that an additional *controlled* activity rule that specifically provides for these “farms in transition” is the simplest and most appropriate approach. Furthermore, I consider that the new rule should apply equally to all “farms in transition” regardless of which Nutrient Allocation Zone they are in.

12.9 While there is an argument that the provisions should only apply to the Red Zone (on the basis that there is greater the opportunity to apply for consents in the usual way in the Orange Zone), in my view that would create an anomaly whereby farms in a Red Zone would have an “easier” path than those in the Orange zone. For that reason I propose that a rule be introduced to authorise all farms in the Orange or Red Zones that can meet a test of having been committed to land use change before the date of notification to be controlled activities.

12.10 Accordingly, I propose that Rule 5.44A be amended read:

The use of land for a farm in transition where the property is partly or wholly in an area coloured Orange or Red on the Series A Planning Maps, is a controlled activity provided the following conditions are met:

(1) A Farm Environment Plan is prepared, implemented and audited in accordance with Schedule 7;

The CRC will restrict the exercise control over the following matters:

1. The content of, compliance with, and auditing of the Farm Environment Plan;

2. The potential effects of the land use on surface and groundwater quality, and sources of drinking water.

12.11 I propose a definition of “farming activity in transition” that would read:

A farming activity on a property in respect of which the following information was submitted to, and accepted by, Council by [six months after the date of the Commissioners decision]:

- Documentary evidence that a building consent had been sought from the relevant territorial authority for a milking shed prior to 11 August 2012; or
- Copies of resource consent applications lodged with the Council prior to 11 August 2012 for a water take for irrigation or farm dairy effluent discharge; or
- Documentary evidence of a financial arrangement entered into with an irrigation company prior to 11 August 2012 for the supply of irrigation water; or
- Documentary evidence of a financial arrangement entered into with a dairy farm infrastructure provider prior to 11 August 2012 for the supply of equipment or services associated with the physical establishment of a dairy farm. This may include the supply and or installation of irrigation equipment, and/or the construction and/or supply of materials for stock races and any associated stock

underpass, bridging or culverting, feed pads, or stockwater reticulation/trough layout and connection.

12.12 This rule should be accompanied by a policy that states:

4.31A Farming activities in transition to a more intensive use at the time of notification of this Plan will be specifically provided for but will need to demonstrate a bona fide commitment to land use change prior to August 2012 and will be required develop and implement a farm environment plan.

APPENDIX 1

Description of bed from the NRRP (excerpt of part pages 6 - 3 to 6 - 5)

Bed, bank, or margin

The Canterbury region contains a diverse variety of river and lake forms as described within NRRP Chapter 4 Water Quality. Many of the lowland spring-fed streams have clearly identifiable banks (e.g. Avon River/Otakaro, Harts Creek and Ohapi Creek). In contrast, however, a number of the beds of braided mountain-fed rivers are very wide, often do not have clearly defined banks, particularly in the lower reaches and may be up to several kilometres wide in places (e.g. the Rakaia River). These rivers continuously move in their bed and have many old flow channels, some of which may only flow during floods. River systems are active, with paths that are prone to changes in course and level over time, as a result of flooding, erosion and deposition. Many rivers and lakes have numerous historic 'banks' and 'margins' (respectively), that are recognisable as old terraces which have been incorporated into the surrounding land uses.

The RMA defines the bed of lakes and rivers as follows:

"Bed means

(a) in relation to any river-

- (i) For the purpose of esplanade reserves, esplanade strips, and subdivision, the space of land which waters of the river cover at its annual fullest flow without overtopping its banks:*
- (ii) In all other cases, the space of land which the waters of the river cover at its fullest flow without overtopping its bank; and*

(b) In relation to any lake, except a lake controlled by artificial means,-

- (i) For the purposes of esplanade reserves, esplanade strips, and subdivision, the space of land which the waters of the lake cover at its annual highest level without exceeding its margin:*
- (ii) In all other cases, the space of land which the waters of the lake cover at its highest level without exceeding its margin; and*

(c) In relation to any lake controlled by artificial means, the space of land which the waters of the lake cover at its maximum permitted operating level."

This chapter deals with activities identified within section 13 of the RMA, which occur in, on, under or over (within) the bed of a lake or river, and utilises section 9 of the RMA for managing the use of land adjacent to the bed where activities may have an effect on the bed of the river or lake, and where special management of that land is necessary for flood management purposes.

The definition of the bed provided in the RMA is not always straightforward to apply in the context of braided Canterbury rivers.

