I hereby give notice that an ordinary meeting of the Environment Committee will be held on:

Date: **Wednesday, 12 February 2020**
Time: **9.30am**
Venue: **Tararua Room**
Horizons Regional Council
11-15 Victoria Avenue, Palmerston North

ENVIRONMENT COMMITTEE

AGENDA

MEMBERSHIP

Chair	Cr NJ Patrick
Deputy Chair	Cr WK Te Awe Awe
Councillors	Cr AL Benbow
	Cr EM Clarke
	Cr DB Cotton
	Cr SD Ferguson
	Cr EB Gordon
	Cr FJT Gordon
	Cr RJ Keedwell
	Cr WM Kirton
	Cr JM Naylor
	Cr GJ Turkington

Michael McCartney
Chief Executive

Contact Telephone: 0508 800 800
Email: help@horizons.govt.nz
Postal Address: Private Bag 11025,
Palmerston North 4442

Full Agendas are available on Horizons Regional Council website
www.horizons.govt.nz

Note: The reports contained within this agenda are for consideration and should not be construed as Council policy unless and until adopted. Items in the agenda may be subject to amendment or withdrawal at the meeting.

for further information regarding this agenda, please contact:
Julie Kennedy, 06 9522 800

CONTACTS	**24 hr Freephone : 0508 800 800**	**help@horizons.govt.nz**		**www.horizons.govt.nz**
SERVICE CENTRES	**Kairanga** Cnr Rongotea & Kairanga-Bunnythorpe Rds, Palmerston North	**Marton** 19-21 Hammond Street	**Taumarunui** 34 Maata Street	**Woodville** Cnr Vogel (SH2) & Tay Sts
REGIONAL HOUSES	**Palmerston North** 11-15 Victoria Avenue	**Whanganui** 181 Guyton Street		
DEPOTS	**Levin** 120-122 Hokio Beach Rd	**Taihape** 243 Wairanu Rd		
POSTAL ADDRESS	Horizons Regional Council, Private Bag 11025, Manawatu Mail Centre, Palmerston North 4442			
FAX	06 9522 929			

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AGENDA

1 Welcome/Karakia

2 Apologies and Leave of Absence

At the close of the Agenda no apologies had been received.

3 **Public Forums:** Are designed to enable members of the public to bring matters, not on that meeting's agenda, to the attention of the local authority.

Deputations: Are designed to enable a person, group or organisation to speak to an item on the agenda of a particular meeting.

Requests for Public Forums / Deputations must be made to the meeting secretary by 12 noon on the working day before the meeting. The person applying for a Public Forum or a Deputation must provide a clear explanation for the request which is subsequently approved by the Chairperson.

Petitions: Can be presented to the local authority or any of its committees, so long as the subject matter falls within the terms of reference of the council or committee meeting being presented to.

Written notice to the Chief Executive is required at least 5 working days before the date of the meeting. Petitions must contain at least 20 signatures and consist of fewer than 150 words (not including signatories).

Further information is available by phoning 0508 800 800.

4 Supplementary Items

To consider, and if thought fit, to pass a resolution to permit the Committee/Council to consider any further items relating to items following below which do not appear on the Order Paper of this meeting and/or the meeting to be held with the public excluded.

Such resolution is required to be made pursuant to Section 46A(7) of the Local Government Official Information and Meetings Act 1987 (as amended), and the Chairperson must advise:

(i) The reason why the item was not on the Order Paper, and

(ii) The reason why the discussion of this item cannot be delayed until a subsequent meeting.

5 Members' Conflict of Interest

Members are reminded of their obligation to declare any conflicts of interest they might have in respect of the items on this Agenda.

Minutes of the first meeting of the eleventh triennium of the Environment Committee held at 9.00am on Wednesday 13 November 2019, in the Tararua Room, Horizons Regional Council, 11-15 Victoria Avenue, Palmerston North.

PRESENT	Crs NJ Patrick (Chair), AL Benbow, EM Clarke, DB Cotton (via audiovisual link), SD Ferguson, EB Gordon (to 12.04pm), FJT Gordon (from 9.16am), RJ Keedwell (to 12.04pm), WM Kirton (via audiovisual link), JM Naylor, WK Te Awe Awe, and GJ Turkington.	
IN ATTENDANCE	Chief Executive	Mr MJ McCartney
	Committee Secretary	Mrs JA Kennedy
ALSO PRESENT	At various times during the meeting:	
	Dr J Roygard (Group Manager Natural Resources & Partnerships), Dr N Peet (Group Manager Strategy & Regulation), Mr G Shirley (Group Manager Regional Services & Information), Mr R Smillie (Biodiversity, Biosecurity & Partnerships Manager), Ms A Matthews (Science & Innovation Manager), Mr G Bevin (Regulatory Manager), Mr L Brown (Freshwater & Partnerships Manager), Mr C Davey (Biodiversity Plants Coordinator), Mrs S Williams (Environmental Educator), Mrs S Carswell (Coordinator District Advice), Ms C Morrison (Media & Communications Manager), Mr C Rudd (member of the public), and a member of the press.	

The Chair welcomed everyone to the meeting and invited Cr Te Awe Awe to say a Karakia.

APOLOGIES

ENV 19-1 ***Moved*** ***Patrick/B Gordon***

That the Committee receives an apology for lateness from Councillor Fiona Gordon.

CARRIED

PUBLIC FORUMS / DEPUTATIONS / PETITIONS
There were no requests for public speaking rights.

SUPPLEMENTARY ITEMS
There were no supplementary items to be considered.

MEMBERS' CONFLICTS OF INTEREST
Cr Turkington noted a potential conflict of interest in regard to Items 6, 7, and 9.
Cr Clarke noted a potential conflict of interest in regard to Item 8.

ENVIRONMENTAL EDUCATION

Report No 19-174

This item provided Members with an Environmental Education progress report for the period from 1 July 2019 – 1 November 2019.

Ms Morrison (Media & Communications Manager) provided an overview of the Enviroschools activities and gave Councillors an introduction to the Environmental Educator's role and responsibilities.

Cr F Gordon joined the meeting at 9.16am.

Mrs Williams (Environmental Educator) took Members through the report highlights, expanded further on several of the activities, and clarified Members' questions.

ENV 19-2 ***Moved*** ***Keedwell/Ferguson***

That the Committee recommends that Council:

a. receives the information contained in Report No. 19-174.

CARRIED

DISTRICT ADVICE UPDATE

Report No 19-175

This report informed Members of the District Advice activities carried out over the last financial year 2018-19 and the four month period from 1 July to 31 October 2019.

Mr Shirley (Group Manager Regional Services & Information) introduced Mrs Sarah Carswell (Co-ordinator District Advice) and provided an overview of her role and responsibilities. Mrs Carswell expanded further on the activities associated with her role, summarised the information in her report, and clarified Members' questions.

ENV 19-3 ***Moved*** ***Naylor/Clarke***

That the Committee recommends that Council:

a. receives the information contained in Report No. 19-175 and Annexes.

CARRIED

The meeting adjourned at 10.06am.

The meeting reconvened at 10.13am.

NATURAL RESOURCES & PARTNERSHIPS PROGRESS REPORT

Report No 19-176

This item updated Members on the progress made in the Natural Resources & Partnership Group's activity over the period 1 July to 30 September 2019.

Dr Roygard (Group Manager Natural Resources & Partnerships) introduced the report and gave an overview of the group's activities and responsibilities. Mr Brown (Freshwater & Partnerships Manager), Mr Smillie (Biodiversity, Biosecurity & Partnerships Manager), Mr Davey (Biosecurity Plants Coordinator), and Ms Matthews (Science & Innovation Manager) introduced their reports and highlighted activities of note.

ENV 19-4 ***Moved*** ***Clarke/Turkington***

That the Committee recommends that Council:

a. receives the information contained in Report No. 19-176.

CARRIED

REGULATORY MANAGEMENT REPORT - JULY TO SEPTEMBER 2019

Report No 19-177

This report updated Members on regulatory activity for the period July 2019 to September 2019, and summarised regulatory activities associated with the municipal Wastewater Treatment Plant (WWTP) programme. Dr Peet (Group Manager Strategy & Regulation) introduced the item and updated Members on the upcoming regulatory approach to Three Waters. He then updated Members on the Whakapapa Wastewater Treatment Plant application and the decision by Manawatu District Council to centralise a number of wastewater treatment plant discharges into the Feilding Wastewater Treatment Plant.

Mr Bevin (Regulatory Manager) summarised the compliance programme and regulatory action. Members provided their views and comments around Horizons approach as a regulator to enforce consent conditions, and its responsibilities to ensure territorial authorities complied with their consent conditions.

Crs B Gordon and Keedwell left the meeting at 12.04pm to attend other Council business.

MOTION TO SUSPEND STANDING ORDER 4.2

ENV 19-5 ***Moved*** ***Te Awe Awe/Naylor***

That the Committee agrees to suspend Standing Order 4.2 Meeting Duration and continue beyond the two hour limit without a break of ten minutes.

CARRIED

ENV 19-6 ***Moved*** ***Naylor/F Gordon***

That the Committee recommends that Council:

a. receives the information contained in Report No. 19-177 and Annexes.

CARRIED

The meeting closed at 12.23pm.

Confirmed

_____ _____

CHAIR GROUP MANAGER STRATEGY & REGULATION

_____

GROUP MANAGER NATURAL RESOURCES
& PARTNERSHIPS

Report No.	20-01
Information Only - No Decision Required	

NATURAL RESOURCES & PARTNERSHIPS PROGRESS REPORT

1. PURPOSE

1.1. The purpose of this item is update members of Council's Environment Committee on the progress made in the Natural Resources & Partnership Group's activity over the period 1 October to 31 December 2019. The item provides updates on progress against the annual plan targets and aspects of the Natural Resources & Partnerships Group Operational Plan 2019-20.

2. RECOMMENDATION

That the Committee recommends that Council:

a. receives the information contained in Report No. 20-01 and Annexes.

3. FINANCIAL IMPACT

3.1. There is no financial impact associated with recommendations in this paper.

4. COMMUNITY ENGAGEMENT

4.1. This is a public item and therefore Council may deem this sufficient to inform the public.

5. SIGNIFICANT BUSINESS RISK IMPACT

5.1. It is considered that there is no significant risk impact of this item

6. SUMMARY AND HIGHLIGHTS

6.1. The Natural Resources & Partnerships Group activity includes the non-regulatory and science programmes across the land and water management, biosecurity, biodiversity and environmental reporting activities of the Long-term Plan. The group also delivers regulatory functions for biosecurity and supports Horizons' regulatory programmes.

6.2. Over the reporting period the Natural Resources and Partnerships group prepared and presented a range of Council Papers including

- Councillor Roles for Non-Regulatory projects, Regional Council meeting November 5;
- Update on Per- and Polyfluoroalkyl Substances (PFAS) investigations, Strategy and Policy November 12;
- National Pesticide Survey, Strategy and Policy November 12;
- Natural Resources and Partnerships progress report, Environment Committee November 13;
- Drinking Water Update, Strategy and Policy Committee December 10; and
- Land Management Progress report, Catchment Operations December 11.

6.3. Engagement with new national policy direction included staff input and engagement in:

- The Essential Freshwater Policy development through the Regional Sector Water Sub group, the Science Technical and Advisory Group and other forums.
- The 1 billion trees programme working with Te Uru Rakau staff to seeking funding via the partnerships funds for projects within Horizons region and separately on behalf of the Regional Sector.
- The proposed National Policy Statement for Biodiversity including identifying Horizons as an agency to Road test the proposed policy with the Ministry for Environment and a Territorial Authority within the region.
- A submission on proposed new regulations around the use of the possum bait Brodifacoum which is the primary bait used within Horizons possum control programme

6.4. Progress on the Land Management Activity within the Group was reported to the Catchment Operations in December. In summary the programme is progressing through the first year of the new Hill Country Erosion Fund Contract with central government that has provided additional funds for the programme this year. The programme is fully allocated for work including a significant amount of funding from reserves (as approved by Council). Staff are working with landowners to increase the amount of works that are allocated that will actually be completed during the year, noting that in previous years for some work types around 70 percent of allocated works have been completed. The Land Management Activity is not further reported on in this item and will be reported on at the Catchment Operations Committee meeting in March.

6.5. Progress on the Freshwater and Partnerships team's activity is updated on in Annex A. In summary the programme is on track to deliver on all targets and to exceed some. Overall 161 km of stream fencing is allocated for a target of 79 km and 38 km have been completed. Over 159,000 riparian plants have been allocated for a target of 63,333. The target for riparian planting has already been achieved with 86,639 plants planted this year. During the reporting period there were a range of Freshwater Improvement Fund Governance Group meetings held and a Manawatū River Leaders' Accord meeting. Progress was made on the access track to the proposed boat ramp for Lake Horowhenua. A range of other activity was undertaken to inform the Freshwater programme including work to investigate removing two weirs to increase fish passage in the Akitio River. Further a stocktake of coastal lake outlets has been initiated and this has identified in a number of lakes have weirs that are at risk of collapsing. For some of the dune lakes this may result in the loss of the lake due to the shallow nature, for example Lake Kaitoke.

6.6. The Biosecurity Animals programme (Annex B) significantly progressed during the reporting period. Overall the programme has completed 34% of the PCOs and 30% of the area to be controlled by the end of December. At face value this seems to be behind considering the programme is 50% through the financial year, however the programme is currently assessed as on track as the nature of the business is that there is increased contractor capacity operating in the programme during the summer/autumn period with contractors required to complete their work by the end of May. Another item reported on in the item is the submission on the Governments review of the use of brodifacoum. A copy of the submission is provided as part of the item. During the reporting period the rooks programme of nest control was undertaken and the results show a decrease in the number of nests compared to the previous year. In December the Woodville team responded to a sighting of rooks and it is estimated that 130 individuals were controlled. Staff have also reported a potential challenge for the programme in that the control of nests during the October/November period is proving successful at identifying and reducing breeding, however it may be that where nests are disturbed the rooks establish a second nest and second clutch of eggs and do still successfully breed within the season. Information on rooks in New Zealand indicates that the birds can produce two clutches per season and successfully breed if an initial nest is disturbed. It is recommended that Horizons undertakes a second round of nest control next season.

6.7. The Biosecurity Plants programme (Annex C) has been active across a range of pest plants including a busy period around incursion response including activity on pea weevil, velvet leaf, brown marmorated stink bug and Chinese knotweed. Some surveillance work has been undertaken to look for weeds that may have newly established in the region as a part of the Regional Pest Management Plan's exclusion programme. The biological control programme has not been able to meet demand for the green thistle beetle due to low numbers of beetles at the traditional nursery and harvest sites. An item is programmed for March 2020 to update Councillors on a review of progress against the Regional Pest Management Plan.

6.8. The Biodiversity Programme (Annex D) has continued to progress site assessments to inform prioritisation of sites for inclusion within the programme within an additional 76 sites visited during the period. The Annex updates on progress on the range of biodiversity partnership projects and the majority of these are considered to be on track and some are receiving further follow up. The biodiversity partnerships programme is undergoing review and a paper on this is being presented to Council at the February Strategy & Policy Committee meeting. The Tōtara Reserve Regional Park project has focussed on preparations for the busy camping season. During the reporting period the campground maintenance contract was awarded for a term of three years and further work as a part of upgrading health and safety at the camp has been a focus including electrical work and work in relation to the septic tank. A Tōtara Reserve Advisory Group is in the process of being organised for February/March and the primary aim of this is to gather the new group and to familiarise them with the park and its activity. A key goal for the year for this project is establishing a strategic plan from which to base the annual work programmes.

6.9. The Science & Innovation programme (Annex E) has initiated a range of summer monitoring programmes during the period including swim spot monitoring, invertebrate monitoring and additional lake monitoring. Over the reporting period there has been several items to Council in relation to the groundwater research programme including the PFAS item and the National Pesticides Survey item. A comprehensive report on the drinking water research programme has also been provided. The climate change research programme has contracted the development of a Regional Greenhouse Gas Inventory to further understand the contributions of various activities in the region to greenhouse gas emissions. This study will be completed at both a district and regional scale. To increase the communication around Horizons' climate change research programme additional material has been added to Horizons' website as outlined in the Annex.

7. SIGNIFICANCE

7.1. This is not a significant decision according to the Council's Policy on Significance and Engagement.

Logan Brown
FRESHWATER & PARTNERSHIPS MANAGER

Rod Smillie
BIODIVERSITY, BIOSECURITY & PARTNERSHIPS MANAGER

Abby Matthews
SCIENCE & INNOVATION MANAGER

Jon Roygard
GROUP MANAGER NATURAL RESOURCES & PARTNERSHIPS

ANNEXES

A Freshwater & Partnerships Progress Report
B Biosecurity Animals Progress Report
C Biosecurity Plants Progress Report
D Biodiversity Progress Report
E Science & Innovation Progress Report
F Call for information on the use of Brodifacoum as a vertebrate toxic agent

FRESHWATER & PARTNERSHIPS

1 ACTIVITY OVERVIEW

1.1.1 Horizons' Freshwater & Partnerships Team works closely with other Horizons teams and people external to the organisation, to implement water quality and aquatic habitat improvement works.

1.1.2 The team draw on the scientific monitoring work carried out by Horizons and other agencies to prioritise and focus implementation efforts. The programme actively seeks funding from other sources, allowing the acceleration of works. Activities include riparian fencing and planting for water quality improvement and fish habitat enhancement, the identification and enhancement of whitebait spawning habitat and fish passage improvement, sewage treatment plant upgrades, work with horticulture growers and lake weed harvesting.

1.1.3 The Freshwater and Partnerships Activity is presented in six sections:

- The Regional Freshwater programme
- The Manawatu Accord/ Manawatu FIF project;
- The Whangaehu Catchment FIF project
- The Lake Waipu (Rātana) FIF project; and
- The Lake Horowhenua Accord & FIF project; and
- Freshwater improvement work with horticulture growers.

Annex A

Item 7

Annex A

2 ANNUAL PLAN TARGETS

2.1.1 The annual plan targets are aggregated in Table 1 below and shown individually in the sections below. Overall the programme has achieved some targets already and is on track to meet all of its targets. Most aspects of the programme are oversubscribed this year and work is being allocated into next financial year. A map of the work allocated for this year is provided in Map 1.

Table 1: Freshwater & Partnerships programme progress on the 2019-20 Annual Plan targets as at 31 December 2019. NB: the reporting targets to provide Council annual reports on serious projects are not reported on here as they were provided in Environment Committee reporting in August 2019[1,2]

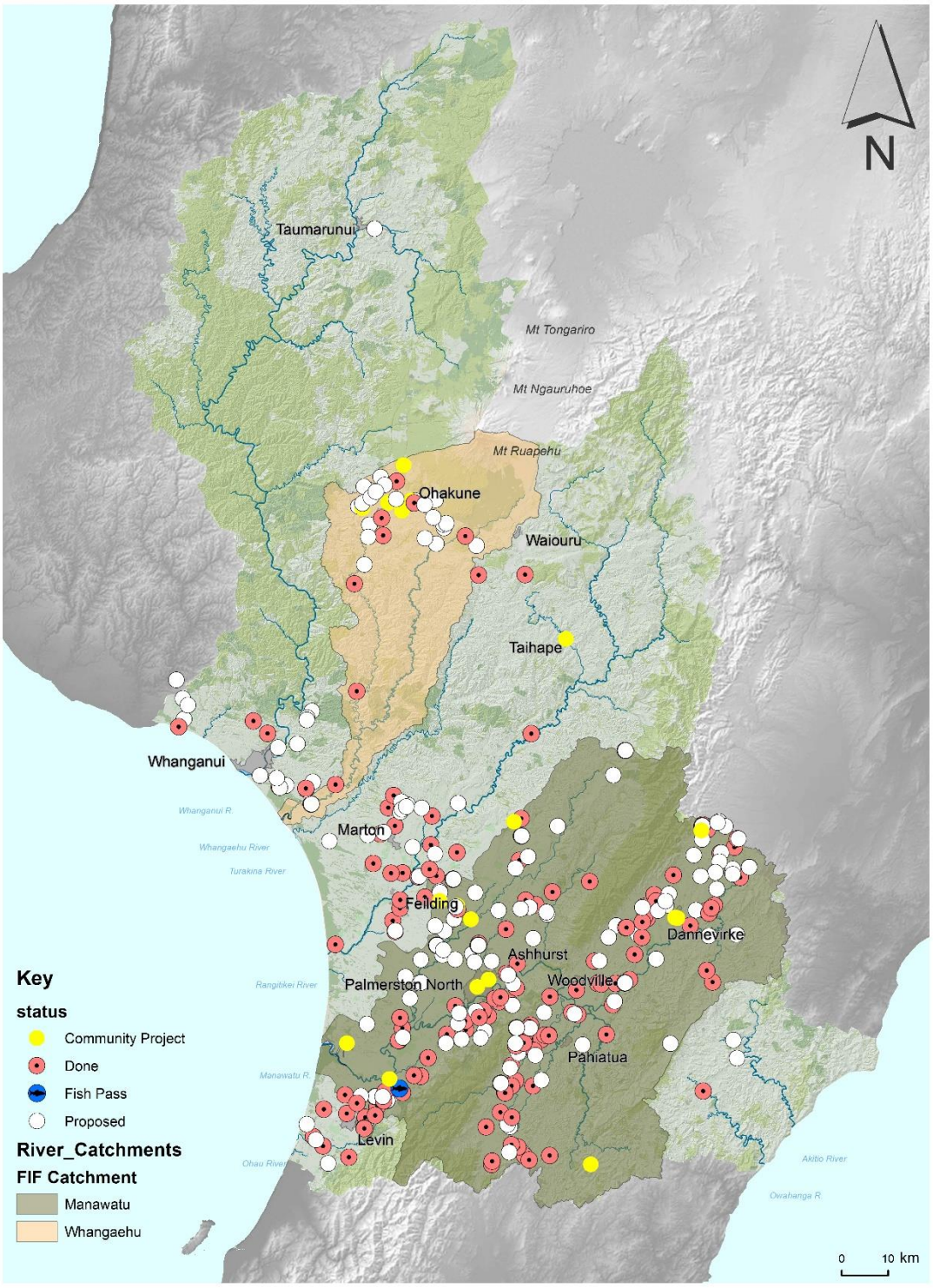
	Riparian fencing (kms)				Riparian planting			
	Target	Complete	Allocated	% complete	Target	Complete	Allocated	% complete
Regional	12	4.585	27.784	38%	20,000	16,133	43,375	81%
Manawatū	50	26.320	94.823	53%	40,000	70,506	105,080	176%
Whangaehu	17	7.332	39.095	43%	3,333	0	8,515	0%
Total[3]	79	38.237	161.702	48%	63,333	86,639	159,970	136%

	Fish passes				Community projects			
	Target	Complete	Allocated	% complete	Target	Complete	Allocated	% complete
Regional	1	1	2	100%	1	1	2	100%
Manawatū	4	0	4	0%	9	0	14	0%
Whangaehu	2	0	2	0%	4	0	6	0%
Total[3]	7	1	8	14%	14	1	22	7%

[1] http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Environment-Committee-2019-14-08/19118%20Natural%20Resources%20%20Partnerships%20Report.pdf

[2] http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Environment-Committee-2019-14-08/19118%20Annex%20A%20Freshwater%20Activity.pdf

[3] NB: The totals in these target tables represent an overall total and achieving these totals does not necessarily mean all targets have been met, as it is the individual targets that are in the Annual Plan.



Freshwater Programme January 2020 Map prepared by L Ferguson, NRP Group on 9 January 2020

Map 1 Locations of Freshwater Grants allocated and completed in 2019-20, including the Regional, Manawatū and Whangaehu programmes. Each point on the map represents one fencing, planting, fish pass or community project.

Item 7

Annex A

3 REGIONAL FRESHWATER PROGRAMME

3.1 Programme Overview

3.1.1 This programme focuses on the protection and enhancement of waterways across the region, excluding the Manawatū and Whangaehu FIF projects. The main component of the Regional Freshwater Programme is supporting stock exclusion from waterways via Freshwater Grants, advice and education, riparian enhancement and planting where desirable, aquatic habitat enhancement and supporting industry and community-led initiatives.

3.2 Annual Plan Targets

3.2.1 A summary of progress against the Annual Plan targets is provided in Table 2.

Table 2 Progress reporting for Regional Freshwater programme Annual Plan targets for 2019-20.

	Target	Allocated	% allocated	Completed	% completed	Status
Stream fencing	12 km	27.784	232%	4.585	38%	On track
Riparian planting	20,000	43,375	217%	16,133	81%	On track
Fish passes	1	2	200%	1	100%	Completed
Community projects	1	2	200%	1	100%	Complete

3.3 Activity Update

3.3.1 Any new enquiries and applications are being pushed into the new financial year. Budget constraints and staff capacity mean that no new works can be signed up for completion in this financial year.

Dudding Lake

3.3.2 After the discovery of grass carp in Dudding Lake, near Whanganui, a further survey was undertaken by NZ Waterway Restoration to estimate the number of grass carp that could be present in the lake. Monitoring was completed over two nights was undertaken during the week starting 16 September 2019 with four grass carp, 145 perch, 29 goldfish and four shortfin eels captured. The team from NZ Waterway Restoration estimated that the likely number of grass carp in the lake was 10. This information has been provided to the expert working group that was pulled together to develop restoration options for the lake, which will develop an updated set of conclusions and potential restoration options based on currently available information.

3.3.3 Coastal lakes and outlets

3.3.4 The Horizons region is home to 57 coastal lakes, some of which had weirs installed on their outlets to maintain water levels and the Freshwater team are undertaking a stock take of the state of the outlet structures from these lakes. This includes visiting all lakes that have identifiable outlets and documenting the type of outlet i.e. natural, culvert or weir and its current state. Initial work suggests that a number of lakes have weirs that are at risk of collapsing and for some of the dune lakes this may result in the loss of the lake due to their shallow nature e.g. Lake Kaitoke. Once the stock take is completed the results will be reported to Council.

Fish passage

3.3.5 The Akitio River has two significant weirs on the mainstem which effectively prevent the migration of the majority of fish species into the Akitio catchment, especially given the placement of the lower weir in the tidal zone of the river. The potential removal of these weirs would open up the entire catchment to all migratory fish species (except to the area above the natural barrier in the headwater of the Waihi Stream - the Waihi Falls), which would bring significant benefit to native fish populations in the Akitio catchment.

3.3.6 It was identified that removing the two weirs on Akitio River would significantly benefit fish passage into the river. During the reporting period a site visit was undertaken to the two weirs with a geomorphologist from Tonkin and Taylor to look at potential effects if the weirs were to be removed. A report outlining some potential effects and recommended monitoring to further inform these effects prior to and after their potential removal is due in the new year. A salt water wedge investigation is being completed in January 2020 with NIWA to see if the wedge reaches the base of the lower weir. The lowest weir in the catchment was originally installed to prevent salt water migrating inland causing water to become unsuitable for stock. The base of the weir definitely experiences tidal fluctuations but it is unknown if the salt water pushes this far back inland. Depending on the answer from this work, it may alleviate some of the concerns that surrounding landowners have around their ability to continue to take stock water.

3.3.7 During the reporting period the team meet with Ruapehu and Rangitikei district councils' roading representatives to discuss fish barriers on the roading network that they administer. Staff are working with these Councils to develop a template that will allow them to assess fish passage at culverts as part of their maintenance checks. Once these have been completed they will work with Horizons to prioritise fixes to enable fish passage.

Figure 1: Akitio weirs – left, the rabbit weir (NB no water flows over the weir during low flows, only under it) and right, the salt water wedge weir.

3.3.8 During the reporting period Horizons and Whanganui District Council representatives met to discuss improving fish passage at a newly installed culvert on the Awarua Stream, which flows beneath Wikitoria Rd at Putiki, Whanganui. Both the existing and now new culvert are in the tidal zone of the Awarua Stream, and therefore there are high numbers of whitebait downstream of culvert, evidenced by the number of whitebaiters downstream of the culvert. The onsite meeting resulted in an agreement to install a "leaky weir" consisting of large rocks being placed approximately 20 metres downstream to allow the stream to back up, flooding the culvert. Horizons conducted pre- and post-weir installation monitoring with results indicating an improvement in the ability of migratory galaxiids (whitebait) to swim upstream through the culvert.

Figure 2: Awarua Stream fish passage restoration by culvert replacement. Photo on the left taken in 2013 and the right in December 2019 after replacement of the culvert and installation of a leaky weir downstream of the culvert.

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Annex A

4 MANAWATU RIVER ACCORD/FIF PROJECT

4.1 Activity Overview

4.1.1 The Manawatū River Leaders' Accord Action Plan includes an array of activities related to improving water quality, to achieve the goals of the Accord. This activity funds works to improve water quality in the Manawatū Catchment as part of the Accord, including excluding stock from streams, riparian planting, improving fish passages and supporting community projects.

4.1.2 During this financial year and the following three years the targeted rate is to be used as Horizons' contribution to the Manawatū Catchment Freshwater Improvement Fund project that is managed by Horizons Freshwater and Partnerships Team.

4.2 Annual Plan Targets

4.2.1 A summary of progress against the Annual Plan targets is provided in Table 3.

Table 3 Progress reporting for Manawatū Freshwater Improvement Fund Annual Plan targets. The totals for completed work are as at 31 December 2019.

	Target	Allocated	% allocated	Completed	% completed	Status
Stream fencing	50km	94.823	190%	26.320 km	53%	On-track
Riparian planting	40,000 plants	105,080	263%	70,506	176%	Target achieved
Fish passes	4	4	100%	0	0%	On track
Community projects	9	14	156%	0	0%	On track
Annual report	1	1	100%	1	100%	Target achieved

4.3 Activity Update

4.3.1 Any new enquiries and applications are being pushed into the new financial year because budget constraints and staff capacity mean that no new works can be signed up for completion in this financial year.

4.3.2 During the November-December reporting period staff attended a plantain field day hosted by DairyNZ as part of a Sustainable Farming Fund project in the Tararua district. The field day provided some initial results from the work occurring as part of the project, looking at the potential for plantain to reduce Nitrogen leaching from farmland.

4.3.3 A Manawatu Accord Leaders Forum was held on 12 December 2019 with two main presentations, one from Fonterra about some of its environmental initiatives and the other from the New Zealand Transport Authority providing an update on the Gorge replacement project. In addition, the forum welcomed MidCentral District Health Board as a new member.

5 WHANGAEHU FIF PROJECT

5.1 Activity Overview

5.1.1 This programme focuses on the delivery of the Ngā Wai Ora o Te Whangaehu FIF project, which focuses on the protection and enhancement of waterways within the Whangaehu Catchment. The main components of the programme are supporting stock exclusion from waterways, riparian enhancement and planting where desirable, aquatic habitat enhancement and supporting industry and community-led initiatives. The following report provides the annual summary to Council on the Ngā Wai Ora o te Whangaehu Awa Freshwater Improvement Fund project as required by a Long-term Plan target.

5.2 Annual Plan Targets

5.2.1 A summary of progress against the Annual Plan targets is provided in Table 4.

Table 4 Progress reporting for Whangaehu Freshwater Improvement Fund Annual Plan targets.

	Target	Allocated	% allocated	Completed	% completed	Status
Stream fencing	17 km	39.095	230%	7.332	43%	On track
Riparian planting	3,333 plants	8,515	255%	0	0%	On track
Fish passes	2	2	0%	0	0%	On track
Community projects	4	6	150%	0	0%	On track
Annual report	1	1	100%	1	100%	Target achieved

5.3 Activity Update

5.3.1 During the November-December reporting period Central YMCA withdrew the Community project for its camp at Raukawa Falls, Kakatahi, due to the Mangawhero slip blocking SH 4 (the Parapara) and a change in caretakers at the site leaving them without the capacity to be able to complete the works.

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Annex A

6 LAKE HOROWHENUA ACCORD AND FIF PROJECT

6.1 Activity Overview

6.1.1 The Lake Horowhenua Accord is a partnership between the Lake Horowhenua Trust, Horowhenua Lake Domain Board, Horowhenua District Council, Horizons Regional Council and the Department of Conservation. Its purpose is to address water quality issues in Lake Horowhenua.

6.1.2 The FIF project is led by the Horowhenua II Part Reservation Trust (the Lake Horowhenua Trust). The project is in three parts comprising stormwater upgrades, cultural monitoring and groundwater research. Horizons' involvement is a sub-project related to groundwater research. The sub-project seeks to develop a better understanding of the water balance of Lake Horowhenua and the groundwater quality entering the lake to inform water allocation and water quality management decisions.

6.2 Annual Plan Targets

6.2.1 A summary of progress against the Annual Plan targets is provided in Table 5. An annual report was provided to Council regarding Lake Horowhenua in September 2018[4] and further updates have been provided to subsequent Environment Committee meetings.

Table 5 Progress reporting for the Lake Horowhenua Accord Annual Plan Targets.

