

BANKS PENINSULA WATER MANAGEMENT ZONE COMMITTEE AGENDA

18 SEPTEMBER 2012

AT 4PM

IN RAPAKI MARAE, LYTTELTON HARBOUR

Committee: Richard Simpson, Community Representative (Chairperson)
Donald Couch, Commissioner Environment Canterbury
Claudia Reid, Christchurch City Council
Yvette Couch-Lewis, Community Representative
Steve Lowndes, Community Representative
Pam Richardson, Community Representative
Kevin Simcock, Community Representative
Iaeen Cranwell, Te Rūnanga o Wairewa
June Swindells, Te Hapu o Ngāti Wheke/Rapaki
Wade Wereta-Osborn, Te Rūnanga o Koukourarata
Pere Tainui, Te Rūnanga o Ōnuku

Principal Adviser
Peter Kingsbury
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www.ecan.govt.nz/news-and-notice/minutes/Pages/Default.aspx

18. 09. 2012

1. APOLOGIES

Councillor Claudia Reid.

2. CONFIRMATION OF MINUTES – 21 AUGUST 2012

The minutes of the committee's meeting held on 21 August 2012 are **attached**.

The Committee is asked to approve these minutes as a true and accurate record of the meeting.

3. DEPUTATIONS BY APPOINTMENT

3.1 Paula Smith, resident of Diamond Harbour, will give a deputation to the Committee regarding Whakaraupo (Lyttelton Harbour) Catchment and the draft Zone Implementation Programme

4. IDENTIFICATION OF URGENT ITEMS

18. 09. 2012

ATTACHMENT TO CLAUSE 2

**BANKS PENINSULA WATER MANAGEMENT ZONE COMMITTEE
21 AUGUST 2012**

A meeting of the Banks Peninsula Water Management Zone Committee was held in Governors Bay Hotel on Tuesday 21 August 2012 at 4pm

PRESENT: Richard Simpson, Community Representative (Chairperson)
Donald Couch, Commissioner Environment Canterbury
Iaeen Cranwell, Te Rūnanga o Wairewa
Steve Lowndes, Community Representative
Pam Richardson, Community Representative
Pere Tainui, Te Rūnanga o Ōnuku
Kevin Simcock, Community Representative
June Swindells, Te Hapu O Ngati Wheke

APOLOGIES: An apology for absence was received and accepted from Claudia Reid, Yvette Couch-Lewis and Wade Wereta-Osborn.

The meeting was opened with a karakia from Peter Ramsden.

1. CONFIRMATION OF MINUTES – DATE

It was **decided** that the minutes of 24 July 2012 be approved as a true and accurate record.

2. DEPUTATIONS BY APPOINTMENT

Nil.

3. IDENTIFICATION OF URGENT ITEMS

Nil.

4. MATTERS ARISING

4.1 COMMITTEE WORKSHOPS

The Committee gave feedback on the work in progress on the draft Zone Implementation Programme developed through committee workshops (refer **attached**). The Committee acknowledges that all chapters are still in development. The Committee agreed that the topic of water quality should be included in the Zone Implementation Programme.

4.2 PUBLIC MEETING VENUES

The Committee **decided** to accept the proposed venues for the three public consultation meetings as follows:

- (i) 30 October – Akaroa Sports Complex 6-8pm
- (ii) 31 October – Little River Rugby Clubroom 6-8pm
- (iii) 1 November – Diamond Harbour Community Centre

The Committee suggested that a Lyttelton public meeting would also be appropriate if a venue could be found.

The Committee suggested that an article on the Zone Committee be placed in the Akaroa Mail and the Diamond Harbour Herald as a means of communicating with the public.

18. 10. 2011

6. REGIONAL COMMITTEE UPDATE

Iaeen Cranwell will be attending a Regional Committee infrastructure meeting on 23 August and an Ecosystem and Biodiversity meeting on 28 August as the Committee's representative.

7. PRONUNCIATION PRACTICE

The Committee deferred the pronunciation practice to the next meeting.

8. SEPTIC TANK AND STORMWATER REGULATIONS

The Committee received a presentation from Olivia Cook and Nicola Bassi, Environment Canterbury, regarding the operative and proposed rules for wastewater and stormwater discharges (refer **attached**).

9. EROSION AND SEDIMENT CONTROL

The Committee received a presentation from Blair Gray, Environment Canterbury, regarding soil erosion and sediment control (refer **attached**).

10. FARM NUTRIENT BUDGETS

The Committee received a presentation from Peter Brice, Ravensdown, regarding farm nutrient budgets (refer **attached**).

11. IDENTIFICATION OF ANY GENERAL PUBLIC CONTRIBUTIONS

The Committee received comments regarding nutrient budgets in Banks Peninsula from Ian Richardson, Chris Chamberlain and Tim Coop.

The Committee received comments regarding the issue of soil erosion and sediment control around Lyttelton from Claire Findlay.

The meeting concluded at 6.15pm.

CONFIRMED THIS 18TH DAY OF SEPTEMBER 2012

**RICHARD SIMPSON
CHAIRPERSON**

18. 09. 2012

5. MATTERS ARISING

5.1 COMMITTEE WORKSHOPS

The Committee will give feedback on the work in progress on the draft Zone Implementation Programme developed through committee workshops (refer **Attachment 1 and 2**). The Committee acknowledges that all chapters are still in development.