While recognising that case law may develop in the future, to date (May 2010), court decisions have identified that land which is not in the main channel of the river (the area where the river normally flows), but has depressions through which flood water would flow in times of ordinary flooding is considered as river bed. This means that the "bed" can cover a very wide area. The court has applied this interpretation regardless of whether the main channel has defined banks or not. Where large stopbanks have been placed on the bed so that such depressions exist on the landward side of the stopbanks, it is only likely that these depressions would carry water in the event of stopbank failure or a very large flood. Although it may not be practical to manage this land as if it were part of the bed, it may be appropriate, in RMA terms, to manage it for natural hazards purposes (for example, as part of flood plain

strategies).

Putting the RMA definition in context with the interpretation of the “bed” provided by the court, the definition of the “bed of the river” can be read as including:

- i the channel in which the river flows; and
- ii that land onto which ordinary floodwaters flow, as evidenced by geographical features such as lines of depressions or channels

but excluding:

- iii that land onto which the waters of a very large flood may spread (as opposed to maintaining a continued flow)

Having regard to the case law discussed above, the following figures are indicative only and the explanations are intended to provide guidance on how Environment Canterbury will apply the RMA definition of “bed” in relation to Canterbury rivers.

Figure BLR1.1: Single channel with clearly defined river banks: Where a river is clearly confined by natural river banks and no depressions or flood flow channels exist landward of the banks, the bed will be considered to end at the top of the rise of river bank where flood waters flow. If depressions or channels through which floodwater flows exist landward of the banks then those areas will also be considered the bed of the river.

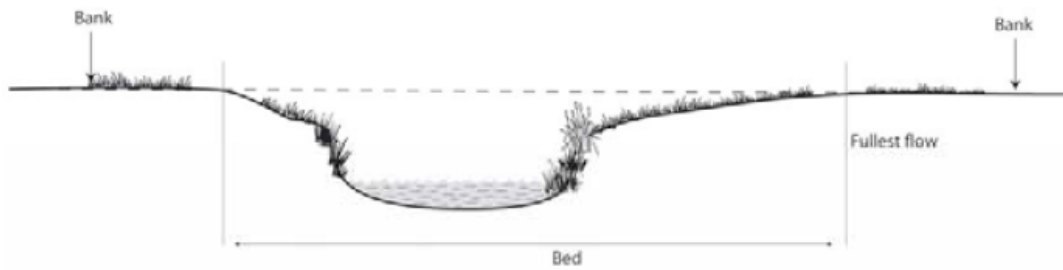


Figure BLR1.2: Rivers without stopbanks: The geographical features of the land surrounding the main river channel will be considered in defining the extent of the riverbed. Depressions and channels through which floodwater flows and land areas between those and the river will be considered riverbed. The bed will therefore extend to the top of the rise of land on the landward side of the depression or channel through which flood waters can flow, furthest from the river. Exceptions may be considered for large areas of land captured within the bed which exhibit no evidence of geographical depressions or channels, and where the land is naturally higher than flood flows, and has stable banks, and the land is unlikely to become bed under natural erosion processes.

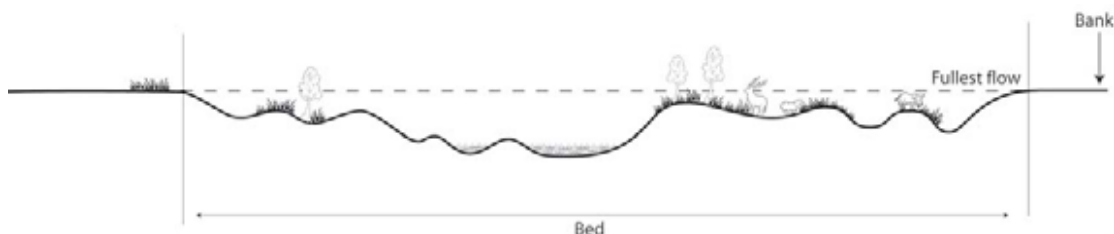


Figure BLR1.3: River with stopbanks: The landward toe of the primary stopbank2 designed for at least a 100 year return period flood, will be considered the outside edge of the bed. Many rivers have wide floodplains, and although the natural bed of the river may extend landward of the primary stopbank, the stopbank creates a pragmatic boundary for management of the river bed. Exceptions shall be considered where primary stopbanks are designed for less than a 100 year return period flood, as to whether land outside of the

stopbanks should be managed as bed of the river. In all cases the management of land for natural hazards will still need to be considered for land outside the bed.