Annual Plan target	Year to date	Target	% Complete	Status
Annual report to Council on lake restoration activity including the Freshwater Improvement Fund project for Lake Horowhenua.	0	1	0%	On track

6.3 Activity Update

6.3.1 The Freshwater Improvement Fund project was intended to start on 1 July 2018 but was delayed due to some legal matters relating to the confirmation of the trustees after the last Lake

[4] http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Regional-Council-Meeting-2018-25-09/18157%20Lake%20Horowhenua%20Update.pdf; the appendices to this report can be downloaded at the following link http://www.horizons.govt.nz/calendar/regional-council-meeting-2018-25-09.aspx

Horowhenua Trust elections. However, a meeting held prior to Christmas has decided to proceed with the project, with a project manager to be appointed by March 2020.

6.3.2 During the November-December 2019 reporting period the access road for the Lake Horowhenua boat ramp was completed. This work was able to be completed after the Maori Appellate Court hearing dismissed the appeal to the Court, reconfirmation from the Lake Trust to complete the works, permissions from Kohuturoa Marae, and following the guidance of Heritage New Zealand to ensure the works were completed without the need for an authority to disturb. The completion of this work provides a further step in progressing weed harvesting at the lake. The next step is the construction of the boat ramp.

6.3.3 During the reporting period weed control was completed on the area between the access track and below Kohuturoa Marae. This weed control will continue until winter 2020 and will enable the planting of the bank with native vegetation as agreed with the marae, as a part of the package of restoration works for Lake Horowhenua.

7 FRESHWATER IMPROVEMENT WORK WITH THE HORTICULTURAL SECTOR

7.1 Activity Overview

7.1.1 Building on previous work with the Tararua Growers Association as part of the Freshwater Clean-Up Fund project, Horizons established new funding of $70,000 per year for work with the horticulture sector to reduce nutrient and sediment loss from horticulture operations. This funding is being used in part to contribute to a Sustainable Farming Fund (SFF) project future-proofing vegetable production.

7.1.2 The balance of the funding will be prioritised for implementation of work to reduce nutrient and sediment losses from horticultural operation, including establishment of sediment traps, similar to the way freshwater grants are paid for fencing and planting of waterways. This funding may be utilised to design the proposed interventions.

7.2 Annual Plan Targets

7.2.1 A summary of progress against the Annual Plan targets is provided in Table 6.

Table 6 Annual Plan performance measures for Freshwater Improvement Work with the horticulture sector.

Annual plan target	Year to date	Target	% Complete	Status
Annual report on work with the	0	1	0%	On track

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horticulture sector through the freshwater and partnerships programme to improve water quality.				

7.3 Activity Update

7.3.1 During the November-December reporting period staff have received enquiries about the potential construction of a wetland/sediment trap in the Ōhau catchment and any advice/assistance that Horizons might be able to contribute. Staff are in the process of working with the landowner and will be engaging an expert in constructed wetlands to upskill staff in constructed wetlands, the theory behind them and appropriate designs. The farm will be used as a case study along with another farm in the Tararua district.

Future-proofing vegetable production

7.3.2 This project[5] is mainly funded through the Sustainable Farming Fund (SFF)with a number of other co-funders, including Horizons. It is not specific to the Lake Horowhenua catchment, although a lot of the ground work and trials are to occur within the catchment where relationships have already been established through other work programmes such as the Clean-Up Fund. The intent is that once these projects have been trialled in the Lake Horowhenua catchment they can be moved out into other parts of Horizons' region. This project has three main deliverables:

- Guidelines for Novel Nitrogen Recapture Techniques;
- Updated Good Nutrient Management Practices; and
- Common Pool Resource Management, which is about getting change for the better happening on farms.

7.3.3 During the previous reporting period, the first quarterly report for year two from LandWise was submitted to the Ministry of Business, Innovation and Employment (MBIE), as administrators of the SFF. A copy was also provided to Horizons. A brief summary follows:

- Further monitoring has been established in collaboration with Horizons. This monitoring has been undertaken throughout the Arawhata Stream network to try to identify nutrient "hot spots", to help identify spots were bioreactor/s could be installed in the catchment;
- Work is continuing on the "Community Management of Common Pool Resources" project with much discussion occurring outside of the project;

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[5] http://www.landwise.org.nz/projects/future-proofing-vegetable-production/

- Workshops were held covering soil sampling, soil test results and fertiliser in Levin and Gisborne on 16-17 July 2019; and
- Work has continued on the calibration of fertiliser application equipment and a range of grower trials focusing on matching fertiliser usage with crop demand for nutrients.

8 LAKE WAIPU FIF PROJECT

8.1 Activity Overview

8.1.1 The Lake Waipu FIF project specifically seeks to remove the discharge into the lake from the Rātana Wastewater Treatment Plant. This is to be led by Rangitikei District Council (RDC) as the consent holder and Horizons' project relates to monitoring the effect of the removal of discharge from the lake and to understand the lake's internal processes. The aim is to develop a restoration plan that includes addressing the legacy issue resulting from the current discharge. The following report provides the annual summary to Council on the Lake Waipu FIF project as required by an Annual Plan target.

8.2 Annual Plan Targets

8.2.1 A summary of progress against the Annual Plan targets is provided in Table 7.

Table 7 Annual Plan performance measures for Freshwater Improvement Fund for Lake Waipu.

Annual plan target	Year to date	Target	% Complete	Status
Annual report to Council on the Waipu Catchment Freshwater Improvement Fund project	1	1	100%	Target achieved

8.3 Activity Update

8.3.1 This project officially commenced on 1 July 2019. A draft of a sub-contract between Rangitīkei District Council (RDC) and Horizons has been provided to RDC for feedback.

8.3.2 Horizons has installed a continuous monitoring buoy on the lake and is collecting data on temperature, dissolved oxygen, pH, conductivity and turbidity at 15-minute intervals which is being telemetered back to Horizons office in Palmerston North.

8.3.3 RDC is investigating potential discharge-to-land locations in close proximity to the waste water treatment plant. This may involve the purchase or long-term lease of land.

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8.3.4 The National Institute of Water and Atmospheric Research (NIWA) will be undertaking a kakahi (freshwater mussel) survey of Lake Waipu in February 2020, with a specific focus on whether the kakahai population is recruiting.

8.3.5 A Governance Group meeting was held on 12 December 2019.

Logan Brown
FRESHWATER & PARTNERSHIPS MANAGER

Jon Roygard
GROUP MANAGER NATURAL RESOURCES AND PARTNERSHIPS

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BIOSECURITY ANIMALS

1 ACTIVITY OVERVIEW

1.1.1 The Biosecurity Animals Activity delivers work across programmes to protect both production and biodiversity values including:

- The Possum Control Programme;
- The Rook Control Programme; and
- The Amenity Pests Programme

1.1.2 The Activity links with a range of national and regional policies and strategies including the Biosecurity Act 1993, National Policy Direction 2015 and Regional Pest Management Plan 2017-2037.

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2 ANNUAL PLAN TARGETS

2.1.1 A summary of the Annual Plan targets and progress to date is provided in Table 1.

Table 1 Progress reporting for the Biosecurity Animals Annual Plan targets for 2019-20.

Performance measure/ contract target	Target	Progress
Possum densities are maintained at/below 10% residual trap catch (RTC) in all existing/new possum control operations. This is to enhance production, biodiversity, disease protection, and amenity values.	<10% RTC	On track, averaging 2.8% RTC to date this year in the areas monitored post control this financial year.
Additional ha included in [the Possum] Control Programme	57,441 ha	On track, with 10,460 ha completed; 16% of total new area planned this year.
All known rookeries are treated annually to reduce crop losses and damage.	1	On track, surveillance underway.
Provide an urban/peri-urban animal pest management service to assist ratepayers with specialist advice and equipment. All enquiries responded to within two working days.	1	On track, with 328 enquiries during this period bringing the total to 597 for July to December. All enquiries dealt with within two working days.

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3 POSSUM CONTROL PROGRAMME

3.1 Programme overview

3.1.1 The Manawatū-Whanganui Region possum control programme aims to maintain the possum population below a target of 10% residual trap catch (RTC) within the area of the programme, consistent with the Regional Pest Management Plan targets. The possum programme started in 2006, covering 70,000 ha and has grown every year to include more land. Horizons has initiated control in some areas and in others has taken on new areas where OSPRI had initiated possum control for the control and eradication of Bovine TB. Horizons has, and continues to absorb the areas into its possum control programme following OSPRI ceasing control of an area. The Horizons programme is delivered by a combination of council staff (approximately 65%), and external contractors (approximately 35%).

3.1.2 In 2019-20 the voluntary possum control programme spans a total area of 1,568,248 ha (approximately 70% of the Horizons region). The total possum control area continues to grow annually as Horizons takes over where OSPRI achieves freedom from Bovine TB in areas it has previously controlled and then cease further pest control. Within the area of the programme in 2019-20:

- Landowners have opted out of 79,174 ha (5%) of the programme;
- 66,718 ha (4.3% of the total area) not previously control by Horizons (ex-OSPRI) is being added to the programme Note: this includes 9,277 ha carried forward from last year;
- 865,655 ha (55.2% of the total area) is scheduled for maintenance control, i.e areas that previously have been under Horizons control and will receive bait station fills this year;
- 556,701 ha (35.5%) of the programme area is being deferred from control due to low possum abundance indicated by the monitoring programme and the projected possum abundance derived from a population modelling app (PosSim) that assists programme management decision-making.

3.1.3 The possum control programme as a whole is made up of a total of 153 Possum Control Operations (PCOs). Within each year the monitoring programme measures possum abundance in 25% of the PCOs to inform decision-making about areas for control, and over a four-year period each of the PCOs is monitored at least once. The growing area of the programme also increases the monitoring programme requirements to ensure each PCO is monitored at least once every four years.

3.1.4 Of a possible 153 PCOs, 99 are being worked this year, with 54 being deferred due to low possum abundance. Of the 99 PCOs being worked, 64 are being completed by Horizons staff and 35 by external contractors.

3.1.5 As outlined in the Operational Plan the team are reviewing each PCO being worked this year, analysing results and installing further bait stations where required. The team are also seeking landowners who have previously opted-out of the voluntary programme to persuade them to opt-in, to provide more complete coverage of the region. If a significant number opt-in, the total number of PCOs completed over the year may reduce. A further change this year is enabling the team to identify and action second fills of bait stations where high possum abundance is encountered.

3.1.6 Landcare Research has been engaged to provide advice regarding the thresholds of possum abundance linked with the size and type of habitat that could trigger Good Neighbour Rules in the Horizons Regional Pest Management Plan (RPMP) 2017-2037. This will provide some guidelines that will assist when assessing adjoining landowners with higher possum abundance than their neighbouring properties, and the level that will trigger a regulatory response. This advice is due to be received in April-May 2020.

3.2 Activity update

Possum Control

3.2.1 The 2019-20 programme is progressing well, with 34 of the 99 PCOs (34%) completed (Table 2 and Map 1).

3.2.2 Overall, 32 (34%) of the PCOs to receive treatment have received treatment and a further 14 (14%) have been started as at 31 December. The numbers indicate 34% were complete at a point half-way through the year so the programme is on track. The external contractors align their contribution to the programme to start later and are contracted to complete by the end of May. This reflects the bulk of the effort being put in over spring/summer/autumn.

3.2.3 Horizons staff have met with Department of Conservation (DOC) staff to discuss further alignment of the two agencies' possum control programmes.

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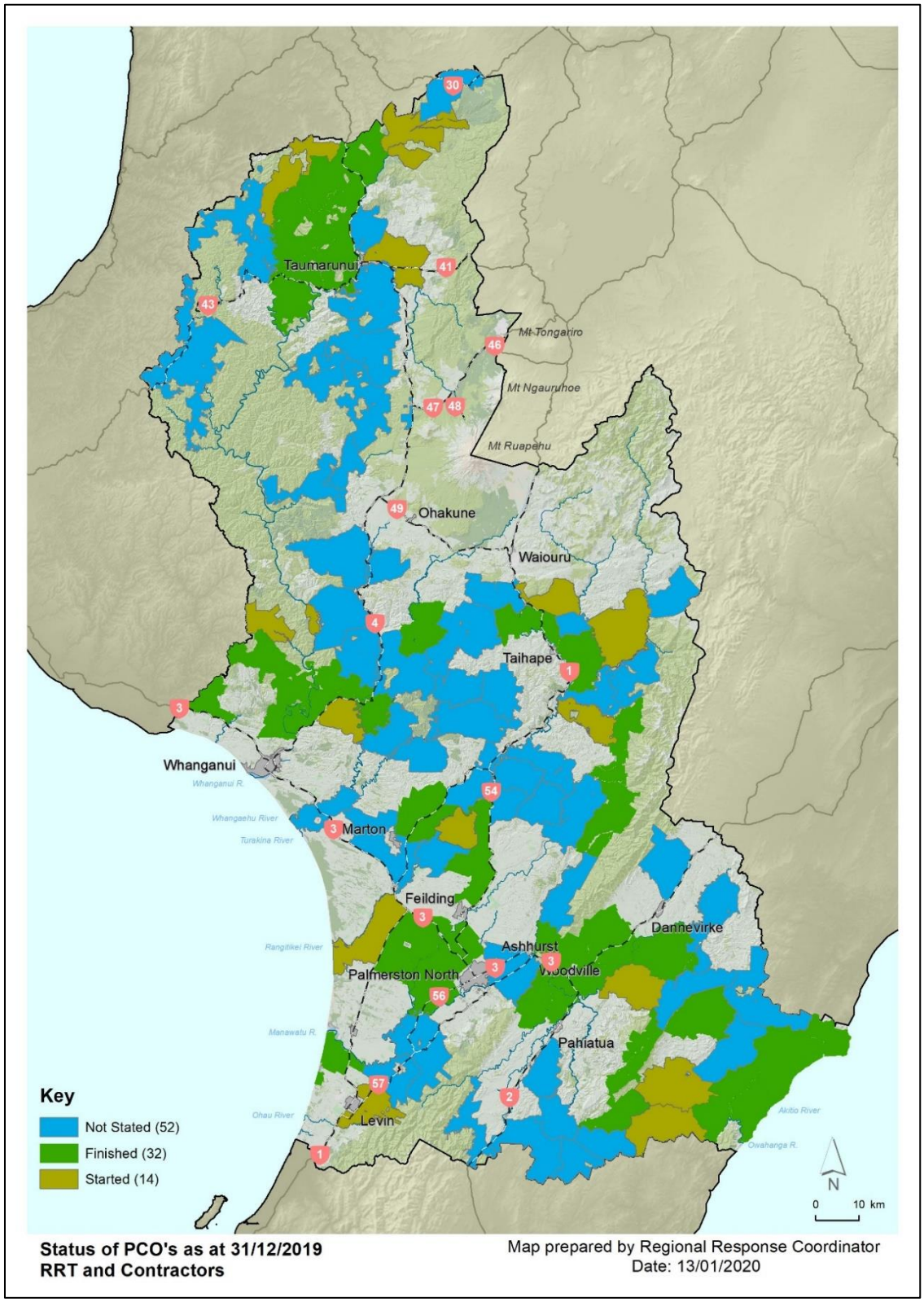
Table 2 Progress reporting for the Possum Control Programme against Operational Plan targets.

Measure	Reporting Period				Total	Target	% Complete	Status at 31/12/2020
	Period 1	Period 2	Period 3	Period 4				
Regional Response Team								
PCOs completed	12	12			24	64	39	On track
New hectares completed	1,460	9,000			19,460	43,765*	44	On track
External Contractors								
PCOs completed	2	6			8	35	26	On track
New hectares completed	0	0			0	22,953	0	On track
Total PCO Programme								
PCOs completed	14	18			32	99	34	On track
New hectares completed	1,460	9,000			19,460	66,718*	30	On track

*Includes 9,277 ha of work carried over from last year.



Map 1: Status of current Possum Control Operations as delivered to 30 October 2019.

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4 POSSUM MONITORING

4.1 Programme Overview

4.1.1 The possum monitoring programme aims to monitor all of the PCOs over a four-year period to provide an index of possum abundance. All of the new areas of control receive pre- and post-control monitoring to establish if they actually do require control and, if they are controlled, the post- result helps determine a measure of population reduction from the control. This measure of reduction helps refine a possum population model (PosSim) that is used to guide the selection of low possum population PCOs for deferral.

4.1.2 The monitoring programme operators put out 25 lines of 10 wax-tags (Photo 1) per PCO and the number of bite marks gives an index of the possum abundance. The monitoring lines are randomly selected to remove bias and provide a robust estimate. The monitoring is predominately done by an independent contractor who is not involved in any of the control work. Some of the internal team monitor the possum control work completed by external contractors.

Photo 1: Wax-tag monitoring device as set in the field. The green square is luminous to attract possum attention at night.

4.2 Activity Update

4.2.1 The monitoring programme is progressing well with 35 (61%) of the planned 56 monitors now completed. Originally 56 monitors were programmed to be undertaken in the 2019-20 year; however this was recently increased by one to facilitate a trial at Mokai to assess the effectiveness of the new Double Tap Pellet Bait. The total monitoring operations now include 40 PCOs for maintenance control, 12 pre- and post-control operations for new areas coming

into the programme, four operations that were carried over from last year and the Mokai PCO' where the bait trial is being carried out. The monitoring programme remains on track to meet delivery milestones for the year. Monitoring to date has returned an index of 2.8% RTC for the 35 areas monitored post-control.

5 ROOK CONTROL PROGRAMME

5.1 Programme overview

5.1.1 Rooks are an eradication species in the Horizons RPMP 2017-37 and the region is surveyed annually for active rookeries. A contractor is engaged to aerially poison the nests to control both chicks and adult rooks.

5.2 Activity update

5.2.1 Rookeries with nests were located in September and the aerial control programme was completed in October. Nests were treated with a contact toxin by an operator slung from a helicopter and there was a decrease of approximately 38% region-wide from the previous year with 94 active nests spread over 56 active rookeries.

5.2.2 In December the Woodville team responded to a call from a landowner with an estimated 150 rooks on a crop. The rooks were controlled by laying baits by hand and it is estimated that 130 individuals were killed.

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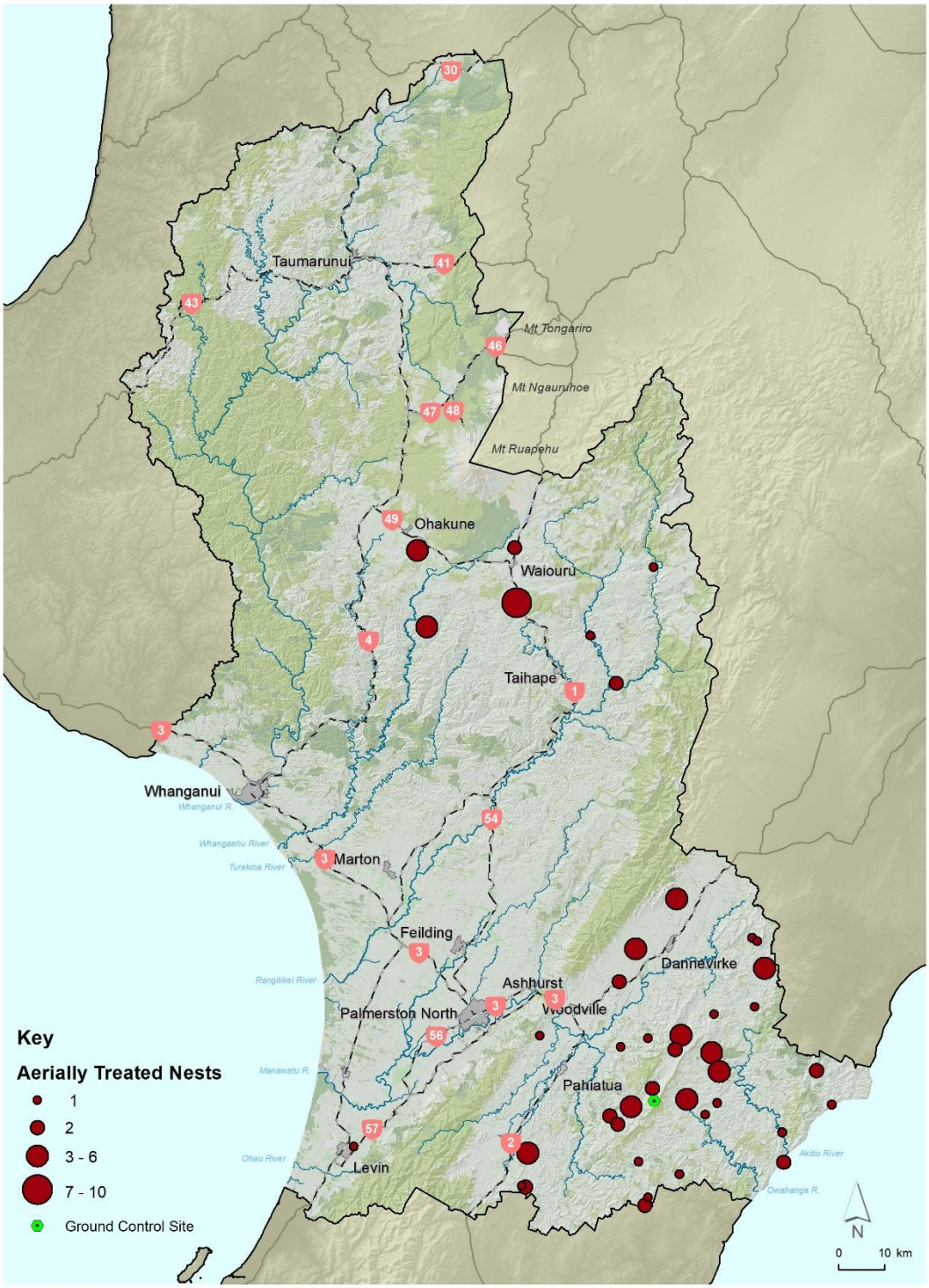

Aerial Rook Control 2019 - 2020
94 Active Nests AeriallyTreated

Map prepared by Regional Response Coordinator
Date: 13/01/2020

6 AMENITY PEST PROGRAMME

6.1 Programme overview

6.1.1 The amenity pest programme provides a pest animal advisory service for ratepayers with pest animal issues who ask for assistance. Horizons provides advice and in some cases we loan equipment for limited control to be undertaken.

6.2 Activity update

6.2.1 The amenity pest programme received 328 enquiries from the public during on how to deal with a wide range of pest issues. The total number of enquiries for 2019-20 now stands at 597. These enquiries are responded to within two working days of them being lodged and usually involve pests such as possums, rabbits, mustelids, rats, magpies and ants. Most enquiries are responded to with advice on controlling the pest and sometimes traps and devices are loaned for the control of the problem creatures.

7 REGIONAL PEST MANAGEMENT PLAN (RPMP)

7.1 Programme overview

7.1.1 As part of the Operational Plan for 2019-20 a project was included to investigate monitoring for wallabies in the region to enable early detection of this exclusion pest (as identified in Horizons Regional Pest Management Plan 2017 to 2037).

7.1.2 Wallabies (Photo 2) are not present in the region, unless by permission of Horizons and then are subject to strict conditions. In neighbouring regions they are considered significant pests. During the year the team will be investigating how Horizons can effectively, proactively survey for incursions, and develop response plans should an incursion occur. The results of this work will be reported to Council.

Photo 2: Dama wallaby, an exclusion pest in Horizons Regional Pest Management Plan.

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7.2 Review of Brodifacoum

7.2.1 During November 2019 the Ministry of Primary Industries (MPI) initiated a review of the use of brodifacoum as a vertebrate toxic agent, and invited industry stakeholders to respond with their views on the use of this chemical for the control of pests for which it is registered. Horizons currently uses brodifacoum bait in the PCO programme and can use up to 35 tonnes of bait annually. Approximately 400 grams of bait is used at each possum bait station for the control of possums and rats. The suggested changes to the use of brodifacoum by MPI would add significant costs to the PCO programme if implemented. The initial estimate is that the additional measures could double the cost to deliver the current PCO programme, from $4m to $8m a year. Horizons' approach to safely using brodifacoum is outlined in the submission. The submission from Horizons is attached for your information. Staff will be awaiting MPI's response in 2020 and will keep Council informed of progress.

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BIOSECURITY PLANTS

1 ACTIVITY OVERVIEW

1.1.1 The biosecurity plants programme seeks to safeguard the regional economy and environment from damage caused by harmful pest plants, and to prevent the transformation of productive land and the region's natural biodiversity by invasive plants. This is achieved by delivering the following four programmes:

- Incursion response - Responding to 'new to the region' incursions and assisting in transitioning to long-term management if appropriate;
- Regional Pest Management Plan implementation - Implementing pest plant management programmes described in Horizons' Regional Pest Management Plan (2017) (RPMP);
- The Biological control programme - Undertaking biological control agent programmes including supporting community-led projects, distribution and monitoring of agent populations across a wide range of pest plant species; and
- Advice, promotion and awareness - Providing advice and information to the public about best practice pest plant control and behaviour to prevent the spread of pest plants

1.1.2 The pest plant management activity links with a range of national and regional policies and strategies as further outlined in the Natural Resources and Partnerships Group's Operational Plan.

2 ANNUAL PLAN TARGETS

2.1.1 A summary of the Annual Plan targets and progress to date is provided in Table 1 below. Progress reporting is limited at this time of year as many of the programmes are mostly delivered during the summer period.

Table 1: Progress reporting for Biosecurity Plants Annual Plan targets for 2019-20.

Performance Measures for Levels of Service	2019-20	Progress to Date
Any exclusion category pest plants that are found in the region are promptly managed. Where exclusion category pest plants are found in the region, an initial response plan will be completed within 2 weeks and then enacted (if not enacted before 2 weeks).	Number of response plans required. Percentage where a response plan has been produced within 2 weeks (target 100%) Number of response plans enacted with their specified timeframes (target 100%)	None required
Number of managed sites at zero-levels increases for pest plants identified for eradication in the Regional Pest Management Plan.	Overall % of managed sites at zero-levels increases by 10%	75% at start of the year[6].
Number of managed sites at zero-levels increases for pest plants identified as progressive containment - mapped in the Regional Pest Management Plan.	Overall % of managed sites at zero-levels increases by 10%	78% at start of the year
Financially support the national bio-control agent development programme and report annually to Council on this programme.	Financial support provided and annual report to Council	Biocontrol programme underway with planning for old man's beard (OMB) gall mite release
Monitoring of some released biological agents will be completed to assess establishment and host damage (using the national protocol).	20 assessment plots will be monitored	Sites assessed for broom gall mite impact and tutsan agent establishment.
Pest plant enquiries received are responded to within 3 working days.	95% of enquiries will be responded to within 3 working days	100% of enquiries responded to within three working days.

[6] The Annual Report to Environment Committee is available at: http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Environment-Committee-2019-14-08/19118%20Annex%20C%20Biosecurity%20Activity%20Plants.pdf

3 INCURSION RESPONSE

3.1 Programme overview

3.1.1 The Incursion Response programme aims to provide immediate and effective assistance for all national or regional biosecurity incursions and any transitions to long-term management. This is a function detailed by a Memorandum of Understanding between Ministry for Primary Industries (MPI) and Regional Councils.

3.2 Activity Update

3.2.1 November-December was a busy period of small-scale incursion activity. We were alerted to a compliance breach of the pea weevil controlled area notice in Greytown, where a gardener was found to be growing peas with pea straw. This had the potential to jeopardise the last year of the response due to the previous couple of years trap cropping not presenting pea weevil detections and national sampling of peas also showing no pea weevils.

3.2.2 Velvetleaf-infected paddocks were inspected for surveillance. A number of these paddocks are in crops and were to be further inspected in late summer using a trained dog.

3.2.3 A live brown marmorated stink bug (Photo 1) was handed into the Department of Conservation's Whakapapa information centre, and their staff contacted Horizons to alert the Ministry for Primary Industries and to ask what to do next. The lone adult was found by a tourist who had arrived from a known stink bug hot spot in the United States the previous day, and upon rolling out a sleeping bag for the first night camping in New Zealand was able to catch and bag it. The information centre staff placed the bug in the freezer and shipped it to MPI for identification. The MPI response was minimal as the discovery of a lone adult was considered very low risk. If an aggregation of 10 or more is discovered there is likely to be breeding potential and population establishment. The bug is not established in NZ but is widespread in the US, Europe and Asia and has the potential to damage the economy and become a household pest. It attacks a wide range of crops including kiwifruit, grapes, apples, citrus, stone fruit and corn. We encourage any sightings to be reported to MPI 0800 809 966.

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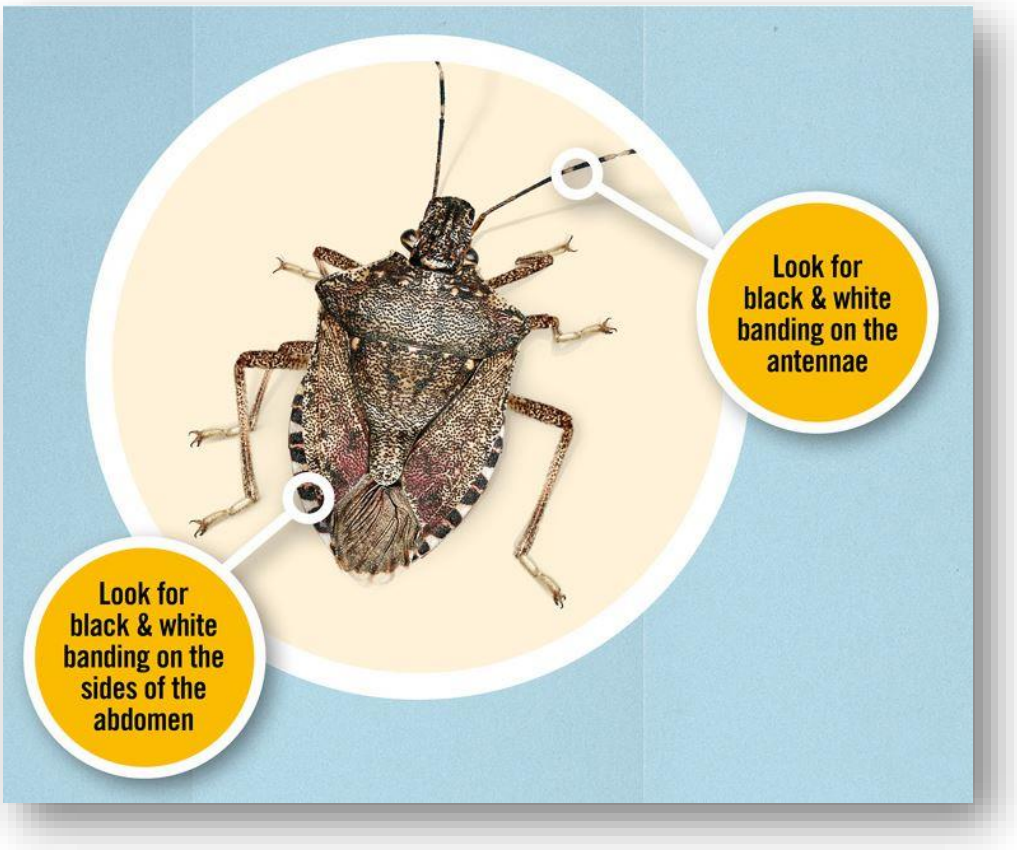

Photo 1 Brown marmorated stink bug, with diagnostic advice. (MPI)

3.2.4 Horizons facilitated the response to a new-to-our-region discovery of Chinese knotweed (*Persicaria chinensis*) (Photo 2). The plant is a rapid grower and if left unchecked will quickly smother most vegetation and is even known to out-compete Japanese knotweed. It is associated with herbal remedies and is known to be distributed via the Chinese community for culinary and cultural purposes. The sites were found by a Taranaki Regional Council staff member on holiday in Palmerston North. Horizons staff were alerted and visited the site to talk to the occupiers and assess the extent and likely control scenarios. MPI was informed as the plant is under a national eradication programme. One of the sites was on Palmerston North City Council reserve land adjacent to the original planting and with the assistance of a Chinese-speaking PNCC staff member and their parks team, MPI were able to organise control and undertake a track-and-trace of the pest's history which revealed no new sites.

Photo 2 Chinese knotweed with atypical leaf markings and stem form. (Stephen Thorpe; iNatualist)

3.2.5 Horizons was notified on 19 December of what has since been confirmed as the first discovery of sea spurge (*Euphorbia paralis)* on our west coastline. An amateur botanist discovered the plant in the Himatangi dunes and posted photos to iNaturalist, an online geospatial plant observation community. Members on the forum alerted MPI and DOC to the post and DOC informed Horizons. DOC retrieved the only known plant for formal identification prior to seeding and MPI are now leading any further activity in the response. Sea spurge is only known in New Zealand at two other sites, a Mokau site found at the same time as the Himatangi site and a larger and previously well-established site at Aotea Harbour in the Waikato. Sea spurge is a northern hemisphere plant which is causing major environmental challenges along the Southern Australian and Tasmanian coast due to the transformational change it causes to the coastal strip. An invader to the southern hemisphere, it appears to have been rapidly spreading since around the turn of the century. Since arriving in Perth in 1927 its population has expanded

and now a large infestation is spreading from Perth around the southern coast to Victoria and Tasmania. Australia is attempting to contain the spread but seed, which can survive for six years on the ocean currents, arrived on Lord Howe Island in 2004 and now is constantly threatening our coast line. Its white sap is toxic to humans and animals, making walking through sites dangerous, and transforms dunes with its vertical growth habit. It requires long-term control operations due to a 2m tap root. Sea spurge infestations have caused major environmental problems at many Australian beaches by displacing native plants and changing natural patterns of sand movement. MPI is the lead agency in the response to this incursion and Horizons may assist MPI and DOC with further survey.