5.2 STAKEHOLDER MEETING

The Committee will decide on arrangements for the stakeholder meeting.

5.5 Chapter: Contamination and Run Off

PRIORITY OUTCOMES

1. Contamination in minimised so:
All streams, freshwater wetlands, Te Roto o Wairewa and saltmarsh/estuaries in the Banks Peninsula Zone are flourishing ecosystems, reflecting Mauri, Kaitiakitanga and Mahinga Kai values and meet water quality standards.

RECOMMENDATIONS

No.	Responsibility	Recommendation	Completion Date
5.5a	Christchurch City Council & Environment Canterbury	Subdivisions and new housing (earthworks) are managed in accordance with strict erosion and sediment control guidelines (Appendix)	Ongoing
5.5b	Christchurch City Council & Environment Canterbury	Roading contractors are educated and enforced if necessary to engineer roading cuts to minimise sediment discharge in rainfall events. Encourage planting for roading projects to help stabilise.	5 years
5.5c	Environment Canterbury & Forestry	Resource consents needed for all forestry clearance that protect waterways from sediment run off.	5 years
5.5d	Christchurch City Council & Environment Canterbury & Community	Culverts are investigated and maintained for adequate sizing for maximum flood protection. Individuals responsible for checking and maintaining on private property.	10 years
5.5e	Farming Community and fertiliser companies	Fertiliser usage is managed so minimal discharge of nutrients to waterways so water quality standards are met. Overseer programme promoted to measure nutrient balance on farms. (Noted that Banks Peninsula farms low in nutrient discharge compared to lowland dairy farms)	Ongoing

5.5f	Christchurch City Council & Environment Canterbury & community	Septic tanks are managed up to current standards and plan rules.	10 years
5.5g	Community & Environment Canterbury	Stormwater is controlled of hazardous sites with oil interceptors.	5 years
5.5h	Christchurch City Council & Environment Canterbury	Passive discharge from contaminated land is investigated eg, old landfills, cemeteries, offal pits. Rules to require sufficient distance from waterways and testing for high risk sites to see if contaminated.	10 years
5.5i	Environment Canterbury	Regional Pest Management Strategy is enforced to control pest numbers, especially birds (swans, geese, ducks) and weeds (gorse and willows) in waterways.	Ongoing
5.5j	Environment Canterbury & Zone Committee	Animals in streams: Encourage fencing and planting of streams. Trough and yard placement are away from streams and runoff is managed.	5 years
5.5k	Christchurch City Council	Freedom campers are controlled so no raw effluent is disposed of.	Bylaw

5.4 Chapter: **Wastewater**

PRIORITY OUTCOMES

1. Treated wastewater is discharged to land as highest priority.
2. A work programme is in place to fix leaky reticulation and faulty septic tanks.
3. Wastewater systems and their environmental impacts are incorporated in small settlement studies and community population increase planning.

RECOMMENDATIONS

1. Treated wastewater is discharged to land as highest priority.

No.	Responsibility	Recommendation	Completion Date
4.1a	Christchurch City Council	Support the CCC programme that is set in the appended LTP programme.	5 years
4.1b	Christchurch City Council	<p>In addition for RETICULATED SYSTEMS</p> <p>Akaroa WWTP: Vigorously support land application.</p> <p>Run irrigation trials</p> <p>Support for NORTH site</p> <p>Wainui WWTP: Irrigation trials are run on the land with the new reticulation programme</p> <p>Tiako Bay: Promoted as good small community scheme.</p> <p>Continued work on fixing leaky infrastructure.</p> <p>Lyttelton: Natural hazard risk taken into account for future</p>	Ongoing

		work.	
4.1c	Christchurch City Council & Public Health	<p>UN-RETICULATED – SEPTIC TANKS</p> <p>Support CCC priority list for future reticulation as follows:</p> <ol style="list-style-type: none"> 1. Chateris Bay 2. Wainui 3. Little River (Important for ZC as includes flagship Wairewa catchment) 4. Birdling s Flat 5. Robinsons Bay 6. Purau 7. Okains Bay 8. Takamatua <p>Public Health to feedback on this list regarding Public Health Risk.</p>	
4.1d	Christchurch City Council	Promote use of 'reclaimed' water for council infrastructure and private use.	Ongoing

2. A work programme is in place to fix leaky reticulation and faulty septic tanks.

No.	Responsibility	Recommendation	Completion Date
4.2a	Christchurch City Council	Support CCC in upgrading stormwater systems, giving higher priority to areas which have poor environmental results. (list here?) eg Tiako Bay, Okains Bay.	Ongoing
4.2b	Environment Canterbury	Education resources around septic tank maintenance and healthy product use.	5 years

3. Wastewater systems and their environmental impacts are incorporated in small settlement studies and community population increase planning.

No.	Responsibility	Recommendation	Completion Date
4.3a	Christchurch City Council	Small settlement studies include research into wastewater capacity.	5 years
4.3b	Zone Committee	Promote small private joint discharge systems .	