Photo 3 Severe infestation of sea spurge at Wilson Promontory in Victoria: What New Zealand beaches could possibly look like in the future.

4 REGIONAL PEST PLAN IMPLMENTATION

4.1 Programme overview

4.1.1 The Biosecurity Plants activity is strongly linked to the delivery of Horizons' Regional Pest Management Plan 2017-37, which can be reached via the following link[7]. The activity reporting

[7] http://www.horizons.govt.nz/HRC/media/Media/Pests/2017-2037-Regional-Pest-Management-Plan.pdf

is arranged in sections as per the RPMP groupings for pest management programmes as outlined in Table 2 below. More information on these groupings is located on page 25 of the RPMP.

Table 2: Activity Summary for Biosecurity Plants.

Aim	Programme	Key Deliverables	YTD Progress
Preventing establishment	Exclusion Programme	Keep unwanted pest plants that are not present out of the region.	No plants were discovered for species targeted this period: Tussock Hawkweed.
Eradicating	Eradication Programme	Controlling and reducing the prevalence and extent of Eradication species.	Species targeted for control this period; alligator weed, blue passionflower, cathedral bells, Chilean rhubarb, climbing spindleberry, knotweed, nassella tussock, and woolly nightshade.
Rolling back	Progressive Containment Programme	To contain and reduce the geographic distribution of the pest to an area over time.	Species controlled this period; banana passionfruit, darwins barberry, evergreen buckthorn, moth plant, old mans beard, and pest pines.
Maintaining low densities	Progressive Containment – un-mapped.	Ongoing control and to reduce its impact and spread to other properties.	Inspections for production plants and responding to boundary complaints.

4.1.2 A paper on progress on the RPMP is scheduled for presentation to Council in March-April. This will update an assessment of the likelihood of achieving the outcomes identified for plant species included in the RPMP.

4.2 Activity Update

Preventing establishment - Exclusion programme

4.2.1 For those pests that are in New Zealand but not in our region, our goal is to prevent establishment. We aim to detect these pests before they become widely established in the region and facilitate a quick response through appropriate funding that will enable the control or management of these species on rateable land. There are 11 species in this category and Chilean needle grass is an example.

4.2.2 Tussock hawkweed is best searched for in Spring, and as the closest known site to our region is at the Lakes Reserve, Kuripapango, in the Kaweka Forest Park in the Hawkes Bay area. It has potential for incidental spread from trampers, campers etc. Two nearby camping locations in Horizons' region were assessed with no plants found this year.

4.2.3 Chilean needle grass is a serious pasture pest which injures livestock and severely limits the stock carrying capacity of infected land. Known from Hawkes Bay near Waipawa, it presents a high risk to our drier farming areas and hill country. Surveillance coincides with flowering from

November through February. Staff have been checking likely sites and will continue to engage with Hawkes Bay Regional Council staff regards spread minimisation and any new sites which may pose a greater distribution risk to farming in our region.

Eradicating – Eradication Programme

4.2.4 High-risk species that should be totally removed from the region are managed via the Eradication programme. There are 18 species in this category and at the start of the year our information reported that 75% of the 1,610 sites were at zero levels.

4.2.5 Staff have been searching for methods to deliver the best control with minimal collateral damage for the places they are located for some time. Many sites are inaccessible to ground contractors except for abseilers and the option of aerial treatment can be costly and may lead to off-target damage. We have used a drone operator against Darwin's barberry at Tongariro National Park and this year a local operator was engaged to control Chilean rhubarb on river cliffs. The drone was able to fly across a river and treat individual plants with a modified drone spraying system which applied herbicide directly to the plants in a quick and efficient manner. We were able to avoid health and safety issues due to the cliffs and cover a lot of sites in a short time.

Photo 4 Drone about to spray gunnera on cliffs along the Mangahao River (J Keast).

Rolling back - Progressive Containment Programme

4.2.6 Where population levels or difficulty and expense of control prevent achievement of a region-wide zero-density objective, high-threat pest plant species will be managed under a Progressive Containment objective. For each species managed this way, an active management zone is defined within which the pest plant species will be controlled wherever it is found, as per the Eradication designation

4.2.7 The Progressive Containment Programme is split into the species that are mapped (e.g. old man's beard) and the species that are un-mapped (e.g. gorse).

Progressive Containment - Mapped Species

4.2.8 Eleven progressive containment species fall into the mapped category (e.g. old man's beard). At the start of the year the data showed 78% of 4,369 sites were at zero levels in the actively managed zones for these species.

4.2.9 An assessment of old man's beard management options was completed and is a topic for consideration by Council at the 12 February Environment Committee meeting.

4.2.10 After a recent minor over-spray incident at an aerial control site, the pest plant team are developing a template of considerations when working within One Plan Schedule F Biodiversity habitats. These are primarily those which are rare, threatened or at-risk habitat. Many of the control sites the team works in are within these habitats and the pest plants we target threaten to degrade and transform them. The control options we use and the way we communicate to those undertaking the work will acknowledge the significance of the habitat and the need to balance pest removal with species and place protection.

Progressive Containment - Unmapped species

4.2.11 Fifteen progressive containment species fall into the unmapped category (e.g. gorse). These species are generally widespread but some parts of the region are clear of them and it is desirable to keep them clear. This programme does not have a strong information base to report on progress against these weeds. Horizons involvement in these weeds is primarily through regulation via the good neighbour rules or clear land rules of the Regional Pest Management Plan 2017-2037 (RPMP) and through non-regulatory advice or in some cases biological control. For occupiers of large land areas, farmers and organisations, we have the ability to allow responsibility to be acknowledged and actions planned via Approved Management Plans. The intent of these plans is to meet the objective of rules and contribute to the outcomes of the RPMP by eradicating or reducing the spread of pests from the place(s) occupied or managed by the plan maker.

4.2.12 Species we dealt with during the November-December reporting period included blackberry and gorse. A small number of good neighbour complaints (Table 3) were received, predominantly regarding weeds between neighbouring properties and on roadsides.

Table 3: Summary of Good Neighbour Rule activity for the period July to October 2019.

Description	Reporting Period				2019-20 totals
	1	2	3	4	
Boundary complaints received and actioned outside of compliance	4	2			6
Required to Clear (RTCs) issued	0	0			0
Notice of Direction (NODs) issued	0	0			0
Notices resolved in this period	0	0			0

4.2.13 Staff have spoken to councils in Horizons region and Crown agencies about their Pest Management Plan obligations. Agreement has been reached on pest programmes with six of the seven Councils. The Crown entities (DOC, Kiwirail, LINZ, NZTA) are engaged and at various stages of reaching an agreement, and Council will receive regular updates of progress.

4.2.14 Higgins has provided a comprehensive road spraying schedule for the state highway network covering the majority of the region. Staff were able to feed into the notification of priority stretches of road. Combined Road and Traffic Services manage the northern SH4 and SH43 runs and have also provided a spray programme for the year to monitor.

Progressive Containment - Unmapped aquatic species

4.2.15 Aquatic pest plants are also a part of the Progressive Containment – unmapped grouping of the RPMP. Aquatic pest plants are grouped together on the basis they are aquatic pests managed the same way for the same objectives. Eelgrass, egeria, hornwort, lagarosiphon and reed sweetgrass are aquatic pest plants included in the Progressive Containment section of the RPMP 2017-37. Their distributions are not yet mapped with any certainty. The aim is to progressively contain or reduce the number of sites affected across the region to prevent further spread and reduce adverse effects on the environment.

4.2.16 Lake Namunamu, west of Hunterville, is closed for the summer for personal use by the owners. NIWA are still to provide guidance on whether Eradication of hornwort is a feasible proposition at this important ecological site.

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Annex C

5 BIOLOGICAL CONTROL

5.1 Programme overview

5.1.1 Many entrenched pest plants in the region are now the target of our Biological Control programme, which aims to assist the development of insects and diseases to control a wide range of pest plants and to release, distribute and monitor those within the region.

5.2 Activity Update

5.2.1 Green thistle beetle is a popular and sought-after biocontrol agent. This year low numbers of beetles at the sites used to gather beetles for distribution meant demand for them could not be met. Approximately 80 farmers are on the list and only about eight were able to be provided with beetles.. We are not sure why this happened, but typically there are annual fluctuations. It could also be recovery from previous years over-harvest or high winds leading to greater dispersal. One staff member was able to collect enough green thistle beetles for three releases prior to a farmer spraying the farm for thistles. Despite good numbers of beetles present, interestingly on winged thistles, the farmer had a planned spray event and the staff member decided to quickly remove as many as possible prior to the food source being diminished. Despite the disappointing harvest conditions, one encouraging sign is the number of self-established sites located up to 10 km from known populations.

5.2.2 Establishment assessments were made for the tutsan leaf feeding beetle and seed eating moth, the privet lace bug and the japanese honeysuckle white admiral butterfly. None have been found established but it is only two years since they were released.

6 INVESTIGATION

6.1 Programme overview

6.1.1 A number of plants present in the region may have the potential to become economically and ecologically damaging. This output contains the Pest Plant Investigation programme and the National Pest Plant Accord (NPPA).

6.2 Activity Update

6.2.1 Giant buttercup is one of the plants being assessed for potential inclusion into the RPMP and trials into control and likely best options for rules or plan designations are being assessed with a decision due at the end of June 2020. A staff member attended an open day with AgResearch at the giant buttercup mowing trial farm. The scientists were talking about their research to

date and the staff member presented on the on-farm experiment we are undertaking in conjunction with the farmers from Takaka. A few weeks later the staff member returned and undertook the six-monthly population survey at the trial site, which showed a significant reduction in the abundance of giant buttercup where mowing is undertaken.

7 ADVICE, PROMOTION AND AWARENESS

7.1 Programme overview

7.1.1 The aim of the Awareness programme is to alert the community to the issues, threats and solutions of weed management to ensure region-wide best practice pest plant management. This includes responding to enquiries from the community and undertaking collaborative projects.

7.1.2 Collaborative projects undertaken by Horizons staff and external stakeholders provide a team approach to managing weeds in some challenging environments. Working with others and providing advice and leadership has delivered some excellent results that otherwise would not have eventuated.

7.2 Activity Update

7.2.1 The pest plant team received 42 enquires in November-December with the main topics being:

- Production (15) - blackberry and field horsetail.
- Zero-Density (13) - old man's beard
- Non-Pest Plant (15) - privet and pink ragwort
- Others (1) - freshwater weed

All enquiries were dealt with within the three working days required.

7.2.2 A summary of activity across a range of collaborative project with stakeholder groups is provided below (Table 4).

Table 4: Collaborative Pest Plant Control Projects.

Project	Key Deliverables	YTD Progress	Horizons Role
Wilding Conifer – Central North Island Regional Steering Group (RSG) – Fund holder and Chair	Work with partners and other stakeholders re: ▪ Planning for management unit activity and reporting ▪ Managing the budget ▪ Annual meeting scheduled	Ministry of Primary Industries - Horizons contract signed; partners' variations signed. Work across the programme area. No health and safety issues. Manage a fund of $371,000 initially but this has been recently expanded as MPI brought forward funding. New quantum is $473,000.	Contracted to Government as the agency for managing central government funding for this activity in the broader area. Lead agency in planning and coordinating activities.
Waimarino-Tongariro National Park Darwin's barberry control programme	Coordinated control across public and private land to increase the protection of previously cleared areas.	Programme completed in Waimarino. Work occurred across 15 'blocks' of private land.	Organiser of control programmes on private land.
Rangitikei Horsetail Group	Support group activity with population releases and monitoring.	Application to Sustainable Farming and Futures Fund for one-year extension lodged. Required for multiplication of recently imported second tranche of English weevils. Yet to hear result.	Provide leadership and access to weevils and advice
Desert Road Invasive Legume Control Group	▪ Relationship between parties maintained. ▪ Memorandum of Understanding maintained and out-worked. ▪ Coordinated action in priority areas is undertaken against the target species.	Meeting held and collaboration agreements took a leap forward with the expressed intention for multiple parties to use single contractor. No monitoring flights planned till 2020.	Coordinate meetings and collaborative activities.
Freshwater Pest Partnership Programme and Check, Clean, Dry (CCD) advocacy programme.	Representing Horizons at a national forum to champion behaviour change and freshwater protection. Attendance at high-risk events and strong advocacy with the main users of waterways in our headwater areas.	Advocacy under way throughout Central Plateau.	Provide and manage the programme in the greater region.

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BIODIVERSITY, BIOSECURITY & PARTNERSHIPS MANAGER

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GROUP MANAGER NATURAL RESOURCES AND PARTNERSHIPS

BIODIVERSITY

1 ACTIVITY OVERVIEW

1.1.1 The non-regulatory biodiversity programme seeks to enhance biodiversity and engage the community in biodiversity enhancement. The biodiversity activity is presented in three sections:

- The Priority Sites Programme;
- The Biodiversity Partnerships Programme; and
- Tōtara Reserve Regional Park Management.

2 ANNUAL PLAN TARGETS

2.1.1 A summary of the Annual Plan targets and progress to date is provided in Table 1 below.

Table 1 Progress reporting for the Biodiversity Activity Annual Plan targets for 2019-20.

Long-term Plan Target	Target	Allocated	Completed	% of target completed
Protect/enhance priority habitat remnants				
Additional top 100 wetlands actively managed	4	2	0	0%
Additional top 200 bush remnants actively managed	7	5	1	14%
Support community involvement in biodiversity protection				
Support existing community-based biodiversity improvement projects	12	29	0	0%
Tōtara Reserve Regional Park				
Annual report on the management of Tōtara Reserve Regional Park for biodiversity and recreational values, including managing the camping facility.	1	n/a	1	100%

3 PRIORITY SITES PROGRAMME

3.1 Programme overview

3.1.1 The Priority Sites Programme was initiated to deliver on a One Plan method to have 100 of the region's priority wetlands and 200 of its best bush remnants under active management. Over time the timeframe for this to be achieved has been moved by Council to 2028-29. At the end of the 2018-19 year, the programme reported 69 priority wetlands and 145 priority bush remnants to be under active management. The programme was reviewed in 2017-18 when some changes were made to the way sites are assessed and managed; much of this November-December 2019 reporting period has been dedicated to work to implement that system. The Annual Plan targets and year-to-date progress on these are provided in Table 2 below.

3.1.2 The review of the Priority Sites Programme introduced changes to the way sites are assessed and managed. These changes include the introduction of a new classification of the level of management sites are receiving. This adds more detail to the previous reporting on sites being actively managed (or not). The management level rating (see Box 1 on the following page) incorporates assessments of the level of knowledge of the biodiversity at a site through a Rapid Ecological Assessment (REA) and whether Horizons has completed some restoration work at the site, which was previously the mechanism the programme used to indicate if a site was actively managed or not. The programme review also introduced the requirement for site management plans which, along with frequency of visits are key factors for achieving management level 3. The level of priority works in the site management plan being implemented are also part of the management level index with level 4 being where all priority works are being completed. Levels 5 and 6 reflect sites receiving a greater level of management. NB: the management level index framework continues to be refined as we gain more experience in implementing it.

Table 2 Progress reporting for the priority sites programme Annual Plan targets for 2019-20.

Long-term Plan Target	Target	Allocated	Completed	% of target completed
Protect/enhance priority habitat remnants				
Additional top 100 wetlands actively managed	4	2	0	0%
Additional top 200 bush remnants actively managed	7	5	1	14%

BOX 1: MANAGEMENT LEVEL DESCRIPTIONS

To achieve consistency in reporting over the coming 18 months, the site list has been reconciled and the number of sites at each management level will be reported. Draft management levels are outlined below.

Management Level Zero: Sites that we know exist but we have not visited yet. Will not be reported.

Management Level 0.5: A holding level for sites that have received a contribution toward management from Horizons but have not yet received a Rapid Ecological Assessment (REA) or the REA has expired (i.e. is greater than 10 years old). Many of these sites existed in the Whanganui and Ruapehu districts. The Biodiversity team has visited most of the sites previously listed at this level and completed REAs, moving these sites to a level 2.

Management Level 1: Sites at management level 1 will have been assessed using the REA process. Sites will be included in the Horizons inventory, including the GIS layer. This management level is valid for 10 yea,rs at which point a new REA must be completed or the site returns to the 0.5 level. Sites that were at level 1 and are returned to level 0.5 will still exist in the inventory and GIS layer but the level reflects the dated (and possibly now incorrect) data that we have on that site.

Management Level 2: Sites at management level 2 will fulfil the requirements of level 1 and have had a previous contribution to their management from Horizons. This may have been a one-off contribution such as fencing or other management contribution that no longer occurs. This would include sites that were previously managed but where support has been withdrawn for any reason. These sites will have brief site summaries which detail why management is not continuing though for historical sites this will only be possible where this information is available.

Management Level 3: Sites at management level 3 will fulfil the requirements of level 1 and have site visits to assess works required at least biannually. These sites will have a site summary and management plan. Identified works required will be prioritised. Some work may be deferred if appropriate. Landowners will be supported and encouraged to contribute to the management of these sites.

Management Level 4: Sites at management level 4 will fulfil the requirements of level 3 and have all high priority works carried out as required. Landowners will be supported and encouraged to contribute to the management of these sites. Tōtara Reserve is an example of a site at this management level.

Management Level 5: Sites at management level 5 will fulfil the requirements of level 4 management and have true management partnerships established. Alternatively they may be managed by a landowner, iwi or community group with only surveillance and advice from Horizons. Manawatū Gorge and Cape Turnagain are examples of sites at this management level.

Management Level 6: Sites at management level 6 will meet at least management level 4 requirements and be receiving control for all animal pests. Bushy Park near Whanganui is the only site that meets the criteria for this level.

3.2 Activity Update

General

3.2.1 Table 3 below provides a summary of the management level index status for all sites on the managed list. The current assessment identifies that 10 sites are at management level 4, i.e. have been assessed and priority works have been carried out as required.

Table 3 Priority Sites Management Level Index

Management Level	Bush sites	Wetland sites	All sites
6	1	0	1
5	1	2	3
4	7	3	10
3	37	12	49
2	100	52	152
Sub-total for Level 2+	146	69	215
1	334	65	399
0.5	4	6	10
Total	484	140	624

3.2.2 A further component of the review of the Priority Sites Programme was the review of priority sites to target for inclusion in the programme. This is overviewed in the Natural Resources and Partnerships (NRP) Group's Operational Plan[8]. The review completed an assessment through Zonation software, after which ground-truthing is required to confirm the biodiversity status of the site. During October, November and December 2019 the Biodiversity Team visited 76 sites that the Zonation model had flagged as potentially important. Ground-truthing is necessary as models are only as accurate as the data used to create them; discrepancies in any of the GIS layers can lead to errors. Of the 76 sites visited, 20 were found to be significantly inconsistent with the Zonation results and were noted as such. REA results for the other 56 sites have been added to the table above at management level 1.

[8] http://www.horizons.govt.nz/calendar/strategy-policy-committee-2019-10-09.aspx

4 BIODIVERSITY PARTNERSHIPS

4.1 Programme Overview

4.1.1 Community engagement projects are arranged in three groups of projects within the Biodiversity Partnerships programme: Biodiversity Collaborations, Community Biodiversity Projects and Community Grants. The Annual Plan targets and year-to-date progress on these are provided in Table 4 below.

Table 4 Progress reporting for the Biodiversity Partnerships programme for 2019-20.

Annual Plan Target	Target	Allocated	Completed	% complete
Support community involvement in biodiversity protection				
Support existing community-based biodiversity improvement projects	12	29	0	0%

4.1.2 The 29 projects approved in 2019-20 are made up of seven Biodiversity Collaborations, 13 Community Biodiversity Projects and nine Community Grant Projects as shown in Table 5. Further information on these projects is provided in the Natural Resources and Partnership Group's Operational Plan (pages 59 to 65).

Table 5: Projects within the Biodiversity Partnerships Programme for 2019-20.

Biodiversity Collaborations	Community Biodiversity Projects	Community Grant Projects
1. Kia Whārite	8. Te Potae o Awarua Predator Control	21. Bulls River Users Group.
2. Rangitikei Environment Group (REG)	9. Massey Hill	22. Castlecliff Coast Care and Progress Castle Cliff Inc.
3. Weedbusters Palmerston North	10. Turitea Reserve	23. Dannevirke High School
4. Tawata Mainland Island	11. Bushy Park	24. Hunterville Consolidated School
5. Waitarere Beach Community project	12. Kahuterawa Stream Biodiversity Restoration	25. Nga Tawa Diocesan School
6. Pukaha Mount Bruce	13. Foxton River Loop	26. Ohau school
7. Te Āpiti Manawatū Gorge	14. Manawatū Estuary	27. Puddleducks Montessori preschool
	15. Awahuri Forest – Kitchener Park	28. Taihape Area School
	16. Ahimate Reserve	29. Westmere Lake Volunteers
	17. Gate Pa Bush Restoration	
	18. Ohau Beach Walkway	
	19. Cape Turnagain	
	20. Genesis Moawhango River Restoration	

4.2 Activity Update

General

4.2.1 Many of the Biodiversity Partnerships projects do not get underway until later in the financial year and this report provides some brief updates.

Te Āpiti Manawatū Gorge

4.2.2 The Te Āpiti Manawatū Gorge Governance Group work programme has continued to be implemented over the reporting period with activity including plant and animal pest control in some areas and work led by the Central Economic Development Agency (CEDA) on a tourism opportunities report, further development of pest control options to enhance biodiversity and release of the Te Āpiti Manawatū Gorge book. The Governance Group has also been involved in some forums related to the new gorge road. The next Governance Group meeting is scheduled for 26 February 2020.

Te Potae o Awarua Predator Control

4.2.3 This collaborative pest control programme in the Northwestern part of the Ruahine Ranges aims to protect whio (blue duck) and also benefit kiwi populations. Stoat traps were checked in mid-October 2019 – the first check for many of the new traps that had been put in around Puketaramea to protect kiwi in this area. Nearly all traps were full, with very high numbers of stoat and rat captures, as expected due to the 2019 beech mast. Some traps around Ruahine Corner Hut had stoats removed on the Saturday afternoon, but had already caught further stoats when volunteers checked them again Sunday morning. Bird highlights included several whio families, yellow-crowned kakariki seen at several sites and kiwi recorded on acoustic recorders left out overnight near the Te Potae track. DOC carried out a Tiakina Nga Manu aerial pest control operation throughout the area on 21-23 November to control the rats, stoats and possums across 30,000 ha of the Northern Ruahine. A post-aerial control trap check was completed in mid-December 2019. Again, the traps were very full, particularly with rats and mustelids, but no recaptures were noted overnight this time. Whio families and many fernbirds were noted on this trip.

Biodiversity Partnerships Review

4.2.4 A review of the Biodiversity Partnerships projects was signaled in the previous report and a paper on this has been developed for consideration by Council.

5 TŌTARA RESERVE REGIONAL PARK MANAGEMENT

5.1 Programme Overview

5.1.1 Tōtara Reserve Regional Park is focused on providing visitors with enjoyable biodiversity and recreational experiences. The work includes plant and animal pest control, flood protection, walking tracks and campground maintenance.

5.1.2 The Annual Plan target and year-to-date progress against this are reported in Table 6 below.

Table 6 Progress update for the Regional Park Annual Plan target.

LTP Performance Measure	Target	Completed	% of target completed
Annual report on the management of Tōtara Reserve Regional Park for biodiversity and recreational values, including managing the camping facility.	1	1[9]	100%

5.2 Activity Update

5.2.1 The Tōtara Reserve Regional Park campground maintenance contract was awarded to Fulton Hogan for a three year term.

5.2.2 The damaged tank in the effluent treatment plant has been replaced with two new tanks holding the equivalent volume. Work is underway to upgrade the weather protection for the treatment plant electrical board after an issue caused a pump to cut out on New Year's Eve.

5.2.3 The next Tōtara Reserve Advisory Group meeting is being scheduled for a date in February-March.

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[9] The Annual report on Totara reserve was reported to Environment Committee in August 2019 and is available at the following link. http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Environment-Committee-2019-14-08/19118%20Annex%20D%20Biodiversity%20Activity.pdf

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Annex D

SCIENCE & INNOVATION

1 ACTIVITY OVERVIEW

Horizons' Science and Innovation Team works in partnership with other teams across the Natural Resources and Partnerships (NRP) Group, and the wider organisation, to inform decision-making and support Horizons' natural resource management functions.

The team's main activities include co-ordinating a range of environmental monitoring and research programmes covering air, land and water. This involves collecting, analysing and reporting on data and information collected by Horizons and others. This information helps prioritise and focus the implementation efforts of the wider NRP Group, and supports policy and plan development and implementation. The team's work also informs other functions such as river management and emergency management.

Research is carried out in-house and in partnership with government, industry and independent researchers. Key projects currently underway include the five-year Smarter Targeting of Erosion Control programme, led by Manaaki Whenua, and the development of a National Water Model, led by the National Institute for Water and Atmospheric Research (NIWA). Horizons is also one of a few Councils eligible for external funding through the Ministry of Business, Employment and Innovation's (MBIE) Envirolink scheme, which enables us to receive science advice relating to environmental management. The team has a number of Envirolink-funded projects underway:

Other key activities recently introduced through Horizons' Long-term Plan 2018-28 include research into the effects of climate change and drinking-water security. The team also works closely with Horizons Communications team to share data and information via Horizons' and Land, Air, Water Aotearoa (LAWA) websites, as well as provide annual State of Environment reporting, a summer swim spot campaign and public information around topics such as air quality.

The August 2019 Environment Committee report provides an annual summary of the 2018-19 Science and Innovation work programme, as well as outlining science activities for the 2019-20 year in the NRP Operational Plan. This February 2020 report provides a summary of progress to date for the 2019-20 year (from 1 July 2019 to 31 January 2020).

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Annex E

1.1 Activity Update

Telemetered Water Metering Project

1.1.1 Monitoring water use across the region is a key priority for Horizons. A key aspect of this project is the installation and maintenance of water metering equipment, and collection and reporting of water use data for consented water takes, which is a requirement of national regulations.

1.1.2 Peak water demand typically coincides with reducing river flows and summer is generally the busiest time of year for the water metering project team. In preparation for the 2019-20 season, the focus has been on increasing the accuracy and efficiency of our data collection processes with the implementation of new tools for field data capture.

1.1.3 Increased integration of field data capture with Horizons' Iris database has greatly improved the field team's efficiency; for example, it is now possible to easily identify groups of sites in a spatial format on an iPad and plan site visits more effectively to minimise travel time. The team is on track to deliver the majority of site inspections during the 2019-20 summer season, increasing the available time for new telemetry installations, addressing faults and outages, and upgrading the existing telemetry framework.

Swim Spot Monitoring

1.1.4 Monitoring of the region's popular swimming and recreation spots, numbering more than 80 sites, resumed in November 2019. The programme is delivered in collaboration with MidCentral District Public Health Service and local territorial authorities with results reported weekly using the traffic light system (Figure 1) via both the Horizons and LAWA websites.

Figure 1 Horizons and LAWA use the traffic light system to communicate the level of health risk at more than 80 popular swim spots in our region.

1.1.5 In the region's rivers, monitoring data suggests conditions have mirrored those of previous seasons with warnings/alerts generally associated with higher levels of bacteria following periods

of rain. Popular swim spots such as the Rangitikei River at Vinegar Hill, Pohangina River at Raumai Reserve, Whanganui River at Mosquito Point and Ohau River at Gladstone Reserve have been suitable for swimming for much of the season. Coastal streams continue to return higher results for bacteria and permanent health warnings remain in place for the Kai iwi, Mowhanau and Ototoka Streams.

1.1.6 Prior to Christmas, Lake Dudding was deemed unsuitable for swimming due to high levels of cyanobacteria and was closed in December 2019. The lake re-opened prior to Christmas and caution has been advised since (amber alert). Lake Wiritoa has been suitable for swimming and recreation throughout much of the season, with just one amber alert issued at the start of the season.

1.1.7 Monitoring during 2019-20 shows that beaches have been suitable for swimming and recreation almost all of the time.

1.1.8 Community engagement and communication is an important part of the swim spot monitoring programme delivered via our public campaign. A key objective is to continue the conversation with our communities about when and where they can swim within the region. Further, the campaign provides an opportunity to communicate how our monitoring programme and science helps to inform Horizons' work programmes and initiatives, raising awareness of the wider functions of the Regional Council. Celebrating partnerships and highlighting the work that is already underway to improve water quality is an opportunity to celebrate success and encourage continued participation. During 2019-20:

- Our Communications team is running our annual swim spot photo competition where members of the public can snap a photo of their favourite swim spot, tag the location and Horizons at **#swiminourregion**, and go in the draw to win a $1,500 water-related prize (Figure 2). Last years' entries were so outstanding we had three winners! Julie, our second-equal prize winner spent her prize with whanau up the Whanganui River. You can check out the winning photos in Figure 3.

Figure 2 Visit Horizons' website or Facebook page to **#swiminourregion** and WIN!

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Figure 3 Horizons received so many fantastic entries for the 2018-19 competition we had three winning photo. From top to bottom are photos of the Mangawhero River near Ohakune by our first prize winner, Robyn Wilson; the Kahuterawa Stream by Julie MacLean (left) and Vinegar Hill by Tui Bolger (right), our second-equal winners.

- Council's social media accounts are used to promote the **#swiminourregion** photo competition, as well as to raise awareness of Horizons' monitoring programme, highlight popular swim spots that some people may not be aware of, show videos and photos of people enjoying swim spots, information about what Horizons is doing to improve water quality and good news stories. People are primarily being driven to the LAWA website (lawa.org.nz) for results. Our website (horizons.govt.nz) also has a swim spots map and results, as well as further detail about work Horizons is undertaking to improve water quality..
- The December 2019 edition of Horizons' Across the Region newsletter to residents highlighted the swim spot monitoring programme and competitions, 2018-19 monitoring results, actions Horizons is taking to improve water quality and quotes from our Councillors – see the Ruapehu edition of Across the Region below (Figure 4).

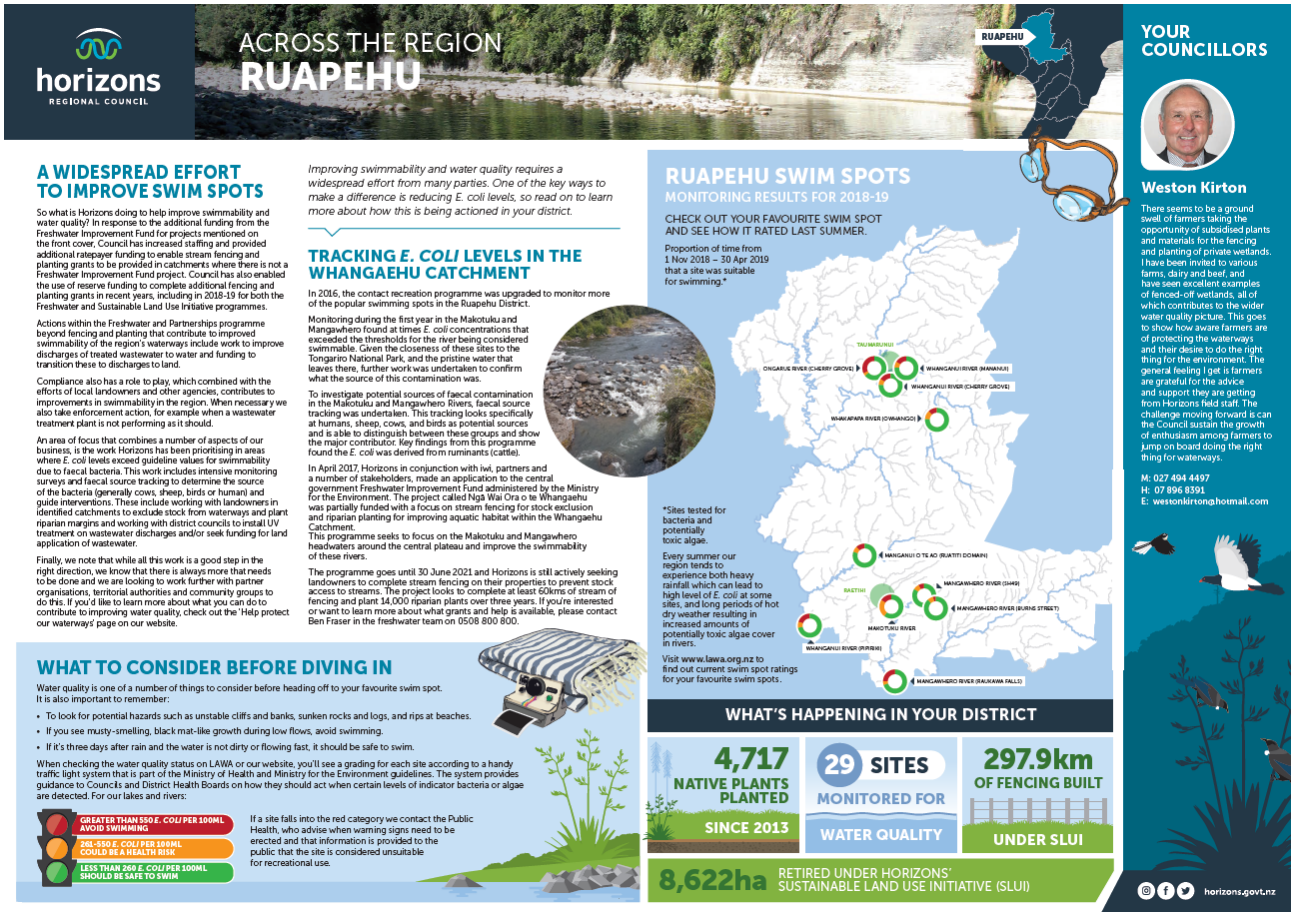


Figure 4 A swim spot themed edition of Across the Region was circulated in December 2019.