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6. REGIONAL COMMITTEE UPDATE

Iaeon Cranwell will brief the Committee on the Regional Committee infrastructure meeting held on 23 August as well as the Regional Committee meeting held on 11 September.

7. PRONUNCIATION PRACTICE

Iaeon Cranwell will lead the Committee in pronunciation of Te Reo.

8. COASTAL PLAN

Linda Kirk, Programme Manager – Environment Canterbury, will provide an overview to the Committee on the New Zealand Coastal Policy Statement. Environment Canterbury has indicated it will commence reviewing the Coastal Plan in late 2013. The role of the Zone Committee will be through the submission process under the Resource Management Act.

9. YOUTH ENGAGEMENT AND ENVIROSCHOOLS CANTERBURY

Sian Carvell and Toni Watts from Environment Canterbury will provide a brief overview of youth engagement programmes to the Committee with a specific focus on water and biodiversity, coordinated by Environment Canterbury in the Banks Peninsula Zone (Refer **Attachment 1**)

10. IDENTIFICATION OF GENERAL PUBLIC CONTRIBUTIONS

Environment Canterbury: Youth Engagement and education: water and biodiversity

The Youth Engagement and Enviroschools Canterbury teams work with children and young people and their communities developing awareness and understanding and encouraging behaviours that benefit the long-term ecological and socio-economic well-being of the community. The programmes are all **linked to key council programmes and priorities**.

Environment Canterbury: Water and biodiversity education programmes

Waitaha Wai: The Waitaha Wai water education programme aims to raise awareness of lowland water issues in Canterbury, encourage active participation by schools and the wider local community in waterbody care and/or restoration, and strengthen links between community groups and schools.

Wai/Water: Informative read about all the issues being dealt with under the Canterbury Water Management Strategy. It is intended for use by communities, schools - anyone interested in water in Canterbury.

Stormwater: A resource is aimed at year 7/8 students and delves into the big issues related to stormwater. It also describes actions that schools, individuals and communities can take to help improve urban stormwater quality

Pests and Biodiversity: The programme, developed in partnership with the Department of Conservation, is for Year 7/8 students. This facilitated programme focuses on pest species – both plant and animal that cause havoc in Canterbury.

HTF for schools: \$10,000 will be available annually from the Honda TreeFund to assist in planting projects identified by schools involved in Environment Canterbury's Water, and Pests and Biodiversity education programmes. Schools can apply for up to \$1000.00 each.

Working with others – The Enviroschools Canterbury team, BPCT and DOC

Enviroschools Canterbury

The programme in Canterbury is coordinated by Environment Canterbury with the support of regional partners Waimakariri, Selwyn, Timaru District Councils, the Department of Conservation and grants received from the CHCH City Council and the Kaikoura Enhancement Trust.

Vision: Enviroschools is a whole school approach to education for sustainability. With support from the school community, students plan, design and take action to create a sustainable school environment.

The theme areas are water, Living Landscapes/Biodiversity, Zero Waste, Energy, and Ecological Buildings. There are five guiding principals of which Maori Perspectives is one.

Nationally, there are 854 schools involved in the Enviroschools programme. There are 65 schools involved in Canterbury.

Schools involved in the Banks Peninsula Zone = seven primary and one area school, and three early learning centres - Diamond Harbour; Lyttelton Main; Lyttelton West; Okains Bay; Le Bons Bay; Little River; Duvauchelle; Akaroa Area; Kids First Lyttelton; Busy Cs; Banks Peninsula Pre School

How? The programme provides opportunities and support regarding water management and biodiversity through workshops, on-site support via a facilitator and connecting schools with other providers and programmes including working with Environment Canterbury staff.

Operative and Proposed Rules for Wastewater and Stormwater Discharges

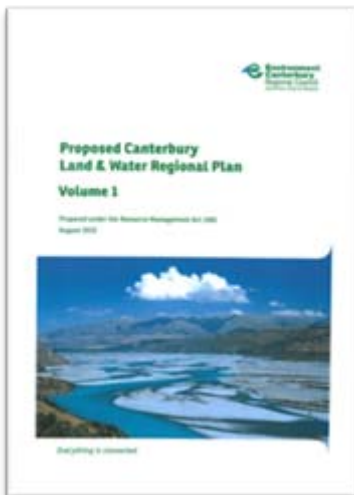
Resource Management Group Implementation -
August 2012

Regional Plans

Natural Resources Regional Plan
(NRRP) – Operative June 2011.



Proposed Canterbury Land and
Water Regional Plan (pCLWRP) –
Notified 11 August 2012.



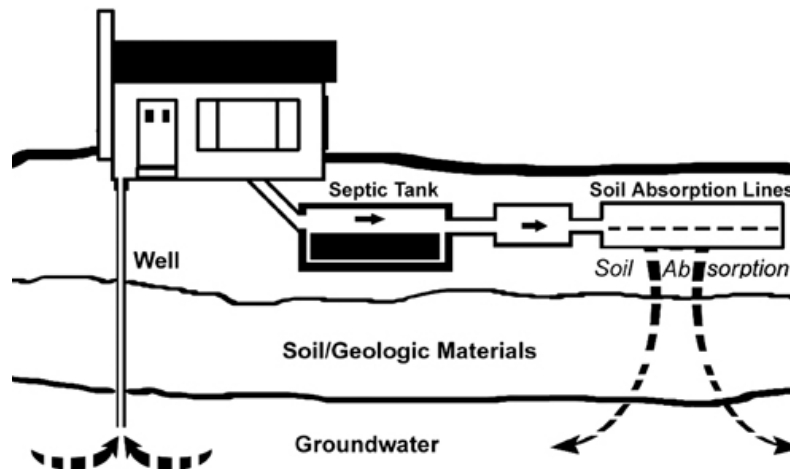
On-Site Wastewater Systems

- Domestic Wastewater

- Liquid waste (which may contain solids) from domestic, industrial or commercial premises which consists of toilet waste and greywater (household wastewater from kitchens, bathrooms and laundries) – *proposed Canterbury Land and Water Regional Plan* .

- Onsite Wastewater System

- A system that receives domestic wastewater from a single site and treats and applies the wastewater to a land application system.



Onsite Wastewater System Rules

- NRRP

- In the NRRP, discharges from existing and new onsite wastewater systems are addressed under one rule - Rule WQL9 – *Discharge of contaminants into land from an on-site wastewater system.*

- pCLWRP

- Discharges from **Existing** Onsite Wastewater Systems
 - Rule 5.7 – Permitted Discharges
 - Rules 5.8 – Discharges requiring resource consent
- Discharges from **New or Upgraded** Onsite Wastewater Systems
 - Rule 5.9 – Permitted Discharges
 - Rule 5.10 – Discharges requiring resource consent.

Rule WQL9 - NRRP



Summary of Key Conditions:

- The disposal system must be either a drip line irrigation system or a 2A sand trench.
- Separation distances to property boundaries, wells, surface waterbodies and other wastewater systems.
- Groundwater must be greater than two metres (for a drip line) or greater than six metres (for a sand trench).



Rules 5.7 and 5.8 - pCLWRP

- Rules relates to discharges onto or into land from **existing** on-site wastewater systems.
- Key differences between the conditions of Rule 5.7 of the pCLWRP and Rule WQL9 of the NRRP:
 - Maintenance now required.
 - Discharge must be within the area mapped “Septic Tank Suitability – Area A” in the Planning Maps.
 - Prohibits discharges in sensitive sites as permitted activities (*e.g. Contaminated sites, archaeological sites*).

Rule 5.7 and 5.8 – pCLWRP cont



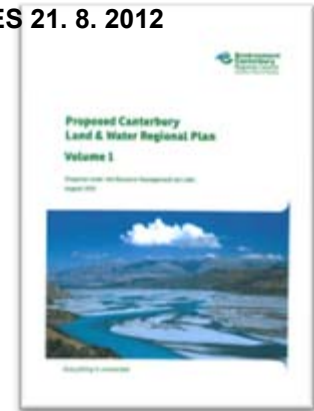
- A system can only be considered under Rule 5.7 if:
 - it was lawfully established before 1 November 2013;
 - the system has not been modified; and
 - There is no increase in the volume of discharge.
- Existing systems which don't comply with Rule 5.7 require resource consent under Rule 5.8.
- However, under Section 20A of the RMA, discharges from existing onsite wastewater systems can continue until the Land and Water Regional Plan becomes operative.