- In December, Horizons water quality scientist Amber Garnett spoke with radio hosts at MoreFM and The Breeze, highlighting Horizons' monitoring programmes and some of the actions Horizons is taking with our community to improve water quality in the region. This interview is part of a #canIswimhere radio campaign that is running from 16 December to 13 March to raise awareness of the monitoring programme and where results can be found

(lawa.org.nz). The radio campaign also includes a 'get involved' element to educate people on what they can do to contribute to water quality.

- The Manawatū Standard recently reported on our swim spot programme. You can read more here at https://bit.ly/36mRpxm.
- As part of Horizons' Swim in our Regio' campaign, vehicles were again branded with campaign material for the summer, working as moving billboards throughout the region. Monitoring staff took advantage of the fine weather over the Christmas break to hand out drinks at popular swim spots, raising awareness of Horizons' work and encouraging our communities to check LAWA for up-to-date information about their favourite swim spots.
- The season was scheduled to include a Te Oranga o te Awa - Manawatū River Improvement Festival on 1 February 2020. The aim of the festival is to encourage people to enjoy the river environment, learn about what efforts are underway to improve the catchment and how they can do their bit. For information, including the line-up of food trucks and musicians, check out 'The Manawatu River' facebook page.

1.1.9 Staff are planning to carry out another faecal source tracking investigation over the next 2-3 months. These surveys have been conducted at sites where we observe high levels of *E. coli* and where the source of bacteria is unclear. Previous investigations have included the Waikawa catchment in Horowhenua, and more recently the Ototoka Stream north of Whanganui where we found the likely source of *E. coli* to be ruminant (cows), due to upstream sections of the stream being unfenced. Staff are currently assessing water quality data to determine the location of the 2020 survey.

One Plan Changes and Policy Support

1.1.10 Horizons' Science and Innovation team is currently working with the Policy team to provide technical support for plan change and policy implementation/review processes. The current focus for the team is to provide: (1) technical support for the Plan Change 2 process; (2) a science plan to inform regional and national policy implementation (including regulatory and non-regulatory activities); (3) a compilation of catchment information, documentation of intervention logic and development of options to improve water quality across the region; and (4) annual State of Environment catchment summary reports.

1.1.11 Staff are also assisting the Ministry for the Environment (MfE) with 'road-testing' the National Policy Statement for Indigenous Biodiversity (NPSIB). The aim is to assist central government in understanding how councils, including Horizons, are likely to implement the proposed policies. It is intended that the proposed policies be tested using real-world implementation scenarios, including in areas that present challenges or risks. Science staff are collaborating with the Biodiversity and Policy teams to deliver this work, in addition to providing feedback as part of the NPSIB public consultation process.

Land and Fluvial Activity

1.1.12 Fluvial surveys to be carried out this year include the Whangaehu catchment and completion of the Eastern Ruahine catchments. In addition to completing river cross-sections, surveying of the Whangaehu in early 2020 will extend to the coast so that we can assess sedimentation of the estuary as part of our broader fluvial research programme, a key issue identified through our estuary habitat monitoring programme.

1.1.13 In recent years Horizons has invested in furthering our understanding of river geomorphology and sedimentation in the Lower Manawatū and Oroua Rivers. Research to date has explored the linkages between hill country erosion, climate change, water quality and flood protection. We are ready to identify and prioritise sedimentation mitigation tools for these rivers and their wider catchments. A workshop with key experts to build on this knowledge is in the planning stage. The outcome of this workshop will be the development of a sedimentation strategy and programme of work for the Lower Manawatū and Oroua Catchments.

Biodiversity and Biosecurity Activity

1.1.14 The Science and Innovation team continues to provide support to the Biodiversity team for planning, data entry and data management of priority biodiversity sites. Work continues to identify opportunities for alignment with other NRP teams to increase protection at high value biodiversity sites. The biosecurity pest animals team have supplied recent monitoring results from waxtag lines and these will be used to identify high-value biodiversity sites that may benefit from additional possum control.

1.1.15 Work is underway using the recently produced Potential Ecosystem mapping (Singers 2019) to classify remaining ecosystems by the International Union for Conservation of Nature's (IUCN) classification. This work will identify what ecosystem types are critically endangered, endangered or vulnerable, to assist with targeting and adding new sites to Horizons' priority sites programme.

1.1.16 The third and final bird monitoring survey at Tōtara Reserve was completed in November and December 2019. Analysis and reporting on the most recent three years of monitoring data are anticipated early this year. An alternative bird monitoring programme for the Horizons region is now being investigated.

Lake Monitoring

1.1.17 Annual Lake Lake Submerged Plant Indicators (SPI) assessments were carried out by NIWA for six lakes in December 2019. Three of the lakes have been assessed in the past with two (Lake Otamangakau and Lake Otamataraha) confirming the maintenance of good condition. The third revisited lake (Lake Ngaruru, near Hunterville), showed rapid range expansion of the invasive

pond weed hornwort which was identified in 2016. Two of the lakes visited for the first time (an unnamed wetland lake near Ohakune, and Lake Waipakuranui) were free of invasive species and had good populations of native aquatic plant species. The third lake (Lake Rotokauwau) was in good condition but there was evidence of a fairly recent incursion of an invasive species. The full report will be completed later in the year.

1.1.18 Recent State of Environment (SOE) monitoring indicates that two of the region's popular recreation lakes, Dudding and Wiritoa, both south of Whanganui, are thermally stratified and the lower layers of the lake are anoxic. Similar conditions were reported during summer last year. An expert panel, convened during 2019, agreed that these conditions are likely to be reflective of a lake with reduced resilience and there is a risk of the lake 'flipping' – i.e. transitioning from a macrophyte-dominated state to an algal-dominated state. Some lakes, such as Lake Horowhenua, have unique conditions that enable them to shift their state (flip) on an annual basis however, in some cases the change is permanent and difficult to reverse. Interventions are available to decrease the risk of this recurring; however, each lake responds differently to these intentions and identifying the appropriate toolbox of actions requires good knowledge of individual lake conditions. This is why collecting robust monitoring data on our region's lakes is crucial to informing restoration options. Horizons Science and Freshwater teams continue to work with lake experts to develop a suite of recommended actions to restore the health of these lakes.

Drinking-water

1.1.19 Phase one of the drinking-water source protection zone work programme was completed in late 2019 and progress reported to Council's Strategy and Policy Committee in December 2019. This project delineated three zones for each council-operated drinking water supply serving more than 500 people and made a number of recommendations for management within these zones to ensure protection of the water source. These recommendations are in the process of being actioned by the relevant authorities.

1.1.20 Phase two of this project has recently been contracted and will cover the remaining council-operated water supplies as well as larger non-council suppliers such as Massey University and New Zealand Defence Force. A further update of the regional drinking-water source prioritisation report, incorporating information from the 2018-19 compliance reports, will also be delivered before 30 June 2020.

Climate Change

1.1.21 A contract to develop a regional greenhouse gas (GHG) inventory has been awarded to AECOM. This inventory will improve our understanding of the contributions different activities in our region make to GHG emissions. Work is now underway to quantify the region's emissions and their sources at a district-scale, to identify opportunities and risks and help determine Horizons' role in the mitigation aspect of climate change in the region.

1.1.22 Information on climate change research and initiatives is now available on Horizons' website (horizons.govt.nz), under the Managing Natural Resources tab. This includes information from our 2019 State of Environment Report, as well as copies of the 2019 'Climate change implications for the Manawatū- Whanganui Region' report and the 2016 'Climate change and variability' report.

1.1.23 At a Council level, an internal cross-organisational team continues to work on a draft set of objectives and policies for Horizons' Climate Change Strategy. This group has also been working alongside territorial authorities to produce a climate change action plan for the region. A Memorandum of Understanding (MOU) between territorial local authorities and Horizons outlines our intention to work together towards climate change adaptation. A copy of the MOU is available on Horizons' website.

1.2 Annual Plan Targets

Table 1 Progress reporting for Science and Innovation Long-term Plan targets for 2019-20.

Performance Measures for Levels of Service	Target 2019-20	Progress Update
Water Quantity and Quality Activity		
Water quantity and water quality information is made available to the public via LAWA (www.lawa.org.nz) and Horizons' websites.	Data provided to LAWA as required	Data is available on the LAWA website. The latest water quality data was published on the website on World Rivers Day, 22 September 2019. Swim spot data is regularly updated as results become available.
Annual report on water quantity and quality monitoring and research activity.	1	An annual report on water quantity and quality activity will be produced and presented to Council in June 2020.
Land Management Activity		
Annual report on land and fluvial monitoring and research activity.	1	An annual report on land and fluvial activity will be developed and presented to Council in June 2020.
Annual report on biodiversity monitoring and research activity.	1	An annual report on biodiversity research activity will be developed and presented to Council in June 2020.
Environmental Reporting and Air Quality Monitoring Activity		
Provide an annual summary report on the state of the environment.	1	Annual State of Environment – Catchment Summary reports were completed for each Freshwater Management Unit (FMU) in September 2019.
Develop and implement a science communication strategy.	Report progress to Council annually	A strategy for science communication was developed mid-2019; an action plan has been developed and is now being drafted.
Complete drinking water supply research with a focus on Council-operated drinking water supplies and complete an annual report on this to Council.	1	Staff have scoped a programme for drinking water research for 2019-20 and this is now underway. An annual progress report to Council was delivered to Horizons' Strategy and Policy Committee in December 2019.
Investigate one aspect of climate change impact in the Region and report on this to Council.	1	A greenhouse gas inventory for the region has been contracted to AECOM and will begin in January 2020.
Air quality is monitored in Taihape and Taumarunui and reporting is made available to the public via LAWA and the annual State of Environment report.	Completed	Monitoring is ongoing and data is made available to the public via the Horizons and LAWA websites. Horizons' ability to accurately report on air quality at Taihape and Taumarunui is now compromised with equipment due for replacement.
Undertake an annual public education air quality campaign.	1	The next public campaign is scheduled for February 2020.

1.3 Activity Summary

Project	Key Deliverables	YTD Progress
Water Quality and Quantity Activity		
Monitoring Programmes	Carry out core monitoring of water quality, quantity, ecosystem health.	Monitoring is progressing to schedule. Summer monitoring of macroinvertebrates is underway and is progressing well. Minor changes to the monitoring programme have occurred as a result of a recent landslide in the Whangaehu catchment. Swim spot monitoring began on Sunday 3 November 2019 and is ongoing
	Undertake a review of our water monitoring network.	A project proposal and work plan for this review is now being developed, with input from a cross-organisational group including Emergency Management, River Management, Environmental Data and Science.
Catchment Characterisation	Improve our understanding and better characterise the region's catchments.	NIWA's 5-year water national water model project continues. Two PhD studies are progressing, exploring the fate and transport of nutrients in the sub-surface environment.
One Plan and Policy Support	Provide science support to One Plan review programme and Our Freshwater Future.	Staff are supporting policy through the provision of technical advice, including PC2. A key deliverable is the development of a science programme to support future plan changes and implementation of regional and national policy.
Lakes Research	Continue to advance lake research that prioritises and informs monitoring and implementation programmes to improve the water quality and ecological condition of the region's lakes.	A groundwater investigation in the Lake Horowhenua catchment is progressing, with the recent installation of flow monitoring in major inflows and additional groundwater monitoring. Annual lake submerged plant indicators (SPI) monitoring was completed in early December with related reporting due at the end of financial year. The national Ministry of Business, Innovation and Environment (MBIE) funded Lakes 380 programme continues, for which 22 lakes in the region have been selected for sediment core analysis. The project aims to uncover the environmental history of 380 lakes in New Zealand.
Coastal and Estuarine Environments	Continue to advance our understanding of the region's coast and estuaries.	Estuary habitat monitoring is contracted and scheduled for mid-late January. Key deliverables include the second year of fine scale-monitoring for the Whanganui estuary, sediment monitoring in the Whangaehu estuary, and monitoring at the Ohau and Waikawa estuaries. An Envirolink-funded project investigating the use of an ocean glider to collect *in situ* measurements of physical ocean properties to inform future monitoring of river plumes from high rainfall events is underway.

Land Management Activity		
Gravel use monitoring and reporting	Track annual gravel use and allocation to support consent decision-making and flood scheme management.	First and second quarter gravel levies have been processed.
Fluvial surveys	Complete fluvial surveys of the Whangaehu and Eastern Ruahine catchments.	Surveys are planned and due to be undertaken in the Whangaehu catchment and Southeastern Ruahines (Manawatū catchment) during early 2020.
Sediment source and transport research	Advance and report on sedimentation transport investigations.	The development of a sedimentation and drainage plan for the Arawhata catchment contracted to Tonkin + Taylor is now underway.
Wastewater management	Assist with the implementation of the One Plan regarding on-site wastewater performance.	Staff continue to provide support through consent technical assessments and working with Territorial Authorities to ensure systems are installed in-line with One Plan requirements.
Nutrient management research	Support research into the fate, transport and management of nutrients in the region.	A range of nutrient management investigations is underway, including three Sustainable Farming Fund (SFF) projects: Future Proofing of Vegetable Production, Innovative Drainage Management Technologies, and Tararua Plantain Project. Other work underway includes investigations of nutrient loss from horticulture and arable farming, and a pilot study investigating nutrient loss from intensive winter grazing. Staff are working with the Policy team and external providers to develop a regional land use map and framework for future mapping, and to undertake an assessment of nutrient losses from horticultural practices in the region.
Biodiversity and Biosecurity Activity		
NRP support	Identify opportunities for alignment with other NRP teams e.g. biosecurity animals and land teams.	Opportunities identified with Horizons Biosecurity Animals team and initial information provided. This workstream will continue to be refined. Opportunities for alignment with Land team are being pursued.
Priority site management	Support the biodiversity team to complete assessments at 100 putative[10] priority biodiversity sites.	This work is ongoing.
	Continue to refine the activity monitoring for priority biodiversity sites.	A process for this has been developed. Biodiversity staff need to be trained in its use.
	Develop management prescriptions for 10 high priority sites.	Initial workshops for this project were held in early November.
Tōtara Reserve	Complete the third year of the bird monitoring programme in Tōtara Reserve, and report on findings.	Bird monitoring at Tōtara Reserve was completed in November-December with full analysis and reporting due at the end of the financial year.

[10] Putative sites are those which have been inferred from a model although, for the majority, no direct evidence of their status is available.

Environmental Reporting and Air Quality Monitoring		
Air quality	Deliver the core monitoring programme for air quality and undertake an annual public education campaign about air quality.	Monitoring is ongoing and data is made available to the public via the Horizons and LAWA websites, noting that there are ongoing issues with the current infrastructure, as discussed earlier in the report. An annual public education campaign is due to begin in early 2020.
Climate change	Investigate one aspect of climate change and report to Council.	A regional greenhouse gas inventory has been contracted to AECOM. This work is now underway and expected to be delivered within the reporting year.
Drinking water	Continue to work with city and district councils to improve management of public drinking water supplies.	A presentation of outputs from the 2018-19 drinking water programme was presented to Horizons Strategy and Policy committee on 10 December 2019. The 2019-20 programme is scoped and underway.
State of Environment report	Provide an annual report on the State of the Environment (SoE) via catchment summaries	Annual State of Environment – Catchment Summary reports were completed for each Freshwater Management Unit (FMU) in September 2019. Planning for 2020 SoE catchment summary reporting will begin in early-mid 2020.
LAWA	Ensure environmental data is made available to the public via the LAWA website.	Data is available on the LAWA website. The latest water quality data was published on the website on World Rivers Day, 22 September 2019. Preparation is underway for the 2020 release. Swim spot data is updated weekly as the results become available. Proposed future modules include groundwater quality, which is in development.
Science communication	Implement Horizons' science communication strategy	An action plan to complement the science communication strategy sets out key science communication activities for the reporting year, to help prioritise resourcing and identify new opportunities. This is currently in draft form. Public information and Resource Management Act (RMA) advice continue to be provided as necessary. Community engagement has included radio interviews and advertisements to start the contact recreation season and the Swim in our Region campaign, handing out drinks to the public and providing them with more information about how to access swim spot results and speaking to students at the Himatangi lifesavers club about our swim spot monitoring.

Item 7

Lizzie Daly
SCIENTIST - ECOLOGY

Staci Boyte
SCIENTIST - LAND

Harold Barnett
ENVIRONMENTAL SCIENTIST

Stephen Collins
SCIENTIST – GROUNDWATER

Mike Patterson
SENIOR SCIENTIST - FRESHWATER

Raelene Mercer
SENIOR SCIENTIST – WATER QUANTITY

Abby Matthews
SCIENCE AND INNOVATION MANAGER

Jon Roygard
GROUP MANAGER NATURAL RESOURCES AND PARTNERSHIPS

Annex E

horizons
REGIONAL COUNCIL

16 December, 2019

PBS0106
2019 RS:MGB

Dr Wayne Severn
Senior Advisor, Agricultural Compounds
Ministry for Primary Industries
Charles Fergusson Building
34-38 Bowen Street
WELLINGTON 6140

Dear Dr Severn

CALL FOR INFORMATION ON THE USE OF BRODIFACOUM AS A VERTEBRATE TOXIC AGENT

Thank you for informing us and other stakeholders of your intent to re-assess brodifacoum. We look forward to being part of the assessment process that will permit brodifacoum to be used into the future to deliver sustainable biodiversity and biosecurity outcomes whilst minimising the risks of its use to environment and community.

The proposed re-assessment comes at a time when the Government has set a target of Predator Free NZ by 2050, and the options for community and landscape pest control available in the "toolbox" are limited, and to further restrict brodifacoum sales would reduce the opportunity for affordable and effective pest control to be undertaken on all scales. Education and training will also help ensure the effective and safe use of brodifacoum by community groups taking up the fight to protect indigenous flora and fauna.

Horizons Regional Council delivers a possum control operation that covers 1.5 million ha, approximately 70% of the region, and mostly on rateable land. Currently Horizons monitors 25% of the treatment area each year and the possum abundance is on average approximately 3.75% RTCI. This programme started in 2006/7 and each year since has provided additional control in areas that AHB and now OSPRI had completed TB operations in, and once bovine TB had been eradicated, had withdrawn their control activities. Horizons has every year since 2006-7 taken more area into our Possum Control Operation (PCO) and "maintained the gains" to ensure the production and biodiversity values that accrued from the original control were not lost. This programme has enjoyed overwhelming support from ratepayers across the region, and the cost to ratepayers this year is $4.08M ($2.72/ha). This programme is part of our delivery model for the Regional Pest Management Plan 2017-2037 established under the Biosecurity Act and delivers significant benefits for both biodiversity and production values in the region.

The methodology Horizons used is to initially deploy Philproof bait stations at approximately 1 per hectare of habitat, and then to place brodifacoum (High Strength) in the bait stations. Horizons has developed a bait station setting specification[1] to enhance bait availability to target pest animals, and to significantly reduce spillage of bait by possums. If possum abundance is initially high, two applications of toxic bait maybe applied, however for most of the PCO it is an annual application of toxin to the bait station. The old uneaten bait is removed and disposed of through a commercial chemical disposal company. Because we also may use Feratox in conjunction with brodifacoum we also get MOH approvals for all of our PCOs to ensure public health and safety concerns receive the appropriate actions, and are implemented. Our programme is developing solfware to record and further track the bait removed and to further optimise the amount of bait used and where it is used to further reduce the amount of bait used annually.

[1] Appendix One

Taumarunui | Whanganui | Marton | Woodville | Palmerston North | Kairanga
24 hour **freephone 0508 800 800** | **fax** 06 952 2929 | **email** help@horizons.govt.nz
Private Bag 11025, Manawatū Mail Centre, Palmerston North 4442

horizons.govt.nz

Annex F

The programme comprises of over 140 areas, each individual area is modelled to determine possum density using a model developed by Landcare Research. This modelling is used to prioritise areas where control is and is not required annually. In 2019, 35 percent of areas are not receiving bait.

The proposed controls outlined in the MPI submissions document, if adopted and implemented could more than double the cost of our programme, or conversely reduce the area we can manage by 50-65% for the same collection of ratepayer funding. This is projected to have significant impact on the programme's effectiveness and ability to sustain low possum numbers. Essentially we forecast not being able to main the gains of the existing programme.

For Horizons, we have concerns with the proposed regulations that relate to bait stations, monitoring, and the new requirement to remove bait stations once monitoring of bait stations has concluded. Our current programme activity is to visit the bait station and apply 400 grams of brodifacoum (hi strength) pellets. We clean out the bait stations when we visit next which in many cases is the following year, and the old remaining bait is removed for disposal. We are collecting about 30-35% of the bait when we return to rebait the stations, and the condition of the bait is usually in one joined block of bait (unable to accidentally exit the bait station), and unpalatable due humidity deteriorating the bait structure. This collected toxin product is disposed of through Waste Management Technical Services in accordance with the guidance on the label.

We currently have approximately 150,000 bait stations permanently in situ, each of these have their individual positions recorded in our GIS system, they are set 2 m above ground to a standard that focuses on bait security, exclusion to livestock and feral ungulates, whilst retaining accessibility for the target species. We revised this standard recently to further reduce any likelihood of interference from farm stock and feral ungulates, improve accessibility for target species, and to keep them out of reach of children. This standard is also enforced with our contractors who currently deliver possum control across 35% of our PCO programme (52,500 bait stations). Our staff assess conditions and placement of bait stations as a standard practice when filling bait stations. Old bait stations are replaced and security of the bait stations are checked. This further enhances the security of bait and we also perform audits.

If our staff are required to revisit the bait stations to monitor bait consumption and then remove the bait station only to put it back in the same location the following year, it will have a significant impact on our possum control programme. Preliminary calculations indicate that to abide by the proposed regulations would increase our cost per bait station from $34 to $85, an increase of 250%. To provide the same level of service that we are providing now, our current programme cost would grow from $4.08M to $10.2M, or we would have to reduce our programme from 150,000 bait stations down to 48,000, a 68% reduction in control.

According to our analysis of the annual "NZ Chemical Residues Programme Report" over the last five years, there has only been one detection of brodifacoum[2], this was in an outdoors field setting which did not pose a food safety risk. Considering the extensive use of brodifacoum in landscape pest control operations using bait stations, and only one detection in five years, we would respectively suggest that education and training will be successful at improving the safe use of an important and effective toxin for pest control across New Zealand. The removing and replacing bait stations each year will in our opinion not meaningfully contribute to less opportunity for brodifacoum to enter the environment, however will add significant costs to existing pest control programmes.

We would recommend that any brodifacoum used on a commercial property for the provision of food products, only be applied by a trained and qualified person. The training would focus on best practice for bait station set up, animal welfare, residue pathways, and other mitigations to prevent brodifacoum entering the food chain. We would recommend that the training content and delivery be in collaboration with all stakeholders and delivered through Bionet.

As an agency we are open to new approaches to possum control and are assessing other tools for the toolbox, including alternate baits. At this stage our assessment is that responsible brodifacoum

[2] https://www.mpi.govt.nz/dmsdocument/32806-results-for-1-july-2017-30-june-2018

use is essential tool for a programme that operates across the region as Horizons does. We are seeking to be able to continue to use this important tool in a responsible manner as we currently do into the future.

Public User Proposals

The public user proposals will seriously restrict community conservation carried out by groups of caring individuals who are volunteering their time and effort to help protect our flora and fauna. There are some community projects that are at landscape level and restricting bait to purchases of 300 grams is wasteful and adds unnecessary tasks to these projects that will have little or no benefit to public health concerns. The weekly checking of bait stations by this group of users could actually inhibit such projects in the future getting underway due to the weekly commitment required. We are seeking changes to the proposal that take a more education based approach and offer the Vespex wasp tutorial type approach as a model to consider.

Professional User

The proposed restriction to pack sizes less than 100 kg for professional users will not increase safety or decrease the risk with these users who are "professionals", who generally all have CSLs (Controlled Substance Licence), and in most cases been vetted and audited by the organisations whom contract them to deliver pest control. Many of these pest control contracts are of landscape scale and limiting these users will only add unnecessary expense and delays in achieving completion of control operations. In our situation our contractors are required to use our bait station set up guidelines, and we audit on a regular basis to ensure they are delivering to those specifications. We have attached our bait station specifications that our staff and contractors all follow.

The 100 kg pack size is somewhat restrictive and inefficient for a large scale programme and we are seeking changes to be able to enable large scale programmes to continue to purchase larger packs.

Summary

- There is no problem statement with the request for submissions, and there should at least be an introduction outlining the issues for which solutions are being sought. Without such information a robust cost benefit analysis cannot be undertaken, and buy in from the pest control stakeholders will be difficult to obtain. We need the issues identified and then as an industry we can apply our collective resources to further developing modern robust protocols that will allow for safe use of the various toxins, maintain and strengthen the social licence to use them, and still be able to use them with our communities, contractors, and staff to protect our valuable indigenous biodiversity, and our biosecurity interests.
- The proposed controls outlined in the MPI submissions document could well more than double the cost of the Horizons Regional Council programme, or conversely reduce the area we can manage by 50-65% for the same collection of rates. This cost in our view would be for no or a very marginal gain in bait security.
- To provide the same level of service that we are providing now, our current programme cost would grow from $4.08M to $10.2M, or we would have to reduce our programme from 150,000 bait stations down to 48,000, a 68% reduction in control.
- According to our analysis of the annual "NZ Chemical Residues Programme Report" over the last 5 years, there has only been 1 detection of brodifacoum[3] in an outdoors setting, which did not pose a food safety risk.
- We would recommend that any brodifacoum used on a commercial property for the provision of food products, only be applied by a trained and qualified person.
- The training would focus on best practice for bait station set up, animal welfare, residue pathways, and other mitigations to prevent brodifacoum entering the food chain.
- We would recommend that the training content and delivery be in collaboration with all stakeholders and delivered through Bionet.
- Limits on amounts that can be purchased and weekly checking of bait stations by public users could actually inhibit such projects this would remove valuable volunteer effort from

[3] https://www.mpi.govt.nz/dmsdocument/32806-results-for-1-july-2017-30-june-2018

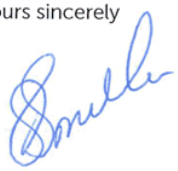
the control of predators in a range of biodiversity projects. We are seeking an approach that will continue to enable these projects to continue.

We look forward to continued collaboration on this matter to improve the safety and utilisation of tools that are available for use in the battle to protect and enhance our biodiversity and biosecurity.

We would welcome the opportunity to demonstrate our approach to possum control and to discuss this submission further.

Thank you for the opportunity to submit on this matter.

Yours sincerely



Rod Smillie
Biodiversity, Biosecurity, and Partnerships Manager

Appendix One

Horizons Bait station specifications

The use of toxins in bait stations is the main method of possum control in the Horizons Possum Control Operation (PCO). The processes around the use of stations has recently been reviewed. The aim of the review was to get a more consistent 'bait station set' in all PCO's across the Region. As a consequence of the review, all personnel involved in the PCO work (both the Horizons internal Regional Response Team and external contractors) will be required to follow the specifications when either setting up new PCO's or refilling existing bait station networks. We will be checking a random number of bait station sites when we undertake our operational audits to check the compliance with the new specifications.

Bait station protocol for 'New' set ups

1. Comply with the NPCA A13 bait station 2015-Nov guidelines
2. Bait stations are to be positioned in all areas of possum habitat in the operational area at a rate of one bait station per hectare of possum habitat.
3. No stations are to be no closer than 100 meters apart.
4. Bait stations are to be positioned along bush pasture margins of 'no work areas' at 150 meter intervals.
5. The stations are to set a minimum of 1.8 meters off the ground in areas grazed by domestic stock. They can be set lower in areas not grazed by stock provided this does not contravene any conditions in the VTA permit. Also landowner approval must be obtained.
6. If bait stations need to be positioned in any pine plantations please discuss the manner in which these stations will be positioned with the landowner and/or the forest manager prior to nailing any stations to the pine trees. If there are concerns about nails being left in the pine trees, it may be necessary to use 'stakes' to position the bait stations.
7. Where possible position the station in such a manner that provides the best access for possums to feed from the station. We prefer the station to be mounted sideways against the tree, however understand that there are times when this will not be possible and the station will need to be mounted from the back.
8. The station needs to be set up with the 'base plate' level in both directions. See Photos 1 & 2.
9. 90 mm jolt head nails are to be used to attach the station to the tree, the top nail is to be bent upward and the bottom nail(s) are to be bent down. The station must be firmly set i.e. it shouldn't wobble if a possum climbs over it to access bait.
10. A pink triangle must be positioned at each bait station site so that it can be seen from the direction from which the bait station site is likely to be approached from in future refills. The triangle is to be attached to the tree with a 90 mm jolt head nail as shown in photo 4.
11. If strikers or bio bags are used these need to be placed at 15 meter intervals and marked with the appropriate GPS icon, a track log must also be recorded.

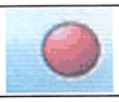
12. The tree is to be lured/blazed with Connovation 'Lure It' spray with a minimum 300mm blaze below the station; see photos 5 & 6. Cinnamon lure is to be used.
13. Mark the bait station on a GPS with the appropriate icon before moving on to the next site.

Bait station protocol for existing 'maintenance' operations.

- Comply with the NPCA A13 bait station 2015-Nov guidelines
- All station are to set a minimum of 1.8 meters off the ground in areas grazed by domestic stock. They can be set lower in areas not grazed by stock provided this does not contravene any conditions in the VTA permit. Also landowner approval must be obtained.
- Where possible position the station in such a manner that provides the best access for possums to feed from the station. We prefer the station to be mounted sideways against the tree, however understand that there are times when this will not be possible and the station will need to be mounted from the back.
- The station needs to be set up with the 'base plate' level in both directions. See photos 1 & 2.
- 90 mm jolt head nails are to be used to attach the station to the tree, the top nail is to be bent upward and the bottom nail(s) are to be bent down. The station must be firmly set i.e. it shouldn't wobble if a possum climbs over it to access bait.
- Prior to putting new bait into the station it first must be thoroughly cleaned to ensure that there is no old poison residue in the station. Any old poison material removed from the stations must be disposed of in accordance with poison label instructions.
- If there is no bait station positioned at the GPS waypoint provided, the contractor shall mark the site with the 'cross' icon indicating that the bait station has gone and /or can position a new bait station in habitat near the old GPS site (within 100 meters) and mark the new set up with the blue flag icon.
- A pink triangle must be positioned at each bait station site so that it can be seen from the direction from which the bait station site is likely to be approached from in future refills. The triangle is to be attached to the tree with a 90 mm jolt head nail as shown in photo 4.
- If strikers or bio bags are used these need to be placed at 15 meter intervals and marked with the appropriate GPS icon, a track log must also be recorded.
- The tree is to be lured/blazed with Connovation 'Lure It' spray with a minimum 300mm blaze below the station; see photos 5 & 6. Cinnamon lure is to be used.
- Mark the bait station on a GPS with the appropriate icon before moving on to the next site.

<u>GPS set up and recording</u>

- GPS units are to be set up in NZTM
- Daily 'track' logs must be recorded by all staff working in the control area.
- GPS icons are to be recorded at each site as shown in the table below

SYMBOL		MEANING
	blue flag	new bait station set up
	green flag	1st fill on existing bat station site
	red flag	2nd fill existing bait station site
	blue pin	1st feratox treatment
	green pin	2nd feratox treatment
	red pin	Trap sites
	cross	removed habitat/baitstation not existing
	house	dwelling/may be a VTA requirement
	blue circle	water source, may be VTA requirement
	red circle	signage, record all

- The raw GPS data (waypoints and tracks) from each staff member working on the contract is to be emailed to Horizons in GPX file on a regular basis. In addition to this, contractors have the option of sending a 'shape file' of the consolidated data through to Horizons at the same time as the raw data is sent through.

Photo 1: Base plate level on a side set (Photo J Hart)

Photo 2: Base plate level from the front view (Photo J Hart)

Photo 3: Back set, note the level base plate and 2 nails in base to prevent the station from moving (Photo J Hart)

Photo 4: Pink Triangle set up (Photo J Hart)

Photo 5: An example of a side set (Photo J Hart)

Photo 6: An example of a back set (Photo J Hart)

Report No.	20-02
Information Only - No Decision Required	

REGULATORY MANAGEMENT REPORT - OCTOBER TO DECEMBER 2019

1. PURPOSE

1.1. This report updates Members on regulatory activity, for the period October to December 2019 and provides a summary of the compliance programme associated with the Mercury Windfarm.

2. RECOMMENDATION

That the Committee recommends that Council:

a. receives the information contained in Report No. 20-02 and Annexes.

3. FINANCIAL IMPACT

3.1. As with previous years, we are still anticipating that there will be significant costs associated with processing large and complex applications, which may in turn be subject to appeal. Also, on-going investigations and prosecutions within the compliance monitoring programme are likely to have an impact on both expenditure and revenue within this programme. Regular updates will be provided to the Audit and Risk Committee throughout the year.

4. COMMUNITY ENGAGEMENT

4.1. This is a public item and therefore Council may deem this sufficient to inform the public.

5. SIGNIFICANT BUSINESS RISK IMPACT

5.1. There is no significant business risk associated with this item.

6. OVERVIEW

6.1. Resource consenting continues to be busy. Since 1 July 2019 Horizons has processed and made decisions on 195 applications.

6.2. In relation to the major applications, the following provides a summary of their current status:

6.2.1. Department of Conservation

i. The **Department of Conservation (DOC)** is progressing the Whakapapa **Wastewater Treatment Plant (WWTP)** application. DOC has now moved to plan for the relocation of the wastewater treatment plant out of the Tongariro National Park to a less sensitive (both culturally and environmentally) receiving environment. This is a positive move and one Horizons has advocated. A move outside the park will take 2-4 years to go through consenting and construction. In the meantime, Horizons is requiring investment into the existing plant to improve, as far as possible, its environmental performance.

ii. Horizons has informed DOC that it will be seeking an enforcement order from the court to oversee improvements to the existing plant and progress towards a new application. This order will hold DOC to an agreed process and timetable with judicial oversight. The same mechanism was used with Whanganui District Council when its wastewater treatment plant failed.

iii. Horizons' counsel is currently working with counsel from DOC to frame the order. Iwi will also be invited to be a party to the process.

6.2.2. **Tararua District Council**

i. Re-consenting of Pahiatua and Eketahuna WWTP remains the subject of a mediation process. These respective processes are confidential to the parties involved.

ii. Regarding the Woodville WWTP, we are also awaiting a response from **Tararua District Council (TDC)** in relation to a section 92 request in relation to groundwater monitoring information. At this stage we are still anticipating a hearing in the first quarter of 2020.

6.2.3. **Horowhenua District Council**

i. The Tokomaru WWTP is now onto its second iteration of draft conditions. **Horowhenua District Council (HDC)** are now working with submitters on these conditions.

ii. The application seeking to renew the Tokomaru water supply abstraction was notified, with two submissions being received. Conditions are with HDC for review and feedback.

iii. The application seeking to discharge stormwater into Koputaroa Stream catchment has been notified in accordance with section 95 of the **Resource Management Act 1991 (RMA)**, with the submission period closing on 29 October 2019. Submissions were received **Horizons Regional Council (Horizons)** River Management Group and landowners downstream of the proposed activity. The applicant is currently holding meetings with these parties who have submitted on the application.

iv. For the Levin WWTP discharges (commonly known as 'The Pot'), a hearing commenced on 30 October 2019 and has been adjourned until March 2020 to allow for further engagement between HDC and submitters and further consideration of proposed conditions.

v. There has been no change since the last report in relation to the application seeking to discharge stormwater from the Levin Township into Lake Horowhenua. Further information has been requested and HDC has asked for time to engage with the relevant parties. HDC has also advised it will be providing the further information requested in June. Given the values of Lake Horowhenua, this is not expected to be a simple process.

vi. HDC is preparing a consent application seeking to discharge stormwater from the Foxton Township to the Manawatū River.

6.2.4. **Ruapehu District Council**

i. **Ruapehu District Council (RDC)** has lodged a consent application in relation to the National Park WWTP. RDC are currently consulting with the Wai Group in relation to the proposed activity and is considering growth implications on the existing consent. RDC is proposing to re-submit a revised set of conditions for consideration.

ii. The Raetihi Water Supply application is progressing with conditions currently being drafted. Once these are agreed, the application can proceed to be granted.

iii. Ohakune and Raetihi WWTP applications may be impacted by the submission of an additional **Tourism Infrastructure Fund (TIF)** application to **Ministry of Business**

Innovation and Employment (MBIE). RDC is looking to provide an update on the applications and the impact growth implications may have on these applications.

iv. The application associated with the Taumarunui water supply is currently on hold for further information, including assessing water efficiency.

6.2.5. **Manawatu District Council**

i. As previously reported, the **Manawatu District Council (MDC)** have a number of WWTP whose discharges are currently authorised under the existing use rights of the RMA; including the Sanson, Cheltenham, Halcombe, Awahuri and Kimbolton WWTP. The applications relating to these WWTP have being placed on hold as MDC progresses its centralisation project, which is aiming to have discharges from these and other WWTP centralised into the Feilding WWTP. To this end, MDC have now lodged a consent application that is seeking to amend the Feilding WWTP consents to allow for centralisation of these discharges into the Feilding WWTP.

ii. MDC have also lodged a consent application to enable expansion to the current land disposal area for the Feilding WWTP. This application is currently being assessed.

6.2.6. **Te Ahu a Turanga**

i. The Manawatu Gorge replacement project "Te Ahu a Turanga" is progressing. A decision on the **Notice of Requirement (NOR)** has been made and subsequently appealed by the three parties, including the Department of Conservation. This matter is still before the Environment Court.

ii. Horizons staff have continued to meet with **New Zealand Transport Authority (NZTA)** in relation to the pending regional consenting process. At this stage NZTA are anticipating lodging the main resource consents with Horizons in February 2020.

iii. NZTA have advised they will be requesting that the applications associated with the main consents are processed via the Direct Referral Process allowed for under the RMA.

iv. To date, Horizons has processed two 'enabling' consent applications in relation to geo-technical investigations in the Manawatu River and construction of an access road into the main alignment. Another application is being considered in relation to further geo-technical investigations. There has been a delay in the lodging of additional enabling consent applications and NZTA has advised that further enabling consent applications are likely to be lodged over the January and February period. These applications will relate to the abstraction of water and construction of water reservoirs, construction of an access road on the eastern side of the project, and works associated with the establishment and operation of a quarry site.

v. As previously reported, officers have considered the regulatory demands that such a major civil construction project will have on its business. These lie in three main areas: the large numbers of consent variations that need to be managed and processed following the main consenting process; large volumes of management reports and compliance inspections required to enable works to occur or follow up on consent conditions; and a significant administration process to manage large volumes of data and information.

7. COMPLIANCE PROGRAMME

7.1. The intention of this section is to focus on one key part of the regulatory business and provide an overview of the compliance programme for the reporting period. The focus for this report is to provide a summary of the compliance prorgramme associated with the construction of the Mercury Windfarm.

7.2. Construction of the windfarm commenced in October and is now in proceeding at pace. The site effectively covers two main work areas, which are being undertaken by two different contractors. The windfarm site and associated works are being undertaken by Vestas, whilst the construction of the transmission lines is being undertaken by Electrix.

7.3. Horizons is undertaking weekly site inspections to assess compliance with relevant resource consents and the numerous management plans that govern the project. Given the structure of the consents and the fact the management plans form part of the General (or Schedule 1) Consent Conditions that fall under the jurisdiction of Horizons, PNCC and TDC, Horizons is effectively undertaking monitoring of these conditions for all three councils.

7.4. These inspections focus on ensuring the environmental controls in place are appropriate and comply with the required certified **Construction Environmental Management Plans (CEMP)** and **Site Environmental Management Plans (SEMP)**. They involve inspection of the site and various work areas within the site, assessing compliance and where appropriate providing direction to the contractor in relation corrective action. A copy of a typical compliance report is attached as **Annexure 1.**

7.5. Given the size and scale of works occurring, the site is being inspected on weekly basis, with the inspections taking approximately one day. The associated reporting and administration takes a further day to complete.

7.6. To date, approximately 25 management plans have been certified. A copy of two SEMPs are attached as **Annexures 2 and 3**. Figure 1 below shows the general management plan structure that forms part of the project. We are expecting management plan certification to be an on-going process as new SEMP are provided and existing SEMP evolve to reflect the dynamic nature of works occurring on-site.

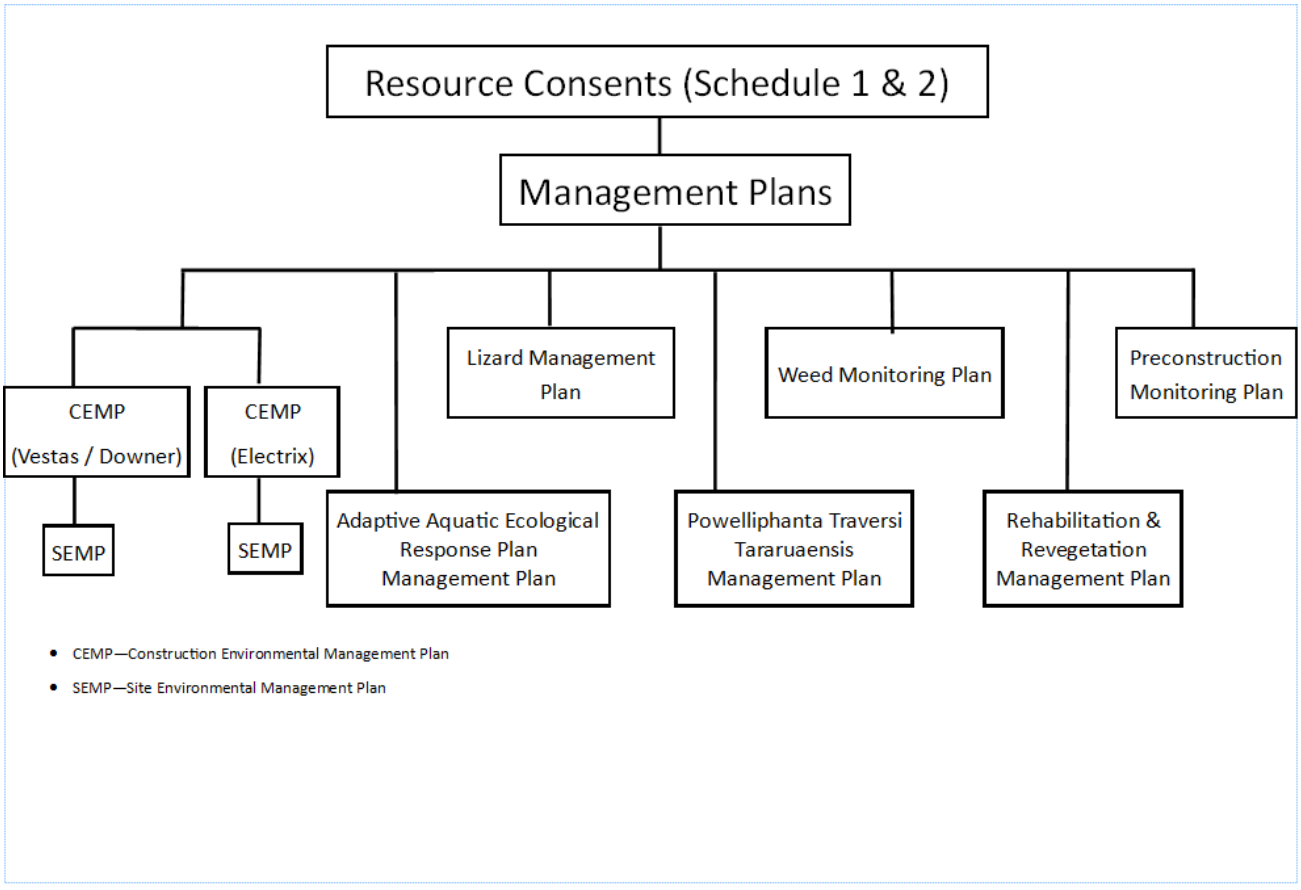


Figure 1. Mercury Energy – General Management Plan Structure

7.7. Figures 1-4 show some of the environmental controls installed on the Windfarm.

Figure 1. Decanting Earthbund

Figure 2. Sediment Retention Pond

Figure 3. Super Silt Fence controlling sediment run-off while primary control is constructed

Figure 4. Culvert installation

8. COMPLIANCE PROGRAMME SUMMARY

8.1. During the reporting period there were 107 compliance monitoring assessments. Of these, 56 Comply Full, 22 Comply At-Risk, eight Low Risk Non-Compliance, nine Moderate Non-Compliance and 12 Significant Non-compliance gradings were issued. Overall, this equates to a 73% compliance rate across the entire programme for the reporting period.

8.2. Below is a breakdown of the non-compliances by consent area, for the reporting period:
Industry: Four Low risk non-compliance, three moderate non-compliance and two significant non-compliances, respectively; and
Rural: Four low risk non-compliance, six moderate non-compliance and ten significant non-compliances, respectively.

8.3. The number of scheduled compliance assessments completed is slightly behind what is anticipated. However, at this stage, we are on track to meet our annual plan targets.

8.4. Horizons currently has seven prosecutions before the District Court; however, three of these cannot be named at this stage. There is also one significant investigation underway. The prosecution relating to Central Demolition Limited and Mr Ian Butcher is proceeding to

sentencing on 10 February 2020. Table 1 provides a summary of the prosecutions currently before the Court where the defendants can be named.

8.5. Also during the reporting period, LA Landscapes Limited and Mr Patrick Damien Toyne were sentenced in relation to the unlawful discharge of construction and demolition waste onto land and the burning of that material, which resulted in the discharge of contaminants to air in the vicinity of Halcombe. The Court imposed a fine of $57,000, plus it awarded investigation costs of $24,000.

Table 1. Summary of Court proceedings

Defendant	Summary
Huka View Dairies and Derek Berendt	Charges laid and before the Court.
Central Demolition Limited and Ian Butcher	Pleaded Guilty, proceeding to sentencing.
John Turkington Limited and Gordon John Turkington	Charges laid and before the Court.
Ray Coles Transport Limited and Mark Coles	Charges laid and before the Court

9. INCIDENTS

9.1. Over the reporting period, a total of 282 complaints were received, compared to 367 for the same period last year. For this reporting period, the majority of these complaints (177) related to discharges to air. The remainder of the complaints related to discharges to land (45) and water (60).

9.2. All complaints are categorised and responded to accordingly. A response can include an immediate or planned inspection, a phone call, or being referred to another agency such as a Territorial Authority or Civil Aviation

10. REGULATORY ACTION

10.1. During the reporting period, 14 abatement and 20 infringement notices were issued. Table 2 below provides a summary of the formal regulatory action taken during the reporting period.

Table 2. Regulatory action taken during reporting period.

Issued to	Regulatory Action Taken	District	Date notice Issued	Section of Act Contravened	Details
Ngaio Pastoral Ltd	Abatement Notice	Whanganui	25/11/19	9(2)(a)	Not providing nutrient budget
Moxham Milk Limited	Abatement Notice	Horowhenua	25/11/19	9(2)(a)	Not providing nutrient budget
Mountain Dairies Ltd	Abatement Notice	Tararua	25/11/19	9(2)(a)	Not providing nutrient budget
CW & MY Matthews	Abatement Notice	Manawatu	03/12/19	9(2)(a)	Not providing nutrient budget
Ross Mclean Burnett	Abatement Notice	Manawatu	03/12/19	9(2)(a)	Not providing nutrient budget
RK & M Maxwell	Abatement Notice	Manawatu	03/12/19	9(2)(a)	Not providing nutrient budget

James Braddick, Stacey Death and Andrew Vallance	Abatement Notice	Tararua	03/12/19	9(2)(a)	Not providing nutrient budget
Progress Transport Limited	Abatement Notice	Region Wide	17/12/19	15(1)(b)	Discharge of effluent to ground where it may enter water
Hautapu Pine Products Limited	Abatement Notice	Rangitikei	16/12/19	15(1)(b)	Discharge of condensate and Sewage to stormwater system
Hautapu Pine Products Limited	Abatement Notice	Rangitikei	16/12/19	15(1)(b)	Discharge of condensate and Sewage to stormwater system
Aokautere Land Holdings Limited	Abatement Notice	Palmerston North	17/12/19	9(2)	Cease all unauthorised land disturbance.
Aokautere Land Holdings Limited	Abatement Notice	Palmerston North	17/12/19	15(1)(b)	Stabilise all unauthorised land disturbance.
Forest 360 Stabilise	Abatement Notice	Ruapehu	09/01/20	9(1) 15(1)(b)	Stabilise earthworks site
Chris and Linda Baines	Abatement Notice	Ruapehu	16/12/19	9(2)	Unauthorised earthworks within 5 metres of a permanently flowing river
Warren & Janice Haworth	Infringement Notice	Manawatu	22/10/19	15(1)(b)	Discharge of contaminants to land where it may enter water
Robert J Palmer	Infringement Notice	Manawatu	01/11/19	15(2A)	Discharge of a contaminant to air (smoke)
Ben Goodwin	Infringement Notice	Manawatu	1/11/201	15(2A)	Discharge of a contaminant to air (smoke)
John Arthur Morgan	Infringement Notice	Horowhenua	11/11/19	15(1)(b)	Discharge of contaminant to land where it may enter water
Phil Manderson	Infringement Notice	Palmerston North	06/11/19	15(1)(b)	Discharge of contaminant to land where it may enter water
Woodgate Gospel Trust	Infringement Notice	Palmerston North	12/11/19	338(1)(c)	Non-compliance with abatement notice
Woodgate Gospel Trust	Infringement Notice	Palmerston North	12/11/19	9(2)	Unauthorised earthworks
Woodgate Gospel Trust	Infringement Notice	Palmerston North	12/11/19	15(1)(b)	Discharge to land where may enter water
Philip Lambert Contracting Limited	Infringement Notice	Ruapehu		9(2), 15(1)(b)	Breach of abatement notice
PFDL (5) Ltd	Infringement Notice	Palmerston North	13/11/19	338(1)(c)	Non-compliance with abatement notice
Sefton Booth	Infringement Notice	Palmerston north	20/11/19	15(2A)	Burning prohibited items

PFDL (5) Ltd	Infringement Notice	Palmerston North	27/11/19	9(2)	Unauthorised earthworks
PFDL (5) Ltd	Infringement Notice	Palmerston North	27/11/19	15(1)(b)	Discharge to land where may enter water
Kakariki Proteins Ltd	Infringement Notice	Horowhenua	02/12/19	15(1)(c)	Discharge of contaminate from industrial trade premise to air (objectionable odour)
Kakariki Proteins Ltd	Infringement Notice	Horowhenua	02/12/19	338(1)(c)	Breach of an abatement notice.
Alliance Group Limited	Infringement Notice	Horowhenua	11/12/19	15(1)(c)	Discharge of contaminate from industrial trade premise to air (objectionable odour)
Alliance Group Limited	Infringement Notice	Horowhenua	11/12/19	338(1)(c)	Breach of abatement notice
Progress Transport Limited	Infringement Notice	Tararua	17/12/19	15(1)(b)	Discharge of a contaminant (stock truck effluent) to land where it may enter water
Kerry Ian Griffiths	Infringement Notice	Palmerston North	19/12/19	15(2A)	Burning prohibited materials
Kerry Ian Griffiths	Infringement Notice	Palmerston North	19/12/19	338(1)(c)	Breach of abatement notice

11. SIGNIFICANCE

11.1. This is not a significant decision according to the Council's Policy on Significance and Engagement.

Greg Bevin
REGULATORY MANAGER

Nic Peet
GROUP MANAGER STRATEGY & REGULATION

ANNEXES

A Compliance Report - Vestas

B SEMP - Vestas

C SEMP - Electrix

Erosion and Sediment Control Site Inspection Report

Site Name: Mercury Wind Farm - Vestas.

Submitted by: KPearce_HorizonsRC
Submitted Time: 10/01/2020 11.00AM

horizons REGIONAL COUNCIL

Annex A

General Site Information

Site Name: **Mercury Wind Farm - Vestas.**

Consent Holder: **Mighty River Power (Mercury)**

Resource Consent Numbers: **104553 & 104560.**

Date/Time: **16/01/2020 9.30am**

Weather: Fine

Location:

Site Contact Information

Site Contact: Steph Kirk, Anton Viljoen, Nick Denyer, Marty Craill, Simon de Rose, Dathan Proudlove.

Contractor or Consultant: Stephanie Kirk

Phone Number: 0273007408

Email: stephanie.kirk@mercury.co.nz

Role: Consent Holder

Send Report: Yes

Contractor or Consultant: Anton Vlijoen

Phone Number: TBC

Email: anvje@vestas.com

Role: Consent Holder

Send Report: Yes

Contractor or Consultant: Nick Denyer

Phone Number: 021425989

Email: nick.denyer@downer.co.nz

Role: Contractor

Send Report: Yes

Contractor or Consultant: Marty Craill

Phone Number: 0274067886

Email: marty.craill@downer.co.nz

Role: Contractor

Send Report: Yes

Contractor or Consultant: Dathan Proudlove

Phone Number: 0278392593

Email: Dathan.proudlove@downer.co.nz

Role: Contractor

Send Report: Yes

Contractor or Consultant: Simon de Rose

Phone Number: 0274165796

Email: simon@stringfellows.co.nz

Role: Contractor

Send Report: Yes

Consent Monitoring Officer: Kerry Pearce

Construction Zone: Civil Area 1.

Controls

Control Name: Carpark SSF 1

Control: Super Silt Fence

Rating: 1

Observations:

Well-constructed and maintained super silt fence.

Actions:

Nil.

Control Name: Carpark SSF 2

Control: Super Silt Fence

Rating: 1

Observations:

Well-constructed and maintained super silt fence.

Actions:

Nil.

Control Name: Carpark CWD

Control: CWD

Rating: 1

Observations:

Completed and hydroseeded.

Actions:

Nil.

Control Name: Track 21 SSF 1

Control: Super Silt Fence

Rating: 1

Observations:

Well-constructed and maintained super silt fence.

Actions:

Nil.

Control Name: Track 21 SSF 2

Control: Super Silt Fence

Rating: 1

Observations:

Well-constructed and maintained super silt fence. Has been extended to allow for culvert construction and entranceway undercut.

Actions:

Nil.

Control Name: DGT 001

Control: Decanting Grit Trap

Rating: 3

Observations:

DGT 001 has been removed, without consultation with Horizons and without Horizons approval. Track 21 is now effectively uncontrolled and is not completely stabilized. Several options were discussed on site, however given the catchment is not stabilized the only feasible option is to reinstall controls. Note that a silt fence or super silt fence is not suitable for the concentrated flowpath.

Actions:

Please provide an updated ESCP for this area, showing how Track 21 is going to be controlled until such time as stabilization has been achieved. 20/01/2020.

Photos


CAT

Control Name: Refueling Area SSF

Control: Super Silt Fence

Rating: 1

Observations:

Well-constructed and maintained super silt fence.

Actions:

Nil.

Control Name: Laydown Area SSF

Control: Super Silt Fence

Rating: 1

Observations:

Well-constructed and maintained super silt fence.

Actions:

Nil.

Control Name: Laydown Area DEB

Control: Decanting Earth Bund

Rating: 1

Observations:

Well-constructed and maintained DEB.

Actions:

Nil

Control Name: DGT 005

Control: Decanting Grit Trap

Rating: 3

Observations:

The decanting grit trap has been well constructed, however there is a catchment at the intersection of Track 22 and Track 20 that is currently uncontrolled due to the diversions and silt fencing not being complete.

Actions:

Complete controls as per approved Erosion and Sediment Control Plan. 20/01/2020.

Photo:

Control Name: Track 20 CH800 SSF

Control: Super Silt Fence

Rating: 1

Observations:

Well-constructed and maintained super silt fence.

Actions:

Nil.

Construction Zone: Civil Area 3

Controls

Control Name: DEB 008

Control: Decanting Earth Bund

Rating: 1

Observations:

Well-constructed and maintained DEB.

Actions:

Nil.

Control Name: DGT 009

Control: Decanting Grit Trap

Rating: 2

Observations:

Well-constructed and maintained DGT, however the inlet to the DEB should be stabilized prior to receiving catchment flows.

Actions:

Completely stabilize inlet with geotextile. 20/01/2020.

Photo

Control Name: SRP WT05

Control: Sediment Retention Pond

Rating: 1

Observations:

Well-constructed and maintained SRP.

Actions:

Nil.

Annex A

Control Name: DEB 010

Control: Decanting Earth Bund

Rating: 1

Observations:

Well-constructed and maintained DEB.

Actions:

Nil

Photo

Control Name: SRP WTG04

Control: Sediment Retention Pond

Rating: 1

Observations:

Well-constructed and maintained SRP.

Actions:

Nil.

Control Name: SRP SD1

Control: Sediment Retention Pond

Rating: 1

Observations:

Well-constructed and maintained SRP.

Actions:

Nil.

Control Name: Batching Plant SRP

Control: Sediment Retention Pond

Rating: 1

Observations:

Well-constructed and maintained SRP.

Actions:

Nil.

General Comments

The general standard of erosion and sediment control construction on site is high, however there are a few items for rectification as outlined earlier in this report. Some of these are minor in nature however are important to ensure erosion and sediment controls are functioning to their full potential.

The main concern from this site visit is the removal of DGT 001 prior to this catchment being stabilized and without consultation with Horizons. The CEMP states *"…a key component of the erosion and sediment control methodology is to ensure that permanent stabilisation is achieved as rapidly as practical. This in turn requires robust sediment control devices to be implemented which will remain in place until the required stabilisation has been achieved…"* , while the SEMP states *"…all SRPs, DEBs, silt fences and super silt fences are to remain until all surfaces within the contributing catchments are stabilised by grass (strike > 80%), aggregate or other appropriate stabilisation measure."* The CEMP also details in section 9.1.4.5 a methodology around final inspections prior to removal of areas that have been stabilised prior to removal of controls, including Horizons involvement.

Works are commencing on construction of controls for Spoil Disposal Area 4, with mucking of the gully complete and SRP construction underway. It is also intended to commence construction of controls for the access roading out to Tower 1 in the next few days.

Construction Zone: PA Works Aokautere - Pahiatua Road.

Controls

Control Name: Track 21 Stabilised Entrance.

Control: Aggregate

Rating: 1

Observations:

Track 21 entrance from Aokautere - Pahiatua Road is well stabilised with aggregate. It sits outside the site boundary and is therefore covered under the PA rules of the One Plan.

Actions:

Nil.

Compliance Assessment

Consent Assessment:

Consent Number: 104553 & 104560 - Schedule 1.

Condition 6 Assessment:

6. *At least 40 working days prior to the commencement of any construction works, the Consent Holder shall submit a detailed CEMP to the Environmental Compliance Manager at each respective Council, for review acting in a technical certification capacity. A response should be provided within 30 working days of receipt. Construction activities must not commence until written certification has been obtained. The CEMP shall be prepared with the assistance of a suitably qualified environmental management specialist, and shall include, but not be limited to, the following:*

Version 11 of the Vestas/Downer CEMP was provided on 28 August 2019 and certified by all three respective Environmental Compliance Managers on 29 August 2019. Initial works commenced on site on 7 October 2019 to install controls. The plan was prepared by suitably qualified specialists and technically assessed by Graeme Ridley to ensure it met the requirements of sub-conditions 6.1 to 6.11.

Compliance Rating: Comply - Full

Condition 8 Assessment:

8. *The Consent Holder shall prepare and submit to the Environmental Compliance Manager, at each respective Council, a SEMP for each of the South Range Road, Water Catchment Access Road, Western Ridge, Browns Flat and Cross Valley Transmission and Out of Reserve (farmland) sub-catchment areas. The breakdown of the site into individual SEMPs may be varied by the Consent Holder as necessary to reflect any change to the design and construction programmes.*

Vestas have been subcontracted by the consent holder to constrict the wind turbine site and roading for the Mercury Windfarm Project. As part of this work Vestas and Downer have prepared the SEMPs for their proportion of the project which relates to the *"South Range Road, Water Catchment Access Road, Western Ridge… sub-catchment areas."* Vestas have broken their catchment areas down into Civil Areas 1 through 5.

Compliance Rating: Comply - Full

Condition 10 Assessment:

10. *Each SEMP shall be submitted to the Environmental Compliance Managers for review, acting in a technical certification capacity, at least 30 working days prior to bulk earthworks commencing in each SEMP area. A response should be provided within 30 working days of receipt. Construction activities must not commence in the relevant SEMP area until written certification has been obtained. The purpose of the SEMP is to indicate how the CEMP will be applied on a site specific basis.*

The following SEMPs have been submitted and approved by Horizons:

- Civil Area 1, received 12 August and approved 12 September 2019.
- Civil Area 2, received 19 September and approved 27 September 2019.
- Civil Area 3, received 18 September and approved 27 September 2019.

Works have commenced on Civil Areas 1 and 3 to date to install erosion and sediment control at per the SEMPs.

The SEMPs for Civil Areas 4 and 5 are still to be provided.

Compliance Rating: Comply – Full.

Condition 13 Assessment:

13. *The Consent Holder shall ensure that:*

    13.1 *All on-site storage areas for fuel and lubricants are bunded or contained in such a manner so as to prevent the discharge of spillages of such contaminants as far as practicable.*

    13.2 *No diesel storage tanks (other than those fitted to mobile plant) are located within the Water Supply Catchment.*

13.3 Diesel storage tanks (other than those fitted to mobile plant) are bunded with the bund sized to accommodate 110% of the diesel storage volume, plus a 1% AEP 24 hour rainfall depth on the bunded area.

13.4 All machinery and plant is regularly maintained in such a manner so as to minimise the potential for leakage of fuels and lubricants.

13.5 The Consent Holder shall not undertake cleaning or routine maintenance of equipment or machinery within the Water Supply Catchment or refuelling within 10 metres of the tributaries of any watercourse on site.

The current fuel storage area is located in Civil Area 1 and has been situated and designed to meet the requirements of conditions 13.1 through 13.5.

Compliance Rating: Comply - Full

Overall Consent Compliance Rating Schedule 1: Comply-Full.

Consent Numbers: 104553 and 104560 - Schedule 2.

Condition 1 Assessment:

1. *The Consent Holder shall provide written notification to the Environmental Compliance Manager at least 5 working days prior to works commencing in each of the sub-catchment areas for which a SEMP has been prepared.*

Notification for the current areas of work (Civil Areas 1, 2 & 3) was provided via email from Michelle Flawn of Downer on 1 October 2019 with works to install controls beginning on 7 October 2019. It is recommended that any work starting on any subsequent areas are notified as per this condition.

Compliance Rating: Comply - Full

Condition 2 Assessment:

2. *All erosion and sediment control measures shall remain the responsibility of the Consent Holder, and be installed, operated and maintained in accordance with the following hierarchy (except as otherwise required by these conditions):*

   2.1 These consent conditions

   2.2 The CEMP;

   2.3 The relevant SEMP; and

   2.4 The Wellington Regional Council's Erosion and Sediment Control Guidelines for the Wellington Region (dated September 2002) (or its subsequent equivalent).

The erosion and sediment control measures utilized on site have been technically assessed through the CEMP and SEMP approval process against best practice and incorporating the requirements of the consent conditions.

This report has noted minor technical issues with some of the devices on site that are in the process of being rectified. While these may not pose a high risk of sediment discharge, they are important to maintain the integrity of devices and ensure efficient operation of the erosion and sediment controls. This report also notes a significant issue with the removal of DGT 001 without stabilization of the catchment and without consultation with Horizons.

Compliance Rating: Low Risk Non Compliance

Condition 4 Assessment:

4. *The Consent Holder shall engage an independent and appropriately qualified person to audit the design of the erosion and sediment control measures against the CEMP and relevant SEMP, and to inspect bulk earthwork activities on an as-required basis to ensure that the sediment and erosion control measures are being constructed and maintained in accordance with the CEMP and relevant SEMP. The Consent Holder shall implement any recommendations made by the auditor that are consistent with these consent conditions. The Consent Holder shall be responsible for the reasonable direct costs associated with this engagement.*

The consent holder has engaged the services of Gregor McLean of Southern Skies Environmental.

Compliance Rating: Comply - Full

Condition 5 Assessment:

5. *Prior to the complete removal of the topsoil layer in areas of either excavation or filling, the erosion and sediment control works for the affected area shall be installed in accordance with the provisions of the relevant SEMP. The Consent Holder shall not remove or decommission any sediment ponds or perimeter controls until the associated sub-catchment area is stabilised to the satisfaction of the Environmental Compliance Manager. Removal and decommissioning of such devices must be in accordance with the relevant SEMP.*

Inspections onsite have shown the consent holder is installing controls in accordance with the relevant SEMPs prior to bulk earthworks. However note comments on removal of DGT 001 above.

Compliance Rating: Low Level Non Compliance

Condition 7 Assessment:

7. *All roads shall have a cut batter (where road is in cut) or constructed bund (where road is in fill) on the outside of the road, including a stabilising drainage channel sufficient to convey flow up to the 1% AEP storm along the road edge without erosion.*

Observations on site have noted there are stabilised diversion bunds installed along the project roading in accordance with the SEMPs.

Compliance Rating: Comply - Full

Condition 8 Assessment:

8. *As soon as reasonably practicable after final road levels are achieved, all roads shall be covered with aggregate basecourse to provide a running surface and avoid surface and scour erosion.*

Initial works to establish haul roads have only just begun in Civil Areas 1 and 3. It is recommended that aggregate is laid in accordance with the site SEMPs.

Compliance Rating: Not Assessed.