Rules 5.9 and 5.10 - pCLWRP

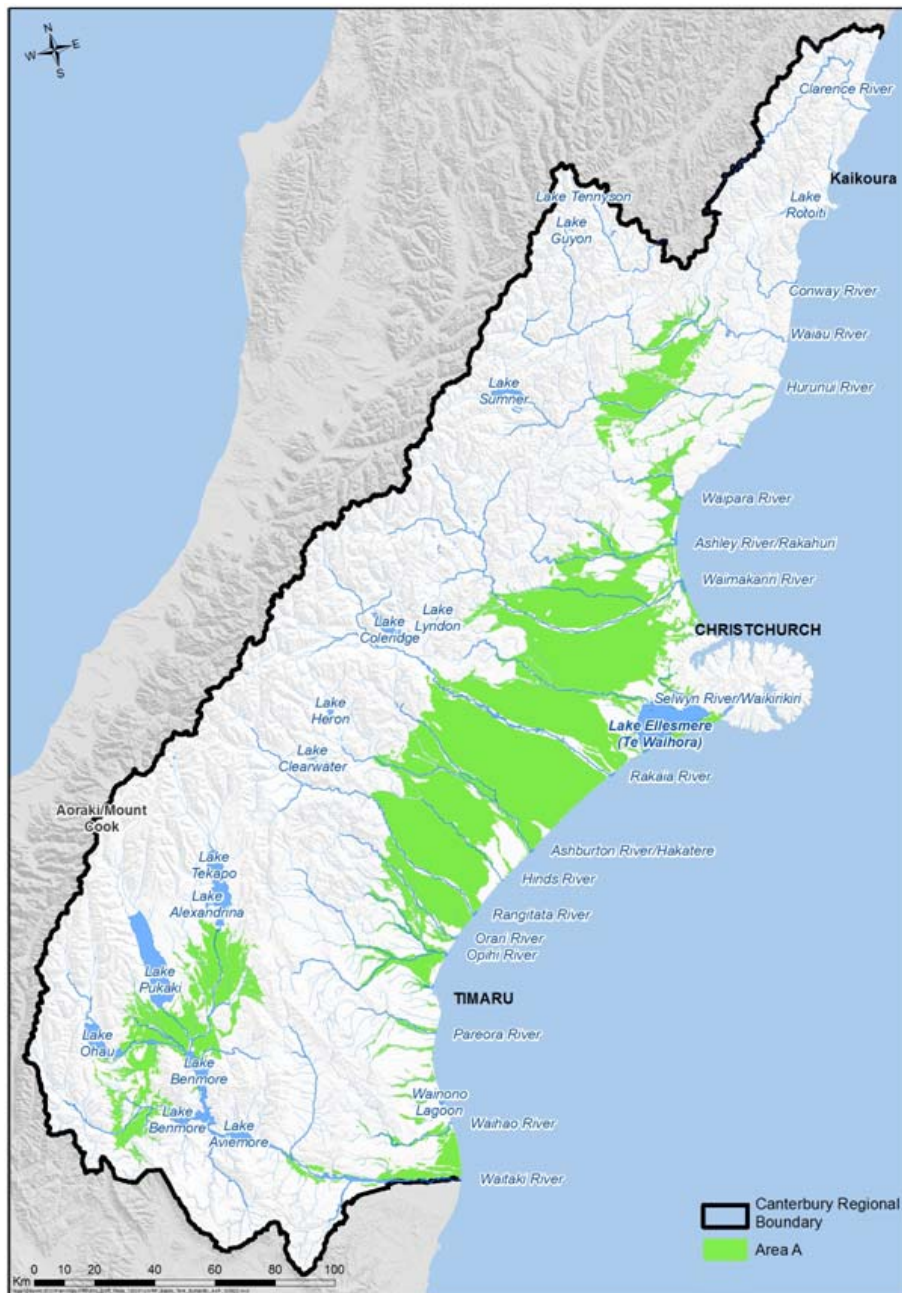


- Relates to discharges from **new and upgraded** onsite wastewater systems.
- Key Differences between the conditions in Rule 5.9 of the pCLWRP and Rule WQL9 of the NRRP :
 - Change from a daily limit on the volume of wastewater discharged to a weekly limit.
 - Conditions aren't as specific with regards to system design and separation distances.
 - Discharge must be within the area mapped "Septic Tank Suitability – Area A" in the Planning Maps.
 - No requirement to submit designs to Ecan prior to carrying out the activity.
- New or Upgraded systems which don't comply with Rule 5.9 require resource consent under Rule 5.10.

Septic Tank Suitability Map



- Provides a mapped area of Canterbury which is suitable for septic tanks.
 - Systems inside this mapped area are permitted activities provided they comply with all the other conditions of the rule.
 - Outside of this mapped area, they require a resource consent.
- This mapped area has been determined by:
 - Groundwater Depth
 - Drainage Capability of the Soil
 - Slope of the land



What does this mean for Banks Peninsula

- Most of Banks Peninsula is outside of the mapped “Septic Tank Suitability” area.
 - A resource consent is required to discharge from an onsite wastewater system in Banks Peninsula.
 - Site specific wastewater system are required in Banks Peninsula.
 - An assessment of the environmental effects of the wastewater discharge must be carried out for all systems in Banks Peninsula.

Stormwater Discharges

- Stormwater
 - Runoff that has been channelled, diverted, intensified or accelerated by human modification of the land surface or runoff from the external surface of any structure as a result of precipitation ***and includes entrained contaminants and sediment including that generated during construction or earthworks – pCLWRP definition***

Onsite Stormwater Rules

- **NRRP**
 - Rule WQL6 – Discharge of Stormwater onto or into land.
 - Rule WQL7 – Discharge of Stormwater into a river, lake or artificial watercourse.

- **pCLWRP**
 - Rule 5.72 – The discharge of stormwater into a river, lake, wetland or artificial watercourse or onto or into land in circumstances where a contaminant may enter water – Permitted.
 - Rule 5.73 – Non-Complying

Stormwater Conditions

- Key differences between the stormwater discharge rules in the pCLWRP and NRRP:
 - Discharges of stormwater to land and to water have been combined under one rule in the pCLWRP.
 - Greater flexibility in the design of the stormwater system
 - No limits on the area of disturbed land.

Key Conditions from Both Plans

- No discharge from or onto potentially contaminated land.
- No discharge to NATURAL class waterways
- No overland flow.
- No increase in the flow rate of a receiving waterbody.
- Discharges not allowed to enter neighbouring property boundaries.
- Suspended solid concentration in the discharge not to exceed
 - 50gm/m³ where the discharge is into a spring-fed river, Banks Peninsula River or to a lake
 - 100gm/m³ where the discharge is to any other river or an artificial watercourse