Conditions 10, 11, 12 & 13 Assessment:

10. *Grit traps shall be installed as follows:*

    10.1 *To intercept runoff from all earthworked areas that comprise the formed roadways and turbine platforms and immediately adjacent catchment areas that drain to the formed roadways and turbine platforms;*

    10.2 *Sufficient grit traps shall be installed such that there is a maximum catchment of 1000m^2 per grit trap;*

    10.3 *Grit traps shall be sized and maintained to provide a treatment volume that is at least 0.5% of the contributing catchment area.*

11. *A super silt fence shall be installed at all grit trap outfalls. The super silt fence shall have a minimum horizontal length of 10m, plus end returns of a minimum length of 2m. For locations in the base of a gully, where the effective horizontal length of fence that will be able to intercept runoff is limited by the gully side slopes, the 10m horizontal length shall be achieved by two or more shorter fences in series down the gully slope, without returns. A total horizontal length of less than 10m may be used in gully situations where the construction of the additional fence or fences in series would impinge on vegetation other than grazed pasture.*

12. *Silt fences shall be installed along the toe of all fills, or adjacent to any additional retaining structures constructed at the toe of any fills. Cleared vegetation may be mounded at the toe of fills provided this does not interfere with the functioning of the silt fence or its maintenance.*

13. *All side drains shall be constructed to provide side-channel drainage which includes erosion protection and grit trap treatment on the outfall.*

The SEMPs for this project have been technically assessed against the best practice standards as detailed in GD05 which exceed the requirements set by these conditions.

As discussed above, the controls onsite have been installed in accordance with the SEMPs.

Compliance Rating: Comply - Full

Condition 14 Assessment:

14. *Stream works for culverts shall be undertaken in dry conditions as far as practicable. If flow is present the Consent Holder shall ensure that the construction activities are separated from flowing water by diverting or pumping the full flow of the streams around or through the construction works, prior to disturbance of the stream beds and installation of culverts commencing.*

As shown in the report above a culvert has been installed at the entrance of the site on Track 21. This has been designed to meet the Permitted Activity standards for culverts under the One Plan. This particular culvert was constructed off line which also meets this condition.

Compliance Rating: Comply-Full.

Condition 15 Assessment:

15. *The discharge from any temporary diversion channels shall be controlled so as to prevent scour at the outlet of the channel.*

No scour of diversion outlet channels was observed onsite.

Compliance Rating: Comply - Full

Condition 16 Assessment:

16. *The Consent Holder shall ensure that any fish stranded during construction works are immediately placed in the clearest flowing water adjacent to the stranding site.*

There have been no reports of stranded fish to date. It is recommended if this occurs it is remediated as per this condition and documented via photos.

Compliance Rating: Not Assessed.

Condition 17 Assessment:

17. *The installation of culverts shall be undertaken in accordance with the CEMP and relevant SEMP, and in general accordance with the DoC publication "Fish passage at Culverts', December 1999.*

Observations onsite show the Track 21 Culvert was installed in accordance with the site SEMPs.

Compliance Rating: Comply – Full

Condition 21 Assessment:

21. *Any topsoil stockpile that is intended to remain in situ for more than 4 consecutive weeks shall have perimeter silt fences and be hydroseeded*

All onsite stockpiles including topsoil are controlled with super silt fences. Use of these stockpiles is ongoing therefore hydroseeding is not required at this time.

Compliance Rating: Comply - Full

Condition 23 Assessment:

23. *All topsoil stockpiles shall be bunded on the uphill side to divert clean water runoff away from the stockpile.*

All stockpile areas shown in the site SEMPs have been designed to have clean water diversions. Controls are still being built at present with no stockpiling occurring in the identified stockpile areas.

Compliance Rating: Not Assessed.

Condition 25 Assessment:

25. *All spoil disposal sites shall be located to ensure that:*

25.1 The uphill boundary is located as close to the ridgeline as possible to reduce upstream catchment size;

25.2 Suitable locations for clean-water cut-off drains can be provided;

25.3 The maximum possible fill volume to surface area ratio is achieved;

25.4 Any indigenous vegetation clearance is minimised;

25.5 They are a minimum of 25m from a permanent watercourse;

25.6 A sediment pond can be located to treat all run-off from the site; and

25.7 There is all weather vehicle (truck and 4x4 utility vehicle) access to sediment ponds for inspection and maintenance purposes.

As discussed the current stockpiles areas are having controls installed. They have been situated to meet this condition and the controls easily accessed for maintenance.

Compliance Rating: Comply - Full

Condition 26 Assessment:

26. All spoil disposal sites shall be designed, constructed and managed in accordance with the following:

26.1 The toe bund shall be structural and constructed of weathered rock;

26.2 The amount of surface area within the spoil site that is exposed at any one time shall be minimised, and limited to a maximum of 3ha per sediment pond;

26.3 Exposed areas shall be stabilised to the greatest extent practicable at the end of each day, and temporarily covered if possible prior to any significant storm event

26.4 A 3% sediment pond (or ponds) (being 3m^3 volume for every 100m^2 of catchment) shall be constructed to collect and treat run-off from each site;

26.5 All sediment ponds shall be constructed to provide for retrofitting of flocculation if needed;

26.6 Flocculation shall be provided for each spoil site sediment pond where:

a. The soils to be placed at the site do not settle to at least 80% removal in 30 minutes and at least 95% removal in 24 hours; and

b. Laboratory testing shows that flocculation can result in at least 80% removal in 30 minutes and at least 95% removal in 24 hours;

26.7 Compliance with condition 26.6 is to be established by sampling and testing of representative samples of the soils to be placed, both prior to preparation of the SEMP, and during placement in the spoil area;

26.8 A clean water diversion shall be constructed around each site that is capable of diverting the 1% AEP storm event around the site without erosion;

26.9 Each spoil site shall be stabilised and grassed over or re-vegetated, as soon as practicable after it has been fully utilised, in order to prevent scour and avoid sediment being washed into adjacent watercourses. Stabilisation may be staged, and stabilised areas diverted to a clean water diversion, to maintain a suitably small working catchment area; and

26.10 For any spoil disposal sites within the Kahuterawa catchment, stormwater runoff discharged from the sediment pond or external pond batters shall, in addition to any other treatment measures, pass through at least 10m of rank grass buffer before reaching an ephemeral watercourse.

All spoil sites are shown on each site's respective SEMP which have technically assessed to meet the requirements of GD05. Observations on site show the current spoil sites are being constructed in accordance with the SEMPs.

Compliance Rating: Comply - Full

Condition 67 Assessment:

67. The Consent Holder shall ensure that the construction, operation and maintenance activities are managed in a manner to ensure that there are no dust emissions occurring

beyond the boundary of the site that are objectionable or offensive. Measures for control may include, but are not limited to, the application of water to surfaces that are exposed or excessively dry, and covering an exposed area with a coating of geotextile, grass and/or mulch.

No dust was noted whilst on site.

Compliance Rating: Comply - Full

Condition 68 Assessment:

68. *If offensive or objectionable dust emissions do occur beyond the site boundaries, the dust-causing activity shall cease immediately and shall not recommence until appropriate measures have been put in place to prevent recurrence of a similar event.*

There has been no reported or witnessed objectionable dust from the site to date.

Compliance Rating: Not applicable.

Condition 69 Assessment:

69. *Should objectionable or offensive dust emissions occur, the Consent Holder shall provide a written report to the Environmental Compliance Manager within 5 working days of the Consent Holder being made aware of such emissions. The report shall specify:*

69.1 The severity of the event;

69.2 The cause or likely cause of the event and any factors that influenced its severity;

69.3 The nature and timing of any measures implemented by the Consent Holder to avoid, remedy or mitigate any adverse effects; and

69.4 The steps to be taken in future to prevent recurrence of similar events.

There has been no objectionable dust from site to date.

Compliance Rating: Not Applicable.

Overall Consent Compliance Rating Schedule 2: Low Level Non Compliance.

Report Close

As detailed in Horizons *"Compliance Assessment Guideline for Individual Consents"*, shown below, a risk of environmental consequences and/or there is a risk of adverse environmental effects results in a Low Level Non Compliance rating for the consent overall.

The Low Level Non Compliance in this instance relates to conditions 2 and 5 of schedule 2, and specifically, to consents 104553 and 104560, which authorise land disturbance and the discharge of stormwater to land from roads and turbine platforms via treatment devices. These consents in turn require compliance with schedules 1 and 2; accordingly a **Low Level Non Compliance** has been allocated for both these recourse consents in this instance.

Overall Compliance Consent Numbers: 104553 and 104560: Low Level Non Compliance.

Recommendations

To ensure full compliance with these consents in the future the following recommendations are made:

- A decommissioning plan for erosion and sediment control devices is drafted and implemented, that meets the conditions of the CEMP and SEMP in relation to maintenance and decommissioning of devices;
- The SEMP for Track 21 is updated to show controls required now that DGT 001 has been removed.

Consent Monitoring Officer:

Kerry Pearce

Annex A

17/01/2020 5.00PM

Horizons Regional Council – Erosion & Sediment Control: Guideline to Determining Control Rating

Category/Rating	Construction/Maintenance	Examples (not an exhaustive list)
1	Best practice – no further action required.	
2	Minor technical issue with the control device, where the *purpose* of the guidelines/E&SCP/consent conditions has been met.	- No silt fence support - Minor holes in silt fence - Minor discrepancy live/dead storage - Minor lack of volume in DEB's - No as builts provided
3	Controls absent or construction of the device is so poor that it leads to/is likely to lead to failure as an efficient erosion/sediment control method.	- No returns in silt fence - Short circuiting along outlet pipe of SRP - Internal pond embankment collapse - Discharge at pond outlet causing erosion - Inappropriate pond volumes - Significant discrepancy between live/dead storage volumes - Flow paths or spillways inadequately stabilised - Diversion channels or bunds inadequately sized - Silt fence not trenched in
4	Controls absent or construction of the device is so poor that it leads to failure as an efficient erosion/sediment control method leading to an uncontrolled sediment discharge.	

Annex A

Table 1. Compliance Assessment Guideline for Individual Consents

Site Compliance Grade	Examples
Comply - Full	Complying with all conditions of consent;
Comply – At Risk	At Risk grading identified against key condition(s) of one or more of consents for the site.
Low Risk Non-Compliance	Compliance with most of the relevant consent conditions. Non-compliance carries a low risk of adverse environmental effects or is technical in nature (e.g. failure to submit a monitoring report).
Moderate Non-Compliance	Non-compliance with one or more of the relevant consent conditions, where there are some environmental consequences and/or there is a moderate risk of adverse environmental effects.
Significant Non-Compliance	Non-compliance with one or more of the relevant consent conditions, where there are significant environmental consequences and/or a high risk of adverse environmental effects.
Not assessed	Monitoring has not been undertaken of this consent during the reporting period.

Table 2. Compliance Assessment Guideline for Individual Conditions

Condition Compliance Grade	Examples (not exhaustive)
Comply - Full	Conditions of consent are fully complied with.
Comply – At Risk	Compliant at time of inspection but management / system deficiencies indicate there is a real risk of a non-compliance occurring (e.g. insufficient effluent storage, poor irrigator performance). Sampling out of sequence or late due to circumstances outside of consent holders control (e.g. flow related sampling).
Low Risk Non-Compliance	One-off failure to comply with a condition of consent (e.g. One off minor exceedance in key parameter in sampling. Intent of condition met however data and / or report provided late. First up failure to provide management plan or environmental information (e.g. water quality information) within required timeframes.
Moderate Non - Compliance	Four minor exceedances of key parameters for one year's worth of sampling / data. Repeat failure to provide a report or monitoring data. Repeat Failure to undertaken sampling. Failure to install water meter. Cow numbers being exceeded for dairy shed effluent consent.
Significant Non-Compliance	Water quality results indicate there is a potential for or an actual effect which is more than minor that is not authorised by the resource consent. Unauthorised discharge of wastewater / effluent into water or onto land where it may enter water, excessive ponding of effluent on the land surface. Repeated failure to provide a report/monitoring data/ management plans/install water metering equipment etc. Repeated failure to undertake sampling. Repeated failure to comply with authorised discharge or water take volumes.
Not Applicable	Applies to conditions that are no longer applicable. Generally relates to historic conditions that may require provision of a management plan, which has been provided and consent requires no further action.
Not Assessed	Monitoring not undertaken of consent condition.

Annex A

Turitea Wind Farm
Site Environmental Management Plan – Civil Area 1

T90-VAWT-PM-PL-0020

Document Preparation and Control	Signature
Michelle Flawn – Environmental Advisor (Downer NZ) Mike McConnell – Environmental Consultant (McConnell Consultancy)	
Document Approval	**Signature**
Duncan Wallbank – Project Manager (Vestas) Marty Craill – Project Manager (Downer NZ)	

Project Document Version	Date
05	09/09/2019

Document Version History			
Version No.	**Date**	**Document Status**	**Brief Description of Change(s) from Previous Version**
01	25/07/2019	Draft	Issued for client review
02	26/07/2019	Draft	Minor text edits. Issued for client review.
03	30/07/2019	Issued	Issued for Client Approval
04	03/09/2019	Issued	Revised to address Council comments and revised track alignments
05	09/09/2019	Issued	Revised to address Council comments

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TABLE OF CONTENTS

1 PURPOSE

This Site Environmental Management Plan (SEMP) defines the specific environmental measures that are to be utilised during construction activities within Civil Work Area 1, including spoil disposal site 4 located between WTG 15 and WTG 11 to the east of South Range Road.

This plan is subordinate to the Construction Environmental Management Plan (CEMP).

This SEMP has been prepared in response to Condition 8, Schedule 1 of the Resource Consents.

The scope of this management plan applies to all construction activities undertaken on site by:

- Vestas
- Downer
- All subcontractors

Further details of scope of this SEMP are detailed in sections 1.3 and 2.1.

1.1 Relevant Consent Conditions

The consent conditions relevant to the Site Environmental Management Plan ("SEMP") are summarised in Table 1 below.

Table 1: Summary of consent conditions relevant to the SEMP

Condition Number	Condition Requirement	Section Referenced in the SEMP
SCHEDULE 1: Conditions relevant to Manawatu-Wanganui Regional Council, Palmerston North City Council, and Tararua District Council Consents		
8	The Consent Holder shall prepare and submit to the Environmental Compliance Manager, at each respective Council, a SEMP for each of the South Range Road, Water Catchment Access Road, Western Ridge, Browns Flat and Cross Valley Transmission and Out of Reserve (farmland) sub-catchment areas. The breakdown of the site into individual SEMPs may be varied by the Consent Holder as necessary to reflect any change to the design and construction programmes.	Section 1.0 Section 1.2 Section 1.3
9	Each SEMP shall be prepared by a group of suitably qualified experts (including input from the Consent Holder, contractor, designer, environmental specialist, erosion and sediment control specialist and (for the walkover only) the consent authority). The preparation of the SEMP shall include, but not be limited to, an on-site meeting and walk-over of each sub-catchment area by this group of experts.	Section 1.2
10	Each SEMP shall be submitted to the Environmental Compliance Managers for review, acting in a technical certification capacity, at least 30 working days prior to bulk earthworks commencing in each SEMP area. A response should be provided within 30 working days of receipt. Construction activities must not commence in the relevant SEMP area until written certification has been obtained. The purpose of the SEMP is to indicate how the CEMP will be applied on a site specific basis.	Section 1.2
11	Each SEMP shall include the following as appropriate to each individual sub-catchment area:	
11.1	A location plan	Section 1.3
11.2	A description of the work to be undertaken	Section 2.1
11.3	Contact details for the contractor(s) undertaking the work;	Section 2.2
11.4	A work programme;	Section 2.3
11.5	A method statement covering construction method, monitoring and contingencies;	Section 2.5 Section 2.6 Section 2.7
11.6	Design for the works covered by the SEMP, showing:	Section 3.0 Appendix A, B & C
11.6 a	Areas to be disturbed;	Section 3.1
11.6 b	Vegetation clearance methods and vegetation stockpiling;	Section 3.2
11.6 c	Fill areas;	Section 3.3
11.6 d	Spoil stockpile and disposal areas;	Section 3.4
11.6 e	Culverts and associated works in watercourses;	Section 3.5
11.6 f	Step by step criteria for determining the appropriate use of erosion and sediment control measures, including cut off drains, surface water control works, sediment ponds, flocculation measures (if required), and progressive rehabilitation of earthworks areas;	Section 3.6

Condition Number	Condition Requirement	Section Referenced in the SEMP
11.6 g	Stormwater management measures; including both temporary and permanent measures;	Section 3.7
11.6 h	Re-vegetation and rehabilitation (identification of re-vegetation to be undertaken and re-vegetation methods and any maintenance)	Section 3.8
11.6 i	Inspection and reporting schedule in particular in response to adverse weather conditions;	Section 3.9
11.6 j	Maintenance and monitoring activities;	Section 3.9
11.6 k	Storage and handling of fuels and hazardous material and contingency measures for containment of spills; and	Section 3.10
11.6 l	Decommissioning and re-stabilising of sediment ponds, and other erosion and sediment control measures, at the completion of construction.	Section 3.6.3
12	In addition to the requirements of condition 11 above, the SEMP for the Cross Valley Transmission sub-catchment area (between the Browns Flat and Plantation substations) shall include the following: 12.1 In areas where this is identified by a suitably qualified and experienced ecologist engaged by the Consent Holder as being necessary in order to minimise the impact on the surrounding vegetation, the footprint area for the transmission line support structures will be cleared by hand; and 12.2 All components for the identified transmission line support structures, including the reinforcement and concrete for the foundations, as well as the towers themselves, will be constructed with the use of helicopters to avoid the need for construction of access tracks.	Not Applicable to this SEMP
SCHEDULE 2: Conditions relevant to Manawatu-Wanganui Regional Council, Consents		
1	The Consent Holder shall provide written notification to the Environmental Compliance Manager at least 5 working days prior to works commencing in each of the sub-catchment areas for which a SEMP has been prepared.	Section 1.2
3	Road or platform pavement construction (including basecourse) works, and tower foundations may be undertaken at any time of the year. During winter (defined as the months of 1 May to 30 September inclusive) the controls on other bulk earthworks in the areas detailed in Appendix 1 to this Schedule, are as follows:	
3.1	No seasonal restrictions on works in Area A: - Realignment and widening of South Range Road - Realignment and widening of Water Supply Catchment Access - Existing "Love Property" farm access road around the rim of Brown's Flat out to Zone 0116 - Existing site access on Part Section 276 Town of Fitzherbert (WN45A/638)	Section 2.4
3.2	No seasonal restrictions on works in Area A (Conditional): - Bulk filling at the Brown's Flat substation site Condition: Foundation works to be completed in summer, and erosion and sediment control systems to be fully operational and in place prior to winter.	Not applicable to this SEMP
3.3	Approval from the Environmental Compliance Manager is required on a week by week basis for works in Area B: - Access up to the Turitea (or "Love") Ridge - Turitea Ridge - Western (or "Game") Ridge in the Reserve - Farm land generally to the east of South Range Road - Farmland to the North West of South Range Road	Section 2.4

Condition Number	Condition Requirement	Section Referenced in the SEMP
3.4	Works are prohibited in Area C: - Farmland at the northern end of the site that falls inside the Upper Turitea Catchment - Works in Brown's Flat (other than filling works on the substation site (filling works subject to compliance with condition 3.1 above)).	Not applicable to this SEMP
26	All spoil disposal sites shall be designed, constructed and managed in accordance with the following	
26.1	The toe bund shall be structural and constructed of weathered rock;	Section 2.5.2
26.2	The amount of surface area within the spoil site that is exposed at any one time shall be minimised, and limited to a maximum of 3ha per sediment pond;	Section 2.5.2 Section 3.6.2.2
26.3	Exposed areas shall be stabilised to the greatest extent practicable at the end of each day, and temporarily covered if possible prior to any significant storm event;	Section 3.6.2.2
26.4	A 3% sediment pond (or ponds) (being $3m_3$ volume for every $100m^2$ of catchment) shall be constructed to collect and treat run-off from each site;	Section 2.5.2 Section 3.6.2.2
26.5	All sediment ponds shall be constructed to provide for retrofitting of flocculation if needed;	Section 3.6.2.2
26.6	Flocculation shall be provided for each spoil site sediment pond where: a. The soils to be placed at the site do not settle to at least 80% removal in 30 minutes and at least 95% removal in 24 hours; and b. Laboratory testing shows that flocculation can result in at least 80% removal in 30 minutes and at least 95% removal in 24 hours;	Section 3.6.2.2
26.7	Compliance with condition 26.6 is to be established by sampling and testing of representative samples of the soils to be placed, both prior to preparation of the SEMP, and during placement in the spoil area;	Section 3.6.2.2
26.8	A clean water diversion shall be constructed around each site that is capable of diverting the 1% AEP storm event around the site without erosion;	Section 3.6.2.2
26.9	Each spoil site shall be stabilised and grassed over or re-vegetated, as soon as practicable after it has been fully utilised, in order to prevent scour and avoid sediment being washed into adjacent watercourses. Stabilisation may be staged, and stabilised areas diverted to a clean water diversion, to maintain a suitably small working catchment area; and	Section 3.6.2.2
26.10	For any spoil disposal sites within the Kahuterawa catchment, stormwater runoff discharged from the sediment pond or external pond batters shall, in addition to any other treatment measures, pass through at least 10m of rank grass buffer before reaching an ephemeral watercourse.	Not applicable to this SEMP

1.2 Preparation and Submission of SEMP

This SEMP has been prepared with input from (as appropriate for the scope of works) the Consent Holder, contractor, designer, environmental specialist, and erosion and sediment control specialist.

In accordance with Schedule 1 Condition 9 a site meeting was held on 15 August 2019 with the following attendees:

Consent Holder Mercury	Contractor / Designer Downer / Vestas	Erosion and Sediment Control Specialist	Horizons
Mason Jackson	Sunil Sharma	Mike McConnell	Hamish Sutherland

Stephanie Kirk	Craig Maloney		Georgia Baker
Gregor McLean	Ian Furness		Graeme Ridley

This SEMP is to be submitted to the Environmental Compliance Manager, at Manawatu-Wanganui Regional Council, Palmerston North City Council, and Tararua District Council for review, acting in a technical capacity.

Construction activities detailed within this SEMP will not commence until written certification has been received.

Following receipt of written certification, written confirmation of the commencement date of these works will be forwarded to the Environmental Compliance Manager of Manawatu-Wanganui Regional Council at least 5 working days prior to works commencing.

1.3 Extent of SEMP

Figure 1 below shows the extent of this SEMP, specifically Area 1 and Spoil Disposal Site 4

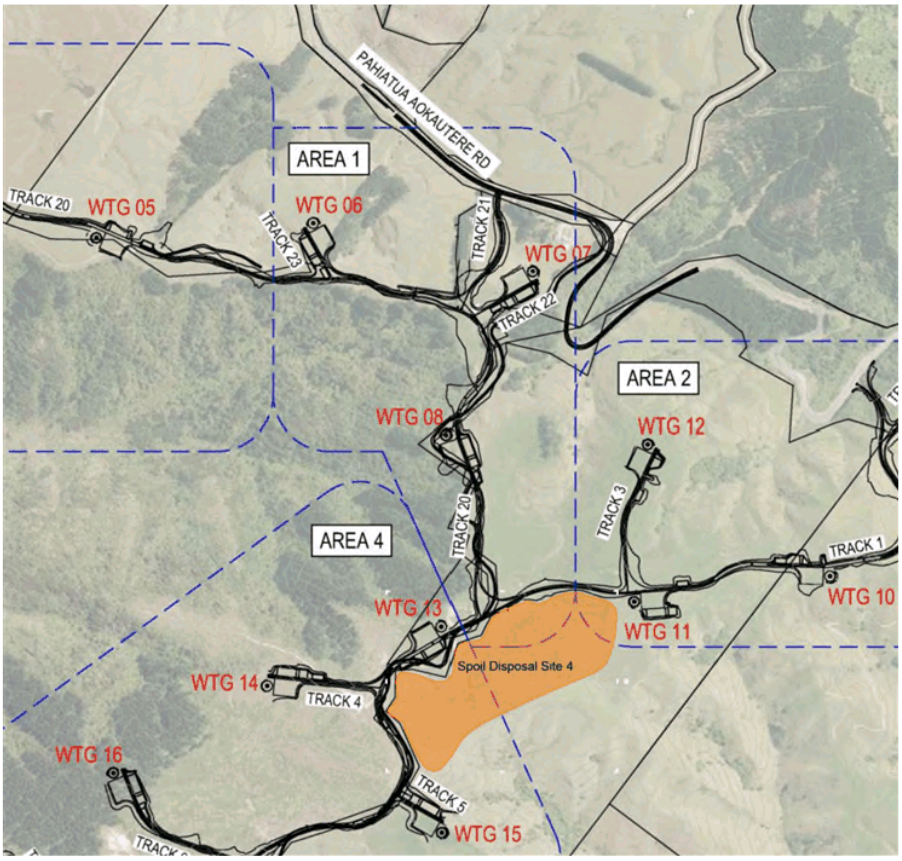


Figure 1 Location Plan of works covered by this SEMP

2 CIVIL AREA 1

2.1 Description of Work

Works within Civil Area 1 primarily provides access to the site to allow subsequent construction. The construction activities include:

- Construction of a new entrance to the site from Pahiatua Aokautere Road, approximately 200m north of the North Range Road intersection providing a safe entrance to the site.
- Establishment of Site Offices at 856 Pahiatua Aokautere Road.
- Construction of Track 21, from Pahiatua Aokautere Road to Track 20.
- Construction of Track 20 between Track 23 and Track 1.
- Construction of Track 23 and WTG 06 foundation.
- Construction of Track 22 and WTG 07 foundation.
- Construction WTG 08 foundation.
- Construction of the site laydown area.
- Development of the initial spoil disposal area.

These works will be undertaken as a traditional cut to fill and cut to waste operation; with waste material being placed in the spoil disposal area.

These works require approximately 70,000m^3 of cut, 35,000m^3 of fill and 14,000m^3 of topsoil stripping over approximately 11ha, of which 6ha is Spoil Disposal Site 4.

2.2 Contact Details

The contact details for this section of the works are as follows:

Vestas Project Contact Numbers			
Name	**Position**	**Phone**	**Email**
Moran Stark	Construction Manager	027 885 5402	mopst@Vestas.com
Downer Contact Numbers			
Name	**Position**	**Phone**	**Email**
Marty Craill	Project Manager	027 406 7886	Marty.Craill@downer.co.nz
Steve Christensen	HSE Professional	027 291 1539	Steve.Christensen@downer.co.nz
Michelle Flawn	Environmental Professional	021 583 347	Michelle.Flawn@downer.co.nz
Mike McConnell	Erosion and Sediment Control Specialist	027 483 8923	mike@mcconnell.nz
Valentino Cabadonga	Quality Professional	021 814 756	Valentino.Cabadonga@downer.co.nz
Simon de Rose	Stringfellows Subcontractor	027 4165796	simon@stringfellows.co.nz

2.3 Work Programme

Civil Area 1	Duration
Construction of new entrance from Pahiatua Aokautere Road	3 Weeks
Establishment of Site Offices	2 Weeks
Construction of Track 21	5 Weeks
Construction of Track 20 between Track 23 and Track 1	28 Weeks
Construction of Track 23 and WTG 06 foundation	28 Weeks
Construction of Track 22 and WTG 07 foundation	26 Weeks
Construction WTG 08 foundation	25 Weeks
Construction of the Site Laydown Area	1 Week
Development of the initial spoil disposal area	6 Weeks

2.4 Seasonal Restrictions

A small section of Civil Area 1, track 20 chainage 400-550, is within the Area A, section of the site as defined by Schedule 2 Condition 3 & Appendix 1, and therefore is not subject to seasonal restrictions.

The majority of Civil Area 1 (including Spoil Disposal Site 4) is predominantly within the Area B, section of the site as defined by Schedule 2 Condition 3 & Appendix 1.

In accordance with condition 3.3 approval is required from the Environmental Compliance Manager (Horizons Regional Council), on a weekly basis for earthworks being undertaken between 1 May and 30 September (inclusive).

This approval will be sought (via email) on the Wednesday of each week for the following week.

2.5 Construction Methodology

The initial activity of the above works will be to set up the site offices at 856 Pahiatua Aokautere Road.

2.5.1 Site Office Establishment

These works require minor earthworks to form access, parking areas, foundations for portacoms, and an on-site sewerage storage tank.

The earthworks will involve approximately 650m^3 of earthworks (600m^3 topsoil, 50m^3 cut to fill/waste) over 4,500m^2.

Heavy vehicle access to the site office area is not practical from the existing driveway. To facilitate this the existing farm track from South Range Road will be upgraded and a temporary access track formed from this farm track to the site office location.

These works are detailed in drawing 377-001 attached as Appendix A.

2.5.2 Spoil Disposal Site 4

In order to avoid temporary stockpiling on site, Spoil Disposal Site 4 will be established as soon as practical.

Spoil Disposal Site 4 covers an area of approximately 6ha and has the capacity to receive approximately 275,000m^3 of surplus cut.

The location of this spoil disposal site has been selected to ensure compliance with Schedule 2 Condition 25, specifically:

25. All spoil disposal sites shall be located to ensure that:
25.1 The uphill boundary is located as close to the ridgeline as possible to reduce upstream catchment size;

25.2 Suitable locations for clean-water cut-off drains can be provided;
25.3 The maximum possible fill volume to surface area ratio is achieved;
25.4 Any indigenous vegetation clearance is minimised;
25.5 They are a minimum of 25m from a permanent watercourse;
25.6 A sediment pond can be located to treat all run-off from the site; and
25.7 There is all weather vehicle (truck and 4x4 utility vehicle) access to sediment ponds for inspection and maintenance purposes.

The location of this spoil disposal site meets the above requirements.

The lower extent of this spoil disposal area is an existing farm track, typically on the alignment of Track 1.

This existing bund will be retained as the downstream embankment of a 6ha SRP which will be formed above this bund. A 750mm culvert will be installed through this bund to ensure that the 1% AEP storm event from the spoil disposal area can be diverted through this culvert without over topping the alignment (and work area during construction) of Track 1.

Additionally, should the topography allow, an additional 450mm culvert will be installed to divert clean water flows from above the spoil disposal area.

Following the installation of this culvert a manhole will be installed forming the emergency spillway of the SRP. Floating decants will then be installed. The required footprint of the SRP will then be excavated and the level spreader and forebay constructed.

A 3ha area of the spoil disposal area will then be stripped including removal of any unsuitable material from the existing gullies. This stripped material will be stockpiled within the catchment area of the SRP to be respread progressively as areas of the fill are completed. Note this maximum 3ha exposed area is a requirement of Schedule 2 Condition 26.2.

Filling will typically commence from the upper extent of the spoil disposal area and progress downslope.

With the spoil disposal area operational earthworks in the other areas will commence.

At the completion of the filling works, as a final activity, a structural toe bund will be constructed of weathered rock. The extent and location of this will be determined by the final volume of fill placed.

2.5.3 Track 21 and New Entrance

The construction of track 21 and the new entrance are a simple traditional earthworks operation:

- Install erosion and sediment control measures
- Strip topsoil to stockpile.
- Undertake cut to fill earthworks to form new road subgrade, surplus cut material to be disposed of in the spoil disposal site.
- Place pavement aggregate to form road surface.

Works will typically be completed from the south towards Pahiatua Aokautere Road so that the majority of the intersection works can be undertaken isolated from traffic.

2.5.4 Site Laydown Area

As above, the construction of the site laydown area, in regard to earthworks, is a relatively simple and traditional earthworks operation:

- Install erosion and sediment control measures
- Strip topsoil to stockpile.
- Undertake cut to fill earthworks to form new road subgrade, surplus cut material to be disposed of in the spoil disposal site.
- Place pavement aggregate to form laydown area.

2.5.5 Track and WTG Foundations

The track and WTG foundation construction is also a traditional earthworks operation. In addition to the above activities these works also require the installation of the cables required by the project as an interim step in the earthworks.

- Install erosion and sediment control measures.
- Strip topsoil to stockpile.
- Undertake cut to fill earthworks to form new alignment of the cable trench, surplus cut material to be disposed of in the fill site.
- Install cables.
- Complete earthworks to form road alignment.
- Place pavement aggregate to form road surface.
- Complete earthworks to form WTG foundations.
- Place pavement aggregate to stabilise WTG foundation and provide a suitable work surface for subsequent construction.

2.5.6 General

The above works will be undertaken using the following plant and methodologies:

- Topsoil will be stripped using excavators with the initial topsoil being used to form diversion bunds as required by the SEMP for the area.
- Where practical these bunds will be of sufficient volume to allow respreading to the completed earthworks areas.
- Surplus topsoil will be loaded into off road dump trucks. In some locations on-road 6 wheelers will be used. This topsoil will then be transported to the various topsoil stockpile areas. The location of these stockpile areas are detailed in the SEMPs and are selected to minimise haul distances and to ensure sufficient topsoil is available for respread at the completion of works.
- Trenching works for the power cable installation is undertaken using a large chain trencher or traditional excavator. This excavated material is stockpiled adjacent to the trench for later backfill following cable and thermal backfill installation. Surplus material will be removed from the area to a suitable project certified fill site.
- Cut to fill operations will be undertaken using excavators and off-road trucks for longer haul distances (particularly to the fill disposal sites).
- Cut to fill over shorter distances may also be undertaken using tractor and scoops.
- Compaction of cut material in fill locations will be by a variety of plant to be selected subject to the compaction effort required and the location of the fill.
- Final trimming of the cut and fill areas will be by grader and or excavator, dozers will also be used in the fill disposal areas.
- Following completion of earthworks, roading aggregate will be imported to site and spread directly from the delivery truck and trailers where possible. For the majority of the site however this material will be stockpiled and loaded into site 6 wheelers for spreading.