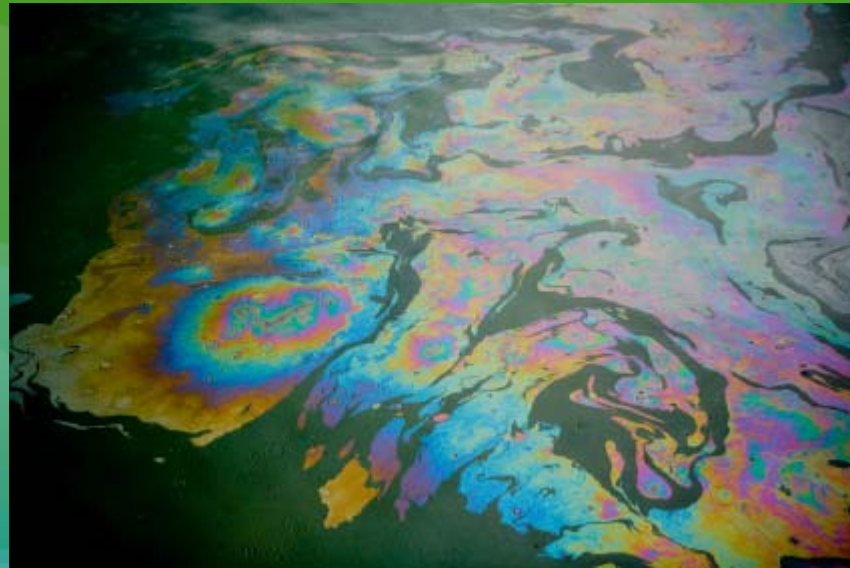
Questions??

Environment Canterbury

Erosion and Sediment Control Presentation

Presented by Blair Gray

Senior Resource Management Officer



Stream and rivers have life



Would you swim in this? Would a fish?



Would a fish swim here?



Building site with no E&SC in place



2.4 Km downstream stream is dirty



Why do we need Sediment Control Measures?



Sediment in streams is unappealing to us and is a bad habitat for fish and insects

When it all goes horribly wrong...

its not just the environment that is affected

- Infringement Notice: \$300 - \$1000
- Abatement Notice: Stop works
- Prosecution: up to
 - » \$200,000
 - » \$10,000 a day ongoing
 - » Two years in jail
- Individual operators fined \$2500





**The good news – ECan
would rather work with
you to prevent the
problems from occurring
– and keep you smiling....**



Our Environmental goal posts have changed...



Erosion & Sediment Control Inspection Sheet

Site Score:	
Average*	3
Highest**	3

Date:	25Jan12
Time:	0930
Weather:	Fine
ESC Plan Rev:	R9

Site Name: Hill Top Developments
 Consent No.: CRC012345

Site Contact: Mr Contractor, Ms Consultant, Mr Consent Holder

E-mailed to: Consent Holder, Everyone else

Type of activity: - Earthworks - Stormwater - ~~Works in Waterways/CMA~~ - Quarry

Note: The purpose of the site visit was to inspect the installation and maintenance of the erosion and sediment control devices on site. The E&SC devices detailed on the E&SCP were assessed against the E&SC Guideline design criteria.

Control	Location	Rating	Comments	Action Date
Stabilised Ent	Entrance	1	Required cleaning earlier in the week. Someone sweeping at time of visit – good effort	
Silt Fence/Geotextile	Soil stock piles	1	Ensure Clay piles covered/protected	
CW Diversion	Above works site	3	CW discharging through site	ASAP
DEB	Mid site	1	Ensure fabric on inlet pinned, 1/2 full sediment - clean out	ASAP
Silt Fence (SF)	E site	1	Appeared OK	
SF	N site	1	Footing and joins much improved	
Unstabilised surfaces	Mid site	1	Most area seeded. Sediment logs installed. Hydroseed buffer around water margin.	Ongoing

Notes:
 The site is becoming progressively more stabilised. Please ensure ESC measures e.g. silt fences are installed and maintained correctly. ESCP needs updating as some measures have been removed/alterd.
 There are a number of areas that have had topsoil applied – please progress seeding and watering. I understanding this is occurring already.

Monitoring Officer: Blair Gray
 DDI: 027 224 7171

Signed:

1 - Full Compliance 2 - Minor non-compliance 3 - Repeated minor non-compliance or significant non-compliance 4 - Major and/or persistent non-compliance.
 Notes: *Environment Canterbury will record the average rankings to allow comparisons between sites, contractors and consultants.
 **Ratings of 3 or higher may result in enforcement action being taken.

Erosion and Sediment Control

- Control run on water
- Protect the land surface from erosion;
and
- Prevent sediment from leaving the
site.