2.6 Construction Monitoring

Construction Monitoring will be undertaken in accordance with Section 9.1 of the CEMP.

There are no specific activities within the scope of this SEMP which trigger additional or alternate monitoring requirements.

2.6.1 Pre-Construction Meeting

The Pre-construction meeting noted in section 9.1.4.1 of the CEMP will be undertaken prior to commencement of control installation. Horizons Monitoring Officer will be advised of the timing of this meeting.

2.6.2 As Built Inspection

As noted in section 9.1.4.2 of the CEMP, as erosion and sediment control devices are completed they will be inspected by the Environmental Manager (or Erosion and Sediment Control Specialist), the site foreman or site engineer to confirm that the controls have been constructed in accordance with the requirements of the SEMP.

The results of these inspections will be recorded on standard forms (Waikato Regional Council As-built Certification Sheet or similar) and maintained on site. These will be made available for Horizons inspection on request.

2.7 Contingency Measures

Contingency measures are detailed in section 8.6 of the CEMP.

There are no specific activities within the scope of this SEMP which trigger additional or alternate contingency measures.

3 DESIGN OF CIVIL AREA 1 WORKS

The works within Civil Area 1 are detailed in the drawings attached as Appendix B.

3.1 Areas to be Disturbed

The works in this SEMP require approximately 11ha of disturbance, including 6ha required by the spoil disposal area. These work areas are shown on the attached drawings.

3.2 Vegetation Clearance

3.2.1 General

The majority of the works in this area does not require the removal of vegetation.

The vegetation to be removed in these work areas is typically small and will be removed by mulching ahead of the topsoil stripping.

This mulched vegetation will be uplifted with and stockpiled with the stripped topsoil.

3.2.2 Herpetofauna

Mercury's lizard searching effort has shown that Herpetofauna within the wind farm footprint is at very low densities, with only three green geckos (barking gecko) found in horopito scrub vegetation near WTG 21, WTG 29 and WTG 32. No other species of skink, gecko or lizard have been found on site.

The Department of Conservation is yet to confirm the preferred lizard management methodology for this project in light of these lizard search results, however, removal of high value lizard habitat near WTG 21, WTG 29 and WTG 32 will likely require some form of pre-clearance lizard search and salvage.

There are no works within the scope of this SEMP that are within the above areas (near WTG 21, WTG 29 and WTG 32).

3.2.3 Powelliphanta Snails

Initial surveys of the site undertaken during development of the Powelliphanta Snail Management Plan, and subsequent searches (30/05/2019) have determined that the likelihood of Powelliphanta Snails being within the location of the WTGs, access roads or spoil disposal areas is low.

Notwithstanding the above low potential of discovery, an accidental discovery protocol will be implemented as follows:

As part of site inductions, all contractors and staff will be made aware of the possibility of Powelliphanta snails being present, and will be supplied with photographs so they know what they look like. Contractors and staff will also be briefed regarding the accidental discovery protocol below.

Upon accidental discovery of Powelliphanta snails or shells at sites where they have not already been identified:

- *Stop any work being undertaken in the area immediately.*
- *Inform supervisor/manager.*
- *Contact the Department of Conservation and ask for advice on how to proceed.*
- *Do not restart works until approval has been granted.*

3.3 Fill Areas

3.3.1 Contouring of earth worked areas

As an initial design criterion, the extent of the earthworks has been minimised. This extent has taken into account the required alignments, both vertical and horizontal, and the geotechnical conditions of the site dictating the maximum and minimum batter slopes.

In addition, fill areas have been avoided where practical, resulting in the surplus of cut material across Civil Area 1, in the order of 27,500m^3.

Fill areas are shown on the drawings attached as Appendix B.

3.4 Stockpiles and Spoil Disposal

3.4.1 General

As noted above the early establishment of the spoil disposal area will limit the requirement for temporary stockpiling of excavated material.

Where any stockpiling of excavated material is required this will be as a temporary activity, typically associated with trenching where this material will be used as backfill. Any such stockpiles will be within the site perimeter controls.

Stripped topsoil will typically be used as perimeter control bunds to be respread once earthworks are completed. For larger earthwork areas, in particular the spoil disposal area, topsoil stockpiles will be formed and located within the perimeter controls.

3.4.2 Contouring of completed Spoil Disposal Site 4

The location of Spoil Disposal Site 4 is a series of moderate gullies that are to be filled typically to the extent of the ridges on either side of the gully system. This area is currently in pasture with reeds and other typically 'wetland' type vegetation in the bases of the gullies.

In order to ensure that the completed site will be able to be productively grazed, the final contours will be no steeper than the existing contours. Typically, as a result of filling the gullies the contours will be flatter. The contours of the completed fill will be as smooth as possible, the transition from the completed fill areas to the existing ground will be softened and rounded to create a 'natural' transition complimenting existing contours. The final vegetation in these areas will be a duplication of the existing pasture.

3.5 Culverts and Watercourse Works

In this area the earthworks are typically located on ridges and do not cross gullies.

The extent of the foundations of WTG 06 extend into the upper extents of an ephemeral watercourse. In these locations, sediment control devices will be installed at the extent of the works.

The spoil disposal area includes a number of ephemeral watercourses which will be filled. These are within the catchment of the SRP and do not require any diversions.

In accordance with Consent Condition 16 any fish that are stranded during the construction works will be recovered and placed in the clearest flowing water adjacent to the stranding site.

3.5.1 Culvert SW-20-1

Culvert SW-20-1 is located on Track 20 immediately east of the intersection with Track 23.

This culvert is not within any form of a watercourse.

This culvert diverts road runoff from Track 20 and Track 23 from the southern side of Track 20 to discharge overland north of Track 20. This culvert specifically diverts road runoff away from the PNCC Water Supply Catchment.

3.5.2 Culvert SW-21-1

See attached drawing Appendix C

Culvert SW-21-1 is located at the lower, northern end of Track 21.

Upstream of the inlet of the culvert is a defined flow path which discharges to a wide, boggy area with no defined channel.

Culvert SW-21-1 complies with the PA rules of Horizons 'One Plan' as follows:

Rule 17-10 Culverts - Permitted Activity Classification	
Conditions/Standards/Terms	**Compliance Comment**
(a) A new culvert must not be erected or placed in: (i) a *river*^ or *lake*^ regulated under Rule 17-3 (ii) a reach of a *river*^ with a Schedule B Value of Flood Control and Drainage, unless the work is undertaken by or on behalf of the Regional Council.	The location of the culvert is not regulated under rule 17-3. The location of the culvert is not within a reach of a *river*^ with a schedule B value.
(b) Where multiple culverts are placed side by side, the total cross-sectional area of the multiple culverts must not be less than that of a single culvert which complies with this *rule*^.	The culvert is a single barrel culvert.
(c) The culvert, associated fill and culvert placement must comply with the following dimensions: (i) a maximum culvert length of 20 m (ii) for circular culverts a culvert diameter of 0.3 m to 1.2 m (inclusive) (iii) for non-circular culverts a width and height of 0.3 m to 1.2 m each (inclusive) (iv) a maximum fill height of 2 m above the top of the culvert unless a spillway is constructed to enable the passage of a 200 year flood without the fill being overtopped (v) a minimum culvert installation depth below the *bed*^ of 20% of the width of the culvert.	 The culvert is 20m long The culvert has a diameter of 525mm NA The maximum height of fill over the top of the culvert is less than 2m (typically 600mm at inlet). The culvert is to be installed with the invert 105mm lower than the existing bed of the stream.
(d) The culvert must be positioned so that its alignment and gradient are the same as the *river*^.	The culvert is replacing a boggy area with no defined channel, however the overall grade (1.5%) of the culvert will match the boggy area and the culvert will discharge to the existing channel beyond the boggy area.
(e) The culvert must be constructed to allow: (i) the flow from a 5% annual exceedance probability (20 year return period) flood event without overtopping, unless the overtopping flows to a specifically designed spillway (ii) the flow from a 2 year return period flood event without any flow impediment.	The contributing catchment of the culvert is approximately 2.26ha and will discharge approximately 0.48m^3/s from the 5% AEP. The 525mm culvert has the capacity to convey 0.55m^3/s.
(f) The culvert inlet and outlet must be protected against erosion.	Yes to permanent design
(g) All practicable steps must be used to minimise the release of sediment during construction.	Culvert will be installed offline

(h) The culvert must be constructed and maintained to avoid any aggradation or erosion of the *bed*^.	Yes, appropriate erosion control is to be included at the inlet and outlet.
(i) The culvert must be kept clear of accumulated debris.	Yes on going maintenance will be undertaken in accordance with maintenance requirements for all public roads.
(j) The activity must comply with the general *conditions*^ listed in Section 17.3.	The construction of the culvert complies with the general *conditions*^ listed in Section 17.3.
(k) The activity must not take place in any *rare habitat**, threatened *habitat** or *at-risk habitat**.	The culvert is not in any *rare habitat**, threatened *habitat** or *at-risk habitat**.

The construction of Culvert SW-21-1 is programmed to take place in late September, early October. This is outside of the fish spawning period of April to June.

3.6 Erosion and Sediment Control

Erosion and Sediment Control measures will be implemented in accordance with section 8.5.2 of the CEMP.

Specific details are shown on the drawings attached as Appendix B and as detailed in the following sections.

3.6.1 Risk Rating

In accordance with Section 8.2 of the CEMP a risk assessment has been undertaken for these works. The work areas have been assessed based on the catchment to which the earthworks will discharge.

3.6.1.1 PNCC Water Supply Catchment

This catchment will receive discharges from:

- Construction of Track 20, between Track 23 and Track 1.
- Construction WTG 08 foundation.

Value of Receiving Environment	**High**
Risk of Sediment Discharge	**Medium**
• Slope (between 5-10 percent) • Size of earthworks (1-3ha), • Universal Soil Loss Equation (USLE) estimates a sediment yield of greater than 2 tonnes over the duration of the proposed works • Earthworks are between 20-100 meters away from watercourse with a good vegetative buffer • Duration of earthworks or site exposure before stabilisation (1-4 weeks) • Contractor/consent holder performance/compliance history illustrates a very good compliance record	
Overall Risk	**High Risk**

The high risk associated with the works within the PNCC Water Supply Catchment is largely influenced by the high value of the receiving environment. As this factor is a constant, to lower the overall risk to medium risk, the risk of a discharge would have to be lowered to Low Risk. To achieve this, the factors that can be modified are the duration of works and the extent of the earthworks. Neither of these can be practically reduced, however through the progressive nature of these works, the overall risk will reduce as the works are completed.

To further minimise the risk of discharges to the PNCC Water Supply Catchment all SRPs and Decanting Grit Traps which discharge to the PNCC Water Supply Catchment will be chemically treated in accordance with the Chemical Treatment Management Plan.

3.6.1.2 Lower Turitea Stream Catchment

This catchment will receive discharges from:

- Construction of a new entrance to the site from Pahiatua Aokautere Road, approximately 200m north of the North Range Road intersection providing a safe entrance to the site.
- Establishment of Site Offices at 856 Pahiatua Aokautere Road
- Construction of Track 21, from Pahiatua Aokautere Road to Track 20.
- Construction of Track 23 and WTG 06 foundation.
- Construction of Track 22 and WTG 07 foundation.
- Construction of the site laydown area.

Value of Receiving Environment	**Medium High**
Risk of Sediment Discharge	**Medium**
• Slope (greater than 10 percent) • Size of earthworks (1-3ha), • Universal Soil Loss Equation (USLE) estimates a sediment yield of greater than 2 tonnes over the duration of the proposed works • Earthworks are between 20-100 meters away from watercourse with a good vegetative buffer • Duration of earthworks or site exposure before stabilisation (1-4 weeks) • Contractor/ consent holder performance/compliance history illustrates a very good compliance record	
Overall Risk	**Medium Risk**

The medium risk associated with the works within the Lower Turitea Stream Catchment is influenced by the medium high value of the receiving environment. As this factor is a constant, to lower the overall risk to a low risk, the risk of a discharge would have to be lowered to a Very Low Risk. To achieve this, the factors that can be modified are the duration of works and the extent of the earthworks. Neither of these can be practically reduced, however through the progressive nature of these works, the overall risk will reduce as the works are completed.

3.6.1.3 Matarua Creek Catchment

This catchment will receive discharges from:

- Construction of Track 22 and WTG 07 foundation.
- Development of the initial spoil disposal area.

Value of Receiving Environment	**Low Medium**
Risk of Sediment Discharge	**High**
• Slope (between 5-10 percent) • Size of earthworks (greater than 3ha), • Universal Soil Loss Equation (USLE) estimates a sediment yield of greater than 2 tonnes over the duration of the proposed works • Earthworks are between 20-100 meters away from watercourse with a good vegetative buffer • Duration of earthworks or site exposure before stabilisation (> 1 month) • Contractor/ consent holder performance/compliance history illustrates a very good compliance record	
Overall Risk	**High Risk**

The high risk associated with the works within the Matarua Catchment is influenced by the low medium value of the receiving environment. This is a reflection of the immediate and near receiving environment which is heavily impacted by stock. As this factor is a constant, to lower the overall risk to a medium risk, the risk of a discharge would have to be lowered to a Medium Risk. To achieve this, the factors that can be modified are the duration of works and the extent of the earthworks. Neither of these can be practically reduced as the spoil disposal area will be in operation with an earthwork area of 3ha for the duration of the works.

These works will remain with a high risk rating and therefore will be a key area of inspection in pre and post rainfall inspections.

3.6.2 Specific Erosion and Sediment Control Measures

Note, haul roads are to remain with the perimeter controls detailed below. If haul roads are required outside of these areas a revised SEMP is to be prepared and submitted for approval.

3.6.2.1 Site Office Establishment

(See drawings 377-001RevA)

Note, the establishment of the site office works will be undertaken as an initial, separate activity before works are commenced on the construction of Tracks 20, 22 and WTG 07.

1. Form cleanwater diversion bunds above the main earthwork area using stripped topsoil.
2. Stabilise the outside of these bunds with stripped turf or geotextile.
3. Install the eastern super silt fence, note this is to be installed along the contour as closely as practicable.
4. Install the western super silt fence.
5. Form the short sections of dirty water diversion bunds with stripped topsoil.
6. Commence earthworks.
7. Any surplus topsoil and or excavated material is to be stockpiled within the perimeter controls and is to be stabilised with geotextile (note this will need to be well secured) before perimeter controls are removed.
8. Undertake as much of the carpark areas as possible as a cut and cover.
9. Upgrade existing access track by removing soft surface material (as required) and covering with aggregate.
10. This is to be undertaken as a 'cut and cover' where at the end of each day or prior to rain (whichever is first) all exposed surfaces are stabilised with geotextile or aggregate.
11. A silt fence is to be installed below a topsoil stockpile location to the north of the existing barn.
12. Any surplus stripped or excavated material from the access roads is to be stockpiled in the above stockpile.
13. Following upgrading of the existing access, form the new temporary access as a 'cut and cover'.

3.6.2.2 Spoil Disposal Area

(See drawings 377-SD4-1RevB)

1. Form cleanwater diversion bunds above the main earthwork area using stripped topsoil.
2. Stabilise the outside of these bunds with stripped turf or geotextile.
3. Install a temporary coffer dam above the following culvert installation area to ensure culvert works are undertaken in dry conditions.
4. Install a section of silt fence below the culvert works.
5. Install a 750mm culvert through the existing farm track, install geotextile and riprap erosion protection at the outlet, minimum 3m x 3m.
6. At the upper end of the 750mm culvert install a 1050mm manhole with 3 x floating decants.
7. Remove coffer dam and excavate 6.0ha SRP footprint (SRP SD4).
8. Construct forebay and level spreader.
9. As built SRP to confirm compliance.
10. Strip a 3ha area at the top of the spoil disposal area, stockpile stripped organic material including topsoil for respreading within the perimeter controls.
11. Commence fill placement.
12. As areas of fill are completed, topsoil and grass.
13. Once grass has achieved 80% strike, additional areas of disposal can be stripped (to the same area as the 80% grass strike) ensuring that at no time is the exposed area greater than 3ha.
14. Where the rate of grass strike does not allow the required opening of new areas, the grassed areas can be stabilised with hay mulch. Note, due to the exposed nature of the site this will likely require frequent reapplication.

It is noted that SRP SD4 has a contributing catchment of 6ha which is greater than the recommended maximum (*Erosion and Sediment Control Guidelines for the Wellington Region*) of 3ha, however as the exposed area within this contributing catchment will be restricted to 3ha (Schedule 2: Consent Condition 26.2) it is considered that this meets the requirements of industry best practice and is appropriate for this location. As noted below the implementation of chemical treatment is expected to ensure that the discharges from this 6ha SRP will have a sediment loading no greater than that from a 3ha SRP.

As an additional initial activity, representative soil samples will be taken from within the spoil disposal area and from the cut areas of Civil Area 1. These soils will be tested to determine if chemical treatment is required to achieve compliance with Schedule 2: Consent Condition 26.6:

> *26.6 Flocculation shall be provided for each spoil site sediment pond where:*
> *a. The soils to be placed at the site do not settle to at least 80% removal in 30 minutes and at least 95% removal in 24 hours; and*
> *b. Laboratory testing shows that flocculation can result in at least 80% removal in 30 minutes and at least 95% removal in 24 hours;*

Soil testing has confirmed that the soils to be placed in the spoil disposal site will benefit from chemical treatment.

Chemical treatment will be undertaken in accordance with the Chemical Treatment Management Plan.

Testing of soils within the spoil disposal area have shown that the use of PAC with a dose rate of 6mg/L increases settlement over 1 hour from 30mm to 120mm.

A single Flocbox will be used to dose the runoff from the 3ha exposed area.

Device	Dosage Rate	Catchment Area	Tray size	Low Flow Volume	High flow Volume	Flocbox size
SRP SD4	6mg	3ha	3.36m^2	40L	80L	Large

During earthworks the exposed area of the fill is to be minimised as much as practical, with completed areas topsoiled and grassed as soon as practical. In particular, steep fill faces are to be avoided. Prior to heavy rain any completed, steep or uncompacted areas are to be compacted and stabilised if practical.

3.6.2.3 Track 21 and New Entrance

(See drawings 377-102RevB)

1. Form a cleanwater diversion bund along the eastern side of the works using stripped topsoil.
2. Stabilise the outside of this bund with stripped turf or geotextile.
3. Install a silt fence below the location of DGT 001.
4. Construct DGT 001 at the lower extent of the cut, approximate chainage 30.
5. Construct DEB 002 to the west of track 21 at the top of the main cut at approximate chainage 195.
6. As built DGT & DEB to confirm compliance
7. Install dirty water diversion bunds, formed from stripped topsoil to direct runoff to these devices.
8. Commence cut to fill and cut to waste earthworks with surplus material being disposed of in the spoil disposal area.
9. As the batters are complete respread topsoil and grass.
10. As the subgrade is completed and roadside drains formed, complete these works to permanent design.
11. The DEBs are to remain until all surfaces within the contributing catchments are stabilised by grass (strike > 80%) or aggregate.
12. Once track 21 has been constructed and stabilised south of chainage 30, specifically the cut area, DGT 001 will be removed and culvert SW-21-1 (see section 3.5) will be installed.
13. Once culvert 21-1 has been installed and the inlet and outlet stabilised with permanent rock rip rap, the flow path to the inlet will be opened, isolating the intersection area from these flows.
14. Silt fences will then be installed on either side of the intersection fill allowing these earthworks to be completed.
15. These silt fences are to remain until the intersection area is complete and stabilised.

3.6.2.4 Laydown Area

(See drawings 377-101RevB)

1. Install a silt fence below the laydown area, ensuring silt fence is installed along the contour.
2. Strip topsoil and commence cut to fill and cut to waste earthworks with surplus material being disposed of in the spoil disposal area.
3. As any batters are completed respread topsoil and grass.
4. As the platform is completed stabilise the surface with aggregate to final design.
5. The silt fence is to remain until all surfaces within the contributing catchments are stabilised by grass (strike > 80%) or aggregate.

3.6.2.5 Track and WTG Foundations

(See drawings 377-101RevB, 377-102RevB, 377-103RevB)

1. Construct DGT 005 on the western side of Track 20 at chainage 430.
2. Install Flocbox (see details below)
3. As built DGT 005 to confirm compliance.
4. Install dirty water diversion bunds, formed from stripped topsoil to direct runoff to DGT 005 from Track 22, note this will require a trafficable bund (or daily reinstatement) where this crosses the existing track at the intersection with South Range Road.
5. Install silt fences along the edge of South Range Road and above South Rage Road below the fills of Track 22 and Track 20.
6. Construct DGT 003.
7. As built DGT 003 to confirm compliance.
8. Install dirty water diversion bunds around the eastern and western sides of WTG 07, formed from stripped topsoil to direct runoff to DGT 003.
9. Commence cut to fill and cut to waste earthworks within the catchment of the above controls with surplus material being disposed of in the spoil disposal area. Note initial haul routes will utilise South Range Road.
10. Set out the location of SRP WTG13.
11. Install a silt fence below this work area
12. Construct SRP WTG13.
13. Install Flocbox (see details below)
14. As built SRP to confirm compliance.
15. Install dirty water diversion bunds, formed from stripped topsoil to direct runoff to SRP WTG13.
16. Commence cut to fill and cut to waste earthworks within the catchment of SRP WTG13 with surplus material being disposed of in the spoil disposal area.
17. Construct DEB 006 & DGT 007
18. As built DEB 006 & DGT 007 to confirm compliance.
19. Install dirty water diversion bunds around the eastern and western sides of WTG 08, formed from stripped topsoil to direct runoff to DEB 006 & DGT 007. Note these bunds will be relocated as works progress to minimise the catchment of the SSFs to the west of WTG 08.
20. Install silt fences on either side of Track 20 between chainages 130 & 180.
21. Commence cut to fill and cut to waste earthworks within the catchments of DEB 006 & DGT 007 with surplus material being disposed of in the spoil disposal area.
22. Install super silt fences below the fill to the west of WTG08.
23. Install a super silt fence below Track 20 fill at chainage 400 fill, ensure the super silt fence is a minimum of 10m long and follows the contour.
24. Commence placement of fill.
25. Install a silt fence at the low points along the south side of Track 20 works, between chainage 750 and 950.
26. Install dirty water diversion bunds between the silt fences at the high points.
27. Set out the location of SRP WTG06.
28. Construct SRP WTG06.
29. As built SRP to confirm compliance.
30. Install dirty water diversion bunds, formed from stripped topsoil to direct runoff to SRP WTG06.
31. Commence cut to fill and cut to waste earthworks within the catchment of SRP WTG06 with surplus material being disposed of in the spoil disposal area.
32. As the batters are complete respread topsoil and grass.

33. As the subgrade is completed and roadside drains formed complete these works to permanent design.
34. The SRPs, DGTs, DEBs, silt fences and super silt fences are to remain until all surfaces within the contributing catchments are stabilised by grass (strike > 80%) or aggregate.

Chemical Treatment requirements

Device	Dosage Rate	Catchment Area	Tray size	Low Flow Volume	High flow Volume	Flocbox size
DGT 005	6mg	0.4ha	0.45m^2	5.4L	10.8L	Small
SRP WTG13	6mg	1.25ha	1.40m^2	17L	34L	Medium

3.6.3 Decommissioning Erosion and Sediment Control Measures

As noted above all SRPs, DEBs, silt fences and super silt fences are to remain until all surfaces within the contributing catchments are stabilised by grass (strike > 80%), aggregate or other appropriate stabilisation measure.

Once the above stabilisation criteria have been met. The decommissioning of controls will meet the following standards:

- The decommissioning of sediment retention ponds or decanting earth bunds will be undertaken to achieve the appropriate geotechnical standard. This standard will define what material is to be used for backfill and what compaction standards are to be met.
- Prior to backfilling of any devices the silt fence or super silt fences that were utilised during the installation devices will be reinstated if required (particularly over the spillways), note this requirement will be subject to the duration of the backfilling.
- Any accumulated sediment is to be removed as part of this decommissioning and will be disposed of in one of the site spoil disposal areas.
- The exposed areas as a result of sediment retention pond or decanting earth bund decommissioning will be rapidly stabilised in accordance with the final landscaping for the area. Where this final landscaping requires grassing, additional stabilisation in the form of hay mulch may be appropriate.
- Any recyclable materials as the result of silt fence or super silt fence removal, waratahs, wire, tensioners, waratah caps etc will be retained and reused as practical.
- The geotextile from the silt fences or super silt fences is not (typically) suitable for reuse so will be removed from site as waste.
- As with the silt fence material, geotextile used for site stabilisation will be recycled if practical, where this is not practical it will be removed from site as waste.
- Though out the duration of the project, the ability to salvage and recycle silt fence and geotextile will continue to be investigated. Off-site recycling opportunities will also be investigated.

3.7 Stormwater Management

Temporary stormwater management will be achieved through compliance with the SEMP.

Permanent stormwater control will be achieved though the implementation of the final design details. These include traditional design objectives and physical control measures including:

- Minimising impervious areas
- Avoiding concentrated discharge flows where practical
- At concentrated discharge points:
  - Minimise outlet velocities
  - Provide erosion control in the form of riprap aprons
  - Consider the location of outlets to existing watercourses

3.8 Revegetation

Revegetation will be undertaken in accordance with the Wildlands Rehabilitation and Revegetation Plan for the Turitea Wind Farm.

3.9 Inspection and Reporting

Monitoring and Inspections will be undertaken as detailed in section 9.0 of the CEMP.

There are no specific activities within the scope of this SEMP which trigger additional or alternate monitoring requirements.

3.10 Storage of Fuels and Hazardous Materials

This project will involve the use of a variety of construction plant and machinery. The majority of this plant will be motorised and as such will require a regular supply of fuels and oils. These can become a pollutant if discharged to ground or water.

Other materials potentially used in the construction process including drilling muds, concrete, bonding agents, sealants, flocculants and degreasers can result in environmental impacts if they are not managed carefully and are discharged to the environment in an uncontrolled manner.

The following mitigation measures will be implemented to manage hazardous substance use, storage and transport during the project:

- Fuel for all construction plant will generally be delivered by mini-tanker and refuelling and lubrication of construction plant will only be carried out in areas separated from environmentally sensitive areas, wetlands, watercourses (including ephemeral watercourses) or overland flow path.
- Spill kits will be available for use in the event of a spill.
- Hydraulic oils, greases and other construction materials including small quantities of fuel required for hand tools and pumps may be stored at the site compound, in a secure area.
- Any hazardous substances kept on site will be stored under cover in accordance with the relevant regulations.
- No diesel storage tanks (other than those fitted to mobile plant) will be located within the PNCC water supply catchment.
- Containers of paint, adhesives etc are not to be left open unless being actively used.
- Specific concrete and grout wash-down areas shall be provided.
- Wastes will be disposed of in accordance with appropriate regulations.
- Spill kits will be maintained at appropriate locations around the site. These site locations will be detailed at all smoko sheds.
- Major plant maintenance will not be carried out onsite unless absolutely necessary. Minor repairs will be undertaken away from the watercourses or stormwater inlets.
- Hazardous substances are managed through the Health and Safety Management Plan. All MSDS information shall be available to site staff.

3.10.1 Emergency Procedures

Prompt and effective emergency response reduces losses and the consequences of natural and man-made disasters. The following are standard situational responses. Job/task specific emergencies will be included in relevant Construction Package Method Statements.

Additionally, both Vestas and Downer employ a range of procedures to ensure proper precautions are taken to mitigate any environmental emergencies. In the event of an incident, a full environmental investigation shall be carried out.

3.10.2 Emergency Plan

In a situation where the Health and Safety of the public or site personnel is at risk, this plan needs to be read in conjunction with the provisions in the project Safety Plan.

An emergency situation may require isolation of some, or all services, to the site to minimise damage to the environment.

Service Isolation points for electricity, water, gas and compressed air, are to be clearly identified on the Emergency Plan and marked in the field.

3.10.3 Fuel and Hazardous Substance Spills

A procedure for dealing with fuel and hazardous substance spills is outlined below:

1. Positively identify the material and then refer to Safety Data Sheet (SDS) information located in the Dangerous Goods or smoko room for Emergency Procedure Guides.
2. Assess whether or not you can safely deal with the spill. Do not under any circumstances attempt to contain any spills containing acids as these fumes are extremely dangerous. Immediately evacuate the building and call the Fire Service on 111 with details of the product and size of spill.
3. If safe to approach the spilled material, follow spill response chart/procedure and site spill response plan.
4. If not activate the alarms and follow the evacuation procedure

If large quantities of fuel, or a hazardous or unknown chemical is spilt:

1. Call the fire service and advise the nature of the spill and the quantity involved.
2. If there is a possible risk to people, evacuate the area, ensuring that people remain upwind and the spill area is closed to public access, as per information in the Emergency Procedure Guides.
3. Remove all sources of ignition to prevent an explosion of flammable vapours.
4. Only attempt to contain a spill if you have been trained in spill cleanup for the substance involved and have the proper protective equipment to do so. Otherwise, do not approach or come into contact with the substance.
5. If safe to do so, reposition leaking containers to prevent further leakage.
6. If there is a possibility of the spill entering the drainage system, or causing an environmental problem, create a temporary bund around any drainage sumps and contact Horizons Regional Council.
7. Should a diesel spill exceed the capabilities of local expertise, then the Fire Service should be called.

3.10.4 Categories of Spills

All spills will be categorised by the Site Supervisor.

Type 1 **A minor spillage within the boundaries of the site that has been, or is able to be, cleaned up by staff from the company involved and no damage to the environment has occurred.**

Site Supervisor shall:		
Initiate and oversee clean-up		
Notify Environmental Professional	Michelle Flawn	021 583347

Type 2 **A spillage that has flowed off-site or has the potential to leave the site (this includes vapours of flammable liquids), or the company staff are not able to clean up the spill and its effects safely.**

Site Supervisor notify:	
NZ Fire Service	1-111
Police (if appropriate)	1-111
Horizons Regional Council	0508 800 800
Project Manager (Marty Craill)	027 4067886
Environmental Professional (Michelle Flawn)	021583347

Annex B

Appendix A

Site Office Establishment

Item 8

Annex B

Notes:
1. Erosion and Sediment Controls are to be checked daily.
2. All Erosion and Sediment Controls are to be installed and maintained as a minimum standard in accordance with Erosion and Sediment Control Guidelines for the Wellington Region June 2006.
3. All diversions are to be monitored for erosion; check dams or stabilisation is to be installed as appropriate.
4. Contour Drains are to be installed as appropriate.
5. Locations shown are indicative and are to be confirmed on site.