Control run on (clean) water

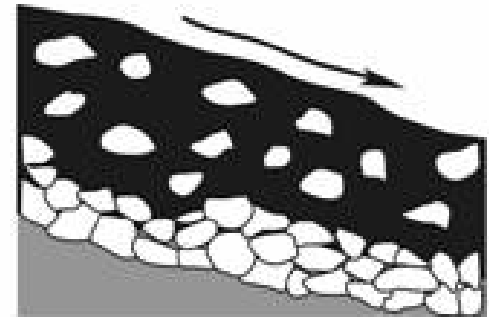
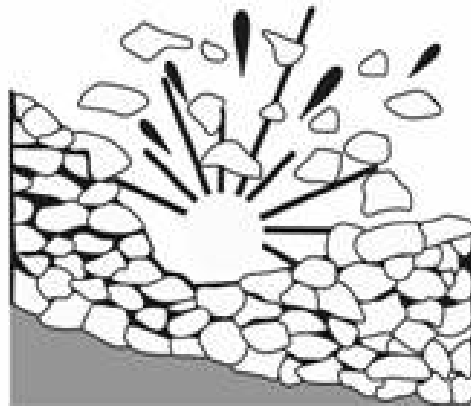
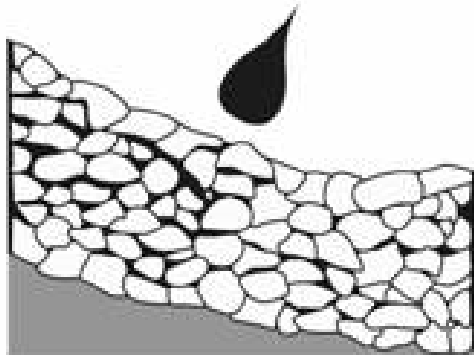




Protect the land surface from erosion



Raindrop Erosion



Reduce rain drop erosion

- Grassing
 - Hydro-seeding
- Mulching (with geobinders)
- Straw/coconut matting blankets

Stop sediment from being produced -
Protect unstabilised soil from rain!

Hydroseeding



Straw blanket



Matting + Seeding



Prevent sediment from leaving the site

Stabilised Entrance



Silt Fences



Silt Fences



Stabilised/Lined channels



Check Dams and sediment logs



Sediment Ponds





Summary:

1. Streams + Sediment \neq Healthy Ecosystems
2. ECan wants to prevent problems occurring by:
 1. Engaging early
 2. Offering advice
 3. Providing education
3. Enforcement options only used as last resort

Example - Silt Fences

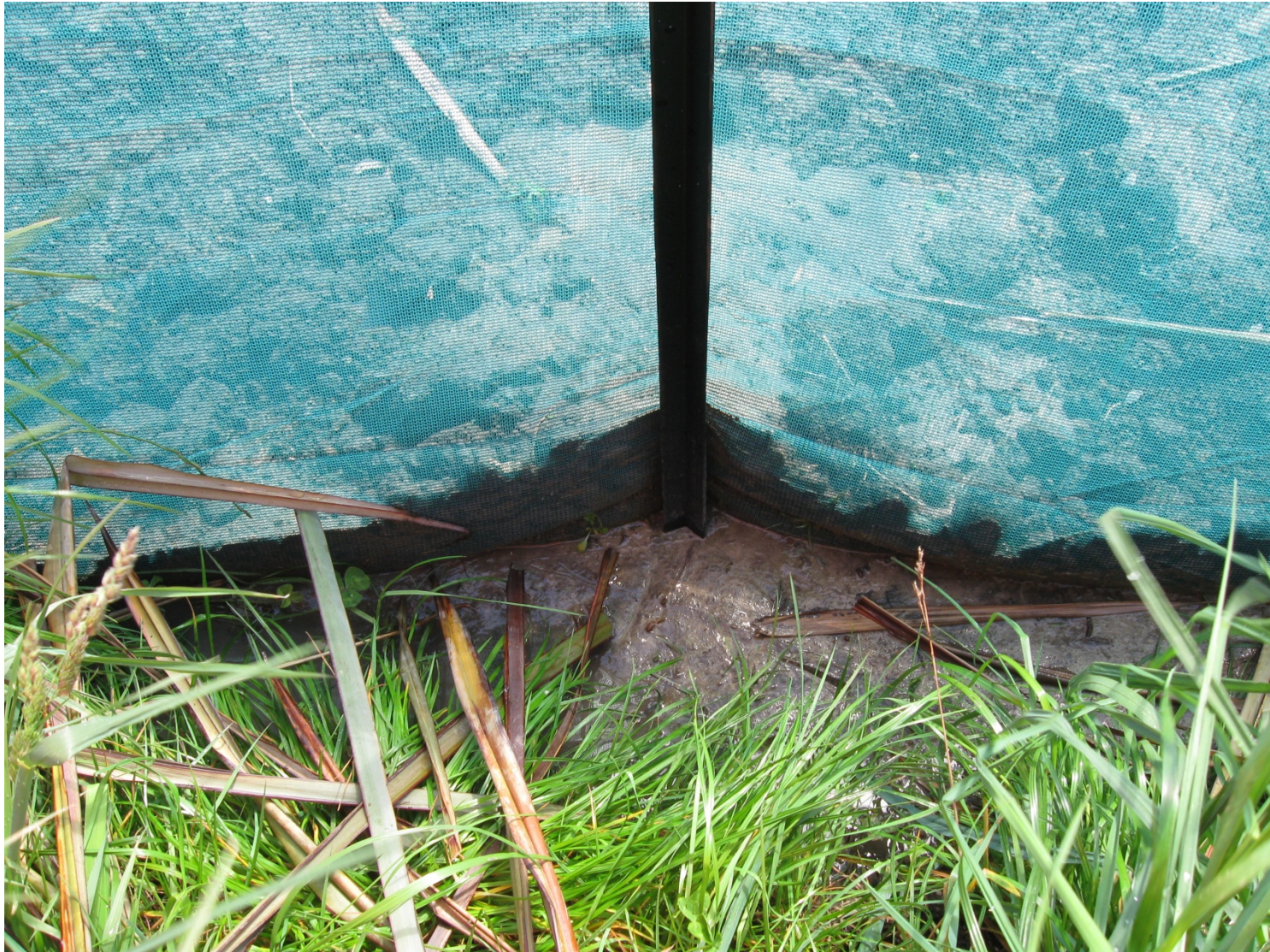


Example of a good joint...



Silt Fences

Can you pick their intentional mistakes?













16/07/2009





Questions?



ATTACHMENT 1 TO CLAUSE 10
OF BP ZONE MINUTES 21. 8. 2012

Nutrient Budgets

Banks Peninsula Zone Committee Meeting

Peter Brice – Account Manager

Why Nutrient Budget?



ATTACHMENT 1 TO CLAUSE 10
OF BP ZONE MINUTES 21. 8. 2012

- Understand nutrient transfer – in and out
- Identify leaching “hot zones”
- Aid management decisions
- Create nutrient replacement strategies

How Do To Nutrient Budget?



ATTACHMENT 1 TO CLAUSE 10
OF BP ZONE MINUTES 21. 8. 2012

- Use Overseer computer programme
- Seek Advice from Local Rep
- Ensure accurate information is used
- Benchmark data

Overseer 6



ATTACHMENT 1 TO CLAUSE 10
OF BP ZONE MINUTES 21. 8. 2012

- Developed by Ag research
- Animal nutrition model
- Long term averages
- Predictive and historic models
- Inputs and outputs for the farm

Example – Simpson Farm



ATTACHMENT 1 TO CLAUSE 10
OF BP ZONE MINUTES 21. 8. 2012

- Fishermans Bay
 - 420 ha Cattle Farm
 - Roughly 1900 Stock Units
 - 160 fenced native bush
 - Developed pastures
 - Good soil fertility
 - Warm dry summers
 - Potentially wet cold easterly winters

Cattle Timeline



ATTACHMENT 1 TO CLAUSE 10
OF BP ZONE MINUTES 21. 8. 2012

- Distribution of Cattle throughout the year
- Winter is the key time for nutrient budget

Mob name	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun		
Breeding cows (mixed age) 1	190	190	190	190	190	190	190	190	190	190	190	190		
Dairy grazing (replacements) 1	50	50	50	50	50	50	50	50	50	50	50	50		
Dairy grazing (replacements) 2	50	50	50	50	50	50	50	0	0	0	0	0		
Dairy grazing (replacements) 3	0	0	0	0	85	85	85	85	85	85	85	85		
Dairy grazing (replacements) 4	85	85	85	85	85	85	85	85	85	85	85	85		
Breeding bulls (mixed age) 1	8	8	8	8	8	8	8	8	8	8	8	8		

Inputs



ATTACHMENT 1 TO CLAUSE 10
OF BP ZONE MINUTES 21. 8. 2012

- All Products coming in
- Transfer, mineralisation, importation
- Expand blue lines for more detail

(kg/ha/yr)	N	P	K	S	Ca	Mg	Na
Nutrients added							
Fertiliser, lime & other	0	11	0	13	68	0	0
Rain/clover N fixation	32	0	4	7	4	10	65
Irrigation	0	0	0	0	0	0	0
Supplements	1	0	1	0	0	0	0

Outputs



ATTACHMENT 1 TO CLAUSE 10
OF BP ZONE MINUTES 21. 8. 2012

- All nutrients leaving system

Nutrients removed							
As products	6	2	0	1	3	0	0
Exported effluent	0	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0
To atmosphere	19	0	0	0	0	0	0
To water	6	0.5	10	19	13	6	33
Leaching - urine patches	3	0.0	1	0	2	0	0
Leaching - other	2	0.0	5	19	8	5	30
Runoff	0	0.4	3	0	2	1	3
Direct (animals, drains)	0	0.0	0	0	0	0	0
Direct pond discharge	0	0.0	0	0	0	0	0
Border dyke outwash	0	0.0	0	0	0	0	0
Septic tank outflow	0	0.0	0	0	0	0	0

Key Losses



ATTACHMENT 1 TO CLAUSE 10
OF BP ZONE MINUTES 21. 8. 2012

- Nitrogen

Block name	Total N lost kg N/yr	N lost to water kg N/ha/yr	N in drainage * ppm
Bush	480	3	N/A
Plane applied	871	6	N/A
Truck applied	1193	10	2.9
Other sources	37		
Whole farm	2581	6	
Less N removed in wetland	0		
Farm output	2581	6	

Key Losses



ATTACHMENT 1 TO CLAUSE 10
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- Phosphate

Block name	Total P lost kg P/yr	P lost to water kg P/ha/yr	P loss categories		
			Soil	Fertiliser	Effluent
Bush	16	0.1	N/A	N/A	N/A
Plane applied	193	1.4	Medium	Medium	N/A
Truck applied	214	1.8	High	Medium	N/A
Other sources	-224				
Whole farm	-54	-0.1			

Take Home Message



ATTACHMENT 1 TO CLAUSE 10
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- Nitrogen moves through the soil
- Phosphate moves with the soil
- Fertiliser needs to be applied accurately
- Seek advice