SF Silt Fence
SSF Super Silt Fence
CW Cleanwater Diversion
DB Diversion Bund
Decanting Earth Bund
Sediment Retention Pond

Surplus material stockpile (from access tracks)
Silt Fence below stockpile
Earthwork area
Form dirty water diversion bund from stripped topsoil
Super Silt Fence
Form cleanwater diversion bund from stripped topsoil
Surface existing track. Undertake as cut and cover
Temporary access track. Undertake as cut and cover
Form cleanwater diversion bund from stripped topsoil
Super Silt Fence
South Range Road
Pahiatua Aokautere Road

				BY	DATE
			DESIGNED		
			SURVEYED		
A	For Review	DMM	AUTOCAD		
AMENDMENT		APP'D	APPROVED		
		Date			

Vestas
Downer
Relationships creating success

TURITEA WIND FARM

Mercury

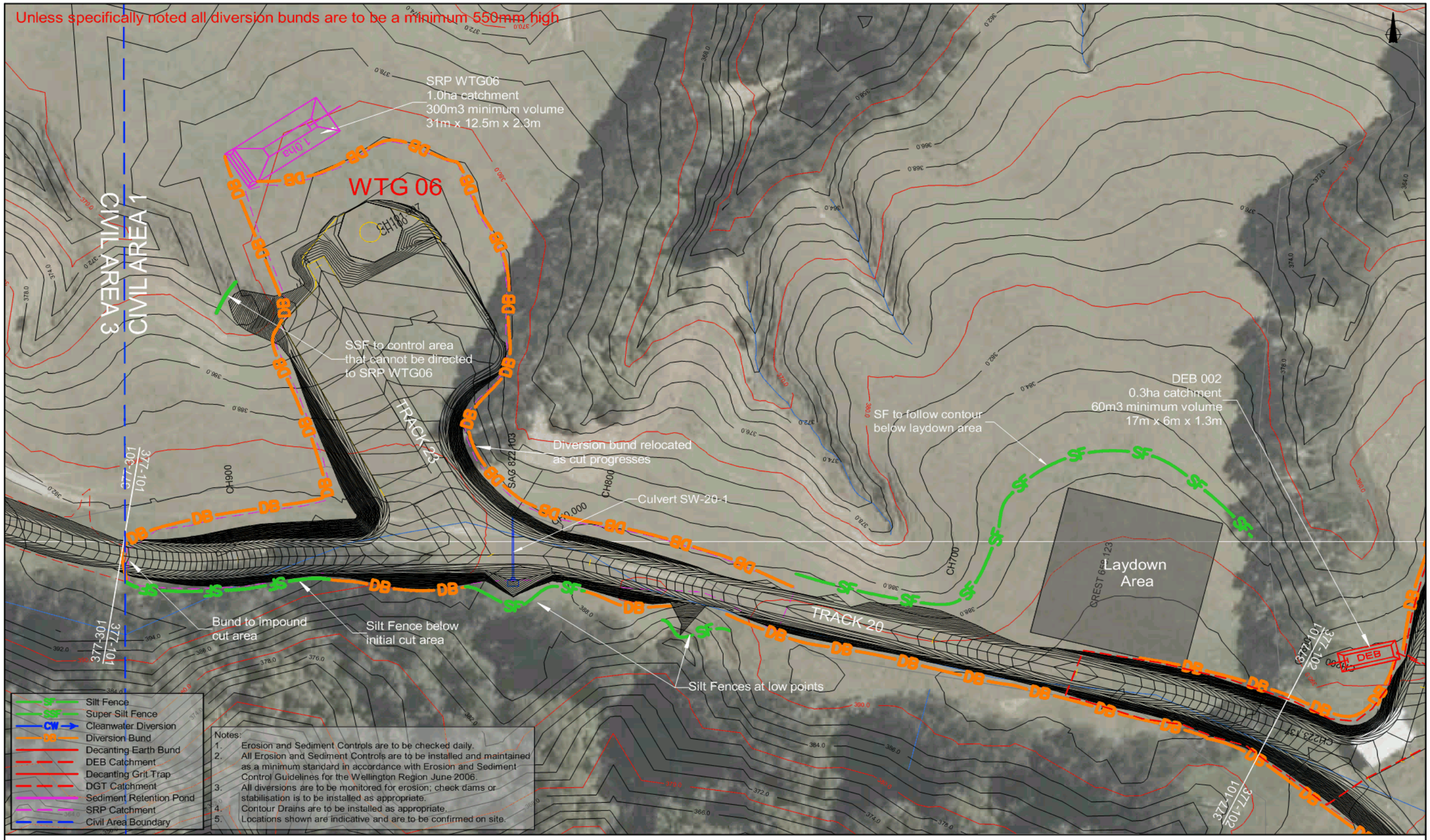
McConnell Consultancy Ltd
0274 8389230
info@mcconnell.nz
www.mcconnell.nz

TITLE: Site Compound Establishment Erosion and Sediment Control
Client: Downer

Plot Date	Scale: 1:1000 @ A3	Job No.: 2019 - 377	
File Number	Drawing No.	Rev. No.	Sheet No.
377	377 - 001	A	1

Appendix B

Erosion and Sediment Control Drawings



	AMENDMENT	APP'D	Date
C	Civil Area Boundaries Added	DMM	09-09-19
B	Track 20 & 21 Revised	DMM	02-09-19
A	For Review	DMM	26-07-19

	BY	DATE
DESIGNED	DMM	26-07-19
SURVEYED		
AUTOCAD	DMM	26-07-19
APPROVED		

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Downer
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TURITEA WIND FARM

Mercury

McConnell Consultancy Ltd
0274 8389230
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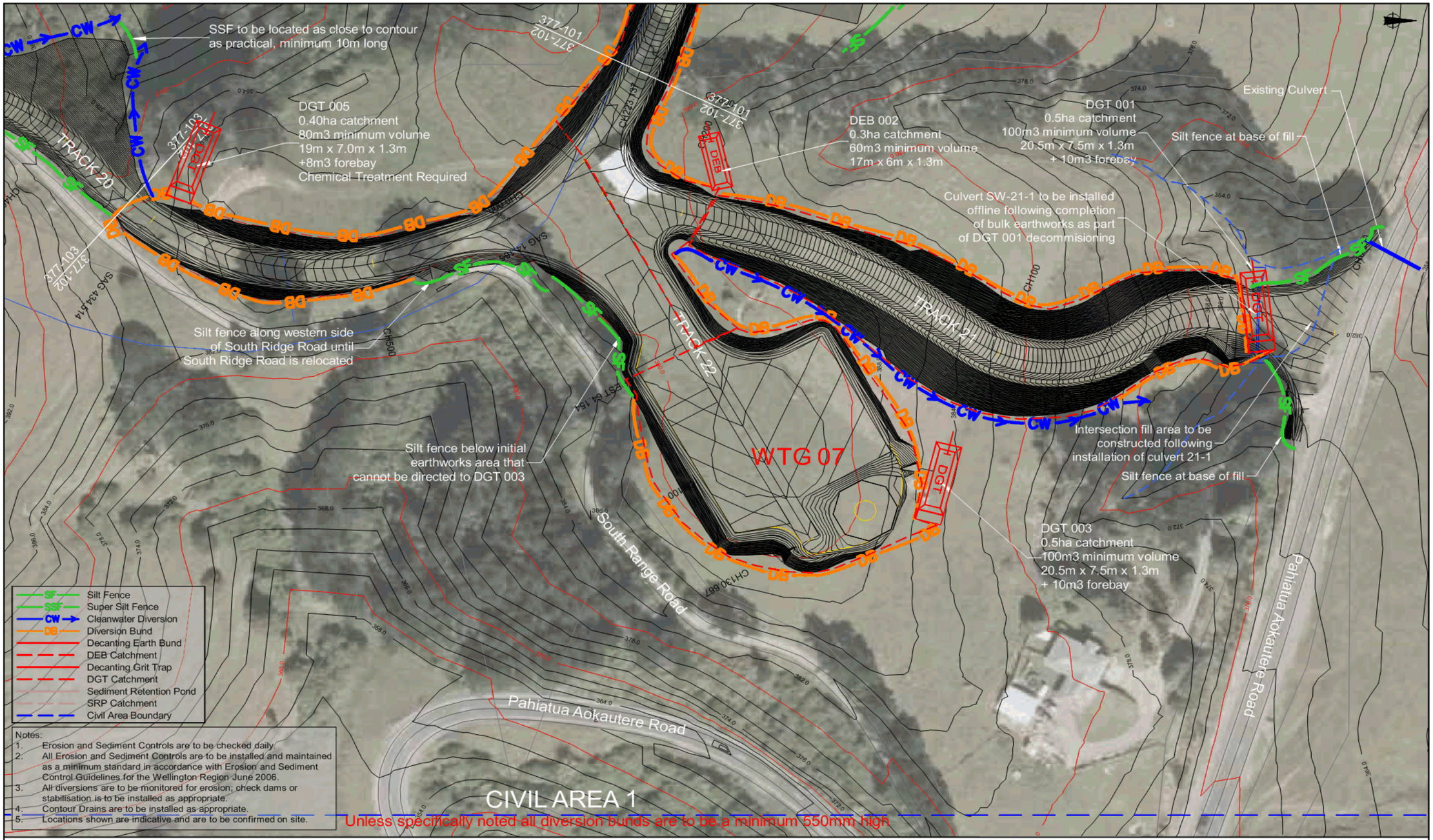
www.mcconnell.nz

Erosion and Sediment Control
TITLE: Civil Area 1
Client: Downer

Plot Date	Scale: 1:1000 @ A3	Job No.: 2019 - 377	
File Number	Drawing No.	Rev. No.	Sheet No.
377	377 - 101	C	1


SSF to be located as close to contour as practical, minimum 10m long
DGT 005
0.40ha catchment
80m3 minimum volume
19m x 7.0m x 1.3m
+8m3 forebay
Chemical Treatment Required
DEB 002
0.3ha catchment
60m3 minimum volume
17m x 6m x 1.3m
DGT 001
0.5ha catchment
100m3 minimum volume
20.5m x 7.5m x 1.3m
+ 10m3 forebay
Existing Culvert
Silt fence at base of fill
Culvert SW-21-1 to be installed offline following completion of bulk earthworks as part of DGT 001 decommisioning
TRACK 20
TRACK 21
TRACK 22
Silt fence along western side of South Ridge Road until South Ridge Road is relocated
Silt fence below initial earthworks area that cannot be directed to DGT 003
WTG 07
Intersection fill area to be constructed following installation of culvert 21-1
Silt fence at base of fill
DGT 003
0.5ha catchment
100m3 minimum volume
20.5m x 7.5m x 1.3m
+ 10m3 forebay
South Range Road
Pahiatua Aokautere Road
Silt Fence
Super Silt Fence
Cleanwater Diversion
Diversion Bund
Decanting Earth Bund
DEB Catchment
Decanting Grit Trap
DGT Catchment
Sediment Retention Pond
SRP Catchment
Civil Area Boundary
Notes:
1. Erosion and Sediment Controls are to be checked daily.
2. All Erosion and Sediment Controls are to be installed and maintained as a minimum standard in accordance with Erosion and Sediment Control Guidelines for the Wellington Region June 2006.
3. All diversions are to be monitored for erosion; check dams or stabilisation is to be installed as appropriate.
4. Contour Drains are to be installed as appropriate.
5. Locations shown are indicative and are to be confirmed on site.
CIVIL AREA 1
Unless specifically noted all diversion bunds are to be a minimum 550mm high
C Civil Area Boundaries Added DMM 09-09-19
B Track 20 & 21 Revised DMM 03-09-19
A For Review DMM 26-07-19
AMENDMENT APP'D Date
DESIGNED DMM 26-07-19
SURVEYED
AUTOCAD DMM 26-07-19
APPROVED
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Mercury
McConnell Consultancy Ltd
0274 8389230
info@mcconnell.nz
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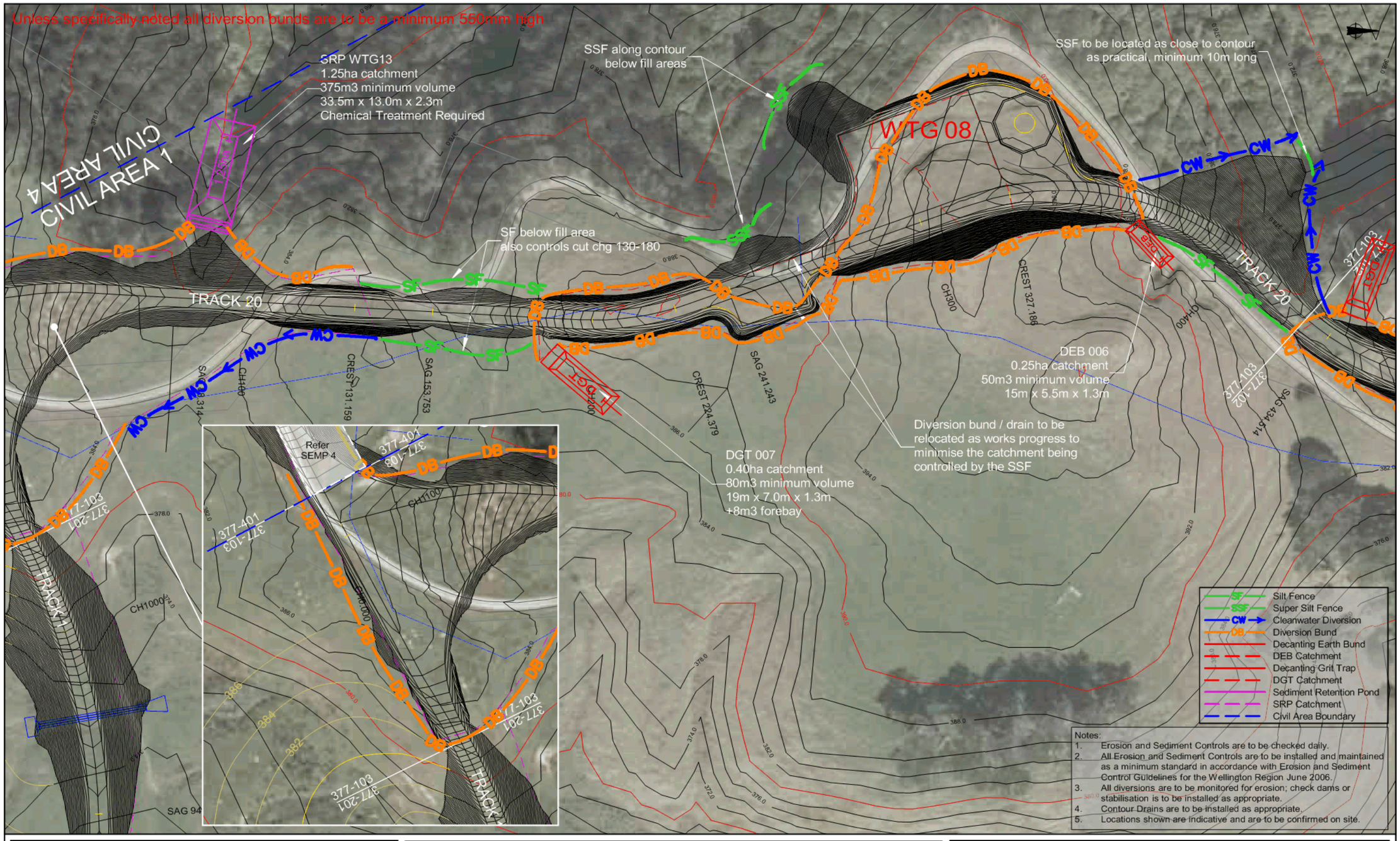
Erosion and Sediment Control
TITLE: Civil Area 1
Client: Downer
Plot Date
Scale: 1:1000 @ A3
Job No.: 2019 - 377
File Number
Drawing No.
Rev. No.
Sheet No.
377
377 - 102
C
1


Unless specifically noted all diversion bunds are to be a minimum 560mm high
SRP WTG13
1.25ha catchment
375m3 minimum volume
33.5m x 13.0m x 2.3m
Chemical Treatment Required
SSF along contour
below fill areas
SSF to be located as close to contour
as practical, minimum 10m long
WTG 08
CIVIL AREA 4
CIVIL AREA 1
SF below fill area
also controls cut chg 130-180
TRACK 20
DEB 006
0.25ha catchment
50m3 minimum volume
15m x 5.5m x 1.3m
Diversion bund / drain to be
relocated as works progress to
minimise the catchment being
controlled by the SSF
DGT 007
0.40ha catchment
80m3 minimum volume
19m x 7.0m x 1.3m
+8m3 forebay
Refer
SEMP 4
TRACK 1
Silt Fence
Super Silt Fence
Cleanwater Diversion
Diversion Bund
Decanting Earth Bund
DEB Catchment
Decanting Grit Trap
DGT Catchment
Sediment Retention Pond
SRP Catchment
Civil Area Boundary
Notes:
1. Erosion and Sediment Controls are to be checked daily.
2. All Erosion and Sediment Controls are to be installed and maintained as a minimum standard in accordance with Erosion and Sediment Control Guidelines for the Wellington Region June 2006.
3. All diversions are to be monitored for erosion; check dams or stabilisation is to be installed as appropriate.
4. Contour Drains are to be installed as appropriate.
5. Locations shown are indicative and are to be confirmed on site.
C Civil Area Boundaries Added DMM 09-09-19
B Track 20 Revised DMM 03-09-19
A For Review DMM 26-07-19
AMENDMENT APP'D Date
DESIGNED DMM 26-07-19
SURVEYED
AUTOCAD DMM 26-07-19
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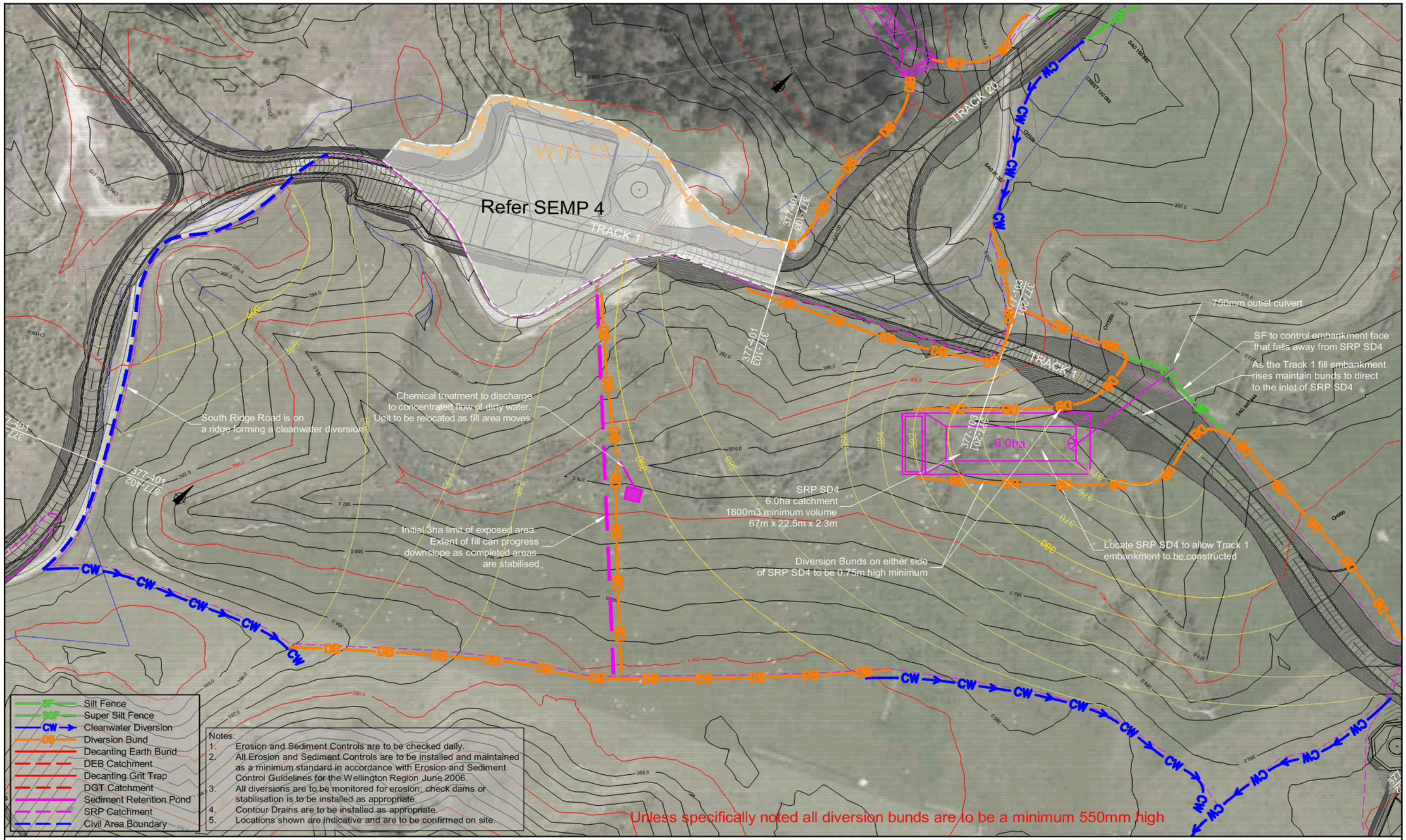
Erosion and Sediment Control
TITLE: Civil Area 1
Client: Downer
Plot Date
Scale: 1:1000 @ A3
Job No.: 2019 - 377
File Number
Drawing No.
Rev. No.
Sheet No.
377
377 - 103
C
1


Refer SEMP 4
WTG 13
TRACK 1
TRACK 2
TRACK 1
750mm outlet culvert
SF to control embankment face that falls away from SRP SD4
As the Track 1 fill embankment rises maintain bunds to direct to the inlet of SRP SD4
South Ridge Road is on a ridge forming a cleanwater diversion
Chemical treatment to discharge to concentrated flow of dirty water. Unit to be relocated as fill area moves.
SRP SD4
6.0ha catchment
1800m3 minimum volume
67m x 22.5m x 2.3m
Initial 3ha limit of exposed area. Extent of fill can progress downslope as completed areas are stabilised
Diversion Bunds on either side of SRP SD4 to be 0.75m high minimum
Locate SRP SD4 to allow Track 1 embankment to be constructed
Silt Fence
Super Silt Fence
Cleanwater Diversion
Diversion Bund
Decanting Earth Bund
DEB Catchment
Decanting Grit Trap
DGT Catchment
Sediment Retention Pond
SRP Catchment
Civil Area Boundary
Notes:
1. Erosion and Sediment Controls are to be checked daily.
2. All Erosion and Sediment Controls are to be installed and maintained as a minimum standard in accordance with Erosion and Sediment Control Guidelines for the Wellington Region June 2006.
3. All diversions are to be monitored for erosion; check dams or stabilisation is to be installed as appropriate.
4. Contour Drains are to be installed as appropriate.
5. Locations shown are indicative and are to be confirmed on site.
Unless specifically noted all diversion bunds are to be a minimum 550mm high
C Extent of works clarified DMM 09-09-19
B Chemical treatment and bund details added DMM 03-09-19
A For Review DMM 26-07-19
AMENDMENT APP'D Date
DESIGNED DMM 26-07-19
SURVEYED
AUTOCAD DMM 26-07-19
APPROVED
BY DATE
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Downer
Relationships creating success
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McConnell Consultancy Ltd
0274 8389230
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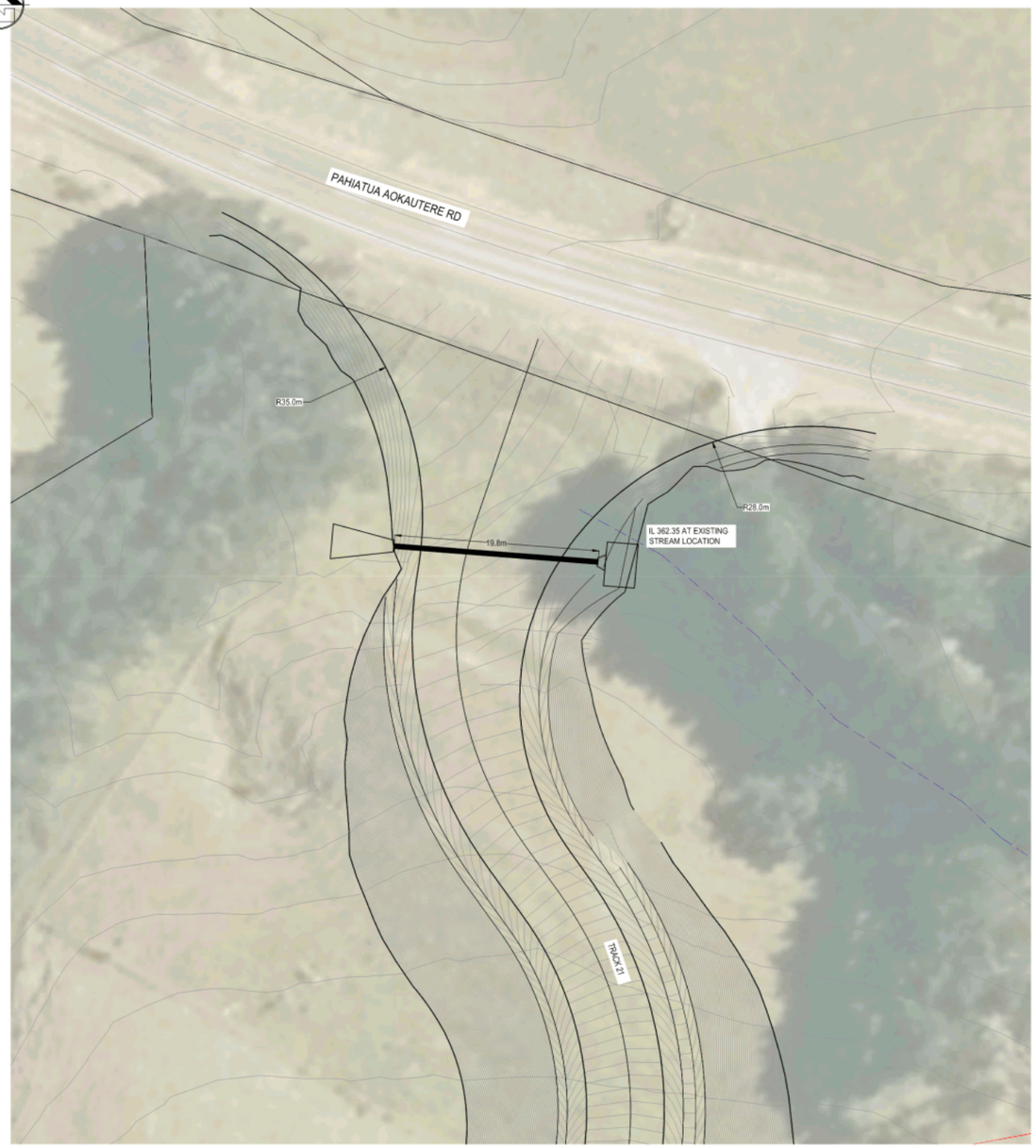
www.mcconnell.nz
Erosion and Sediment Control
TITLE: Spoil Disposal Area 4
Client: Downer
Plot Date Scale: 1:1250 @ A3 Job No.: 2019 - 377
File Number Drawing No. Rev. No. Sheet No.
377 377 - SD4-1 C 1

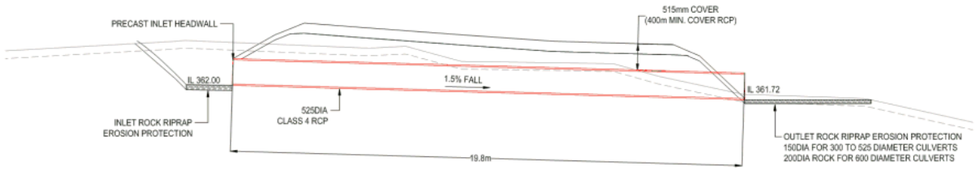
Appendix C

Culvert SW-21-1



WESTERN SITE ENTRANCE INTERSECTION LAYOUT PLAN
SCALE 1:250

CULVERTS									
CULVERT NAME	CATCHMENT	C_{10}	I_{20} (mm/h)	Q_{20} (m^3/s)	CULVERT SIZE	CAPACITY	PERCENT FULL	FROUDE	VELOCITY
SW-21-1	2.264 ha	0.180	102.00	0.481	525DIA RCP - CLASS 4	0.550	88%	1.62	2.96



STORMWATER RCP CULVERT DETAIL
NTS

NOTE
EXISTING CONTOURS SHOWN ON PLAN ARE DERIVED FROM LIDAR DATA.

i³ consulting pty ltd
engineering consultants
innovation, ingenuity, inspiration

18-243 TURITEA WIND FARM
WESTERN SITE ENTRANCE
04.09.2019 A.P.

Annex C

Site Environmental Management Plan (SEMP) - Works Plan - Turitea Reserve - Helicopter site

Turitea Transmission Line

Job Manager:	Kevin Small
Customer:	Mercury NZ Ltd (Mercury)
Electrix Job No:	P.0242015.1.01
Version No.	V3.0
Date of Issue:	27th September 2019

Annex C

Distribution Register

Name	Designation	Role	Signature	Date
Kevin Small	Project Manager	Peer Reviewer & Approver		
Emma Comrie-Thomson	Environmental Consultant (Electrix)	Peer Review		

Amendment Register

Issue No	Issue Date	Description	Author	Reviewer	Approver
01	17th Sept 2019	Version 1	Emma Comrie-Thomson	KS JB	KS
02	18th Sept 2019	Version 2	Emma Comrie-Thomson	KS JB	KS
03	27th Sept 2019	Version 3	Emma Comrie-Thomson	KS JB	KS

ACRONYMS

Acronyms	Defined
AEE	Assessment of Environmental Effects
CEMP	Construction Environmental Management Plan
CLG	Community Liaison Group
CNMP	Construction Noise Management Plan
CTMP	Construction Traffic Management Plan
PNCC	Palmerston North City Council
SDS	Safety Data Sheets
SEMP	Site Environmental Management Plan
TDC	Tararua District Council

Annex C

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Appendix

1. Background

1.1 Introduction

This Site Environmental Management Plan (SEMP) details the principles, practices and procedures to be implemented to manage, remedy and mitigate potential adverse environmental effects during construction of a new 12km long 220kV transmission line to connect Transpower's existing Linton Substation to the "Plantation Substation" at Mercury's Turitea Wind Farm (the Project), near Palmerston North.

This SEMP is for works within the Turitea Reserve where helicopters will be used to deliver materials, machinery and where required, workers. Walking tracks will also be utilised for worker access and egress should weather restrict helicopter access, as well as for any emergency.

The use of helicopters will include tower placement (for towers illustrated in figure 1) and conductor stringing activities (for towers 21-38) (figure 2). Figure 3-5 illustrate the exact works locations and access tracks into each of the areas.

The SEMPs will be updated as necessary during the Project to ensure that they remain current. Where relevant, significant updates will be re-submitted to the Approvers, for certification. Minor updates will be tracked in documentation but will not be resubmitted for approval. These are likely to include (but are not limited to):

- Minor design changes;
- Increase in environmental controls (e.g. Erosion and Sediment controls); and
- Changes as instructed by Regulatory authorities following audits.

Table 1: Consent conditions relating to SEMP

Number	Condition	SEMP Section
8	The Consent Holder shall prepare and submit to the Environmental Compliance Manager, at each respective Council, a SEMP for each of the South Range Road, Water Catchment Access Road, Western Ridge, Browns Flat and Cross Valley Transmission and Out of Reserve (farmland) sub-catchment areas. The breakdown of the site into individual SEMPs may be varied by the Consent Holder as necessary to reflect any change to the design and construction programmes.	-
9	Each SEMP shall be prepared by a group of suitably qualified experts (including input from the Consent Holder, contractor, designer, environmental specialist, erosion and sediment control specialist and (for the walkover only) the consent authority). The preparation of the SEMP shall include, but not be limited to, an onsite meeting and walk-over of each sub-catchment area by this group of experts.	1.4
10	Each SEMP shall be submitted to the Environmental Compliance Managers for review, acting in a technical certification capacity, at least 30 working days prior to bulk earthworks commencing in each SEMP area. A response should be provided within 30 working days of receipt. Construction activities must not commence in the relevant SEMP area until written certification has been obtained. The purpose of the SEMP is to indicate how the CEMP will be applied on a site-specific basis.	-

11	Each SEMP shall include the following as appropriate to each individual sub-catchment area: 11.1 A location plan;	Figures 1-2
	11.2 A description of the work to be undertaken;	2
	11.3 Contact details for the contractor(s) undertaking the work;	12
	11.4 A work programme;	3
	11.5 A method statement covering construction method, monitoring and contingencies;	6, 7
11.6	Design for the works covered by the SEMP, showing: a. Areas to be disturbed;	7
	b. Vegetation clearance methods and vegetation stockpiling;	8
	c. Fill areas;	-
	d. Spoil stockpile and disposal areas;	6
	e. Culverts and associated works in watercourses;	-
	f. Step by step criteria for determining the appropriate use of erosion and sediment control measures, including cut off drains, surface water control works, sediment ponds, flocculation measures (if required), and progressive rehabilitation of earthworks areas;	9
	g. Stormwater management measures; including both temporary and permanent measures;	8.2
	h. Re-vegetation and rehabilitation (identification of re-vegetation to be undertaken and re-vegetation methods and any maintenance);	8
	i. Inspection and reporting schedule in particular in response to adverse weather conditions;	9.3
	j. Maintenance and monitoring activities;	9.2
	k. Storage and handling of fuels and hazardous material and contingency measures for containment of spills; and	11
	l. Decommissioning and re-stabilising of sediment ponds, and other erosion and sediment control measures, at the completion of construction.	9.1
12.1	In addition to the requirements of condition 11 above, the SEMP for the Cross-Valley Transmission sub-catchment area (between the Browns Flat and Plantation substations) shall include the following: In areas where this is identified by a suitably qualified and experienced ecologist engaged by the Consent Holder as being necessary in order to minimise the impact on the surrounding vegetation, the footprint area for the transmission line support structures will be cleared by hand; and	8

12.2	In addition to the requirements of condition 11 above, the SEMP for the Cross-Valley Transmission sub-catchment area (between the Browns Flat and Plantation substations) shall include the following: All components for the identified transmission line support structures, including the reinforcement and concrete for the foundations, as well as the towers themselves, will be constructed with the use of helicopters to avoid the need for construction of access tracks.	1

1.2 Turitea Water Catchment Area

The locations of work are within the Turitea Water Supply Catchment, as illustrated in figure 1.

1.3 Pre-construction meeting

Prior to works commencing in this area there shall be a pre-commencement meeting held on site. The following parties shall be invited to attend the meeting (allowing five working days to confirm the meeting date and time):

a. Mercury's Environmental Advisor;
b. Electrix Project Manager;
c. Electrix Operations Manager
d. Electrix Environmental Manager;
e. The Project's Ecologist; and
f. Council's Monitoring Officer.

This meeting shall discuss the proposed work, how it is to be done, the installation and requirements of the tracks, and the areas of work where specific monitoring and direction are required.

Electrix shall prepare minutes of the actions agreed at the meeting.

A copy of these minutes from this meeting shall be forwarded to all attendees within 5 working days of the meeting occurring.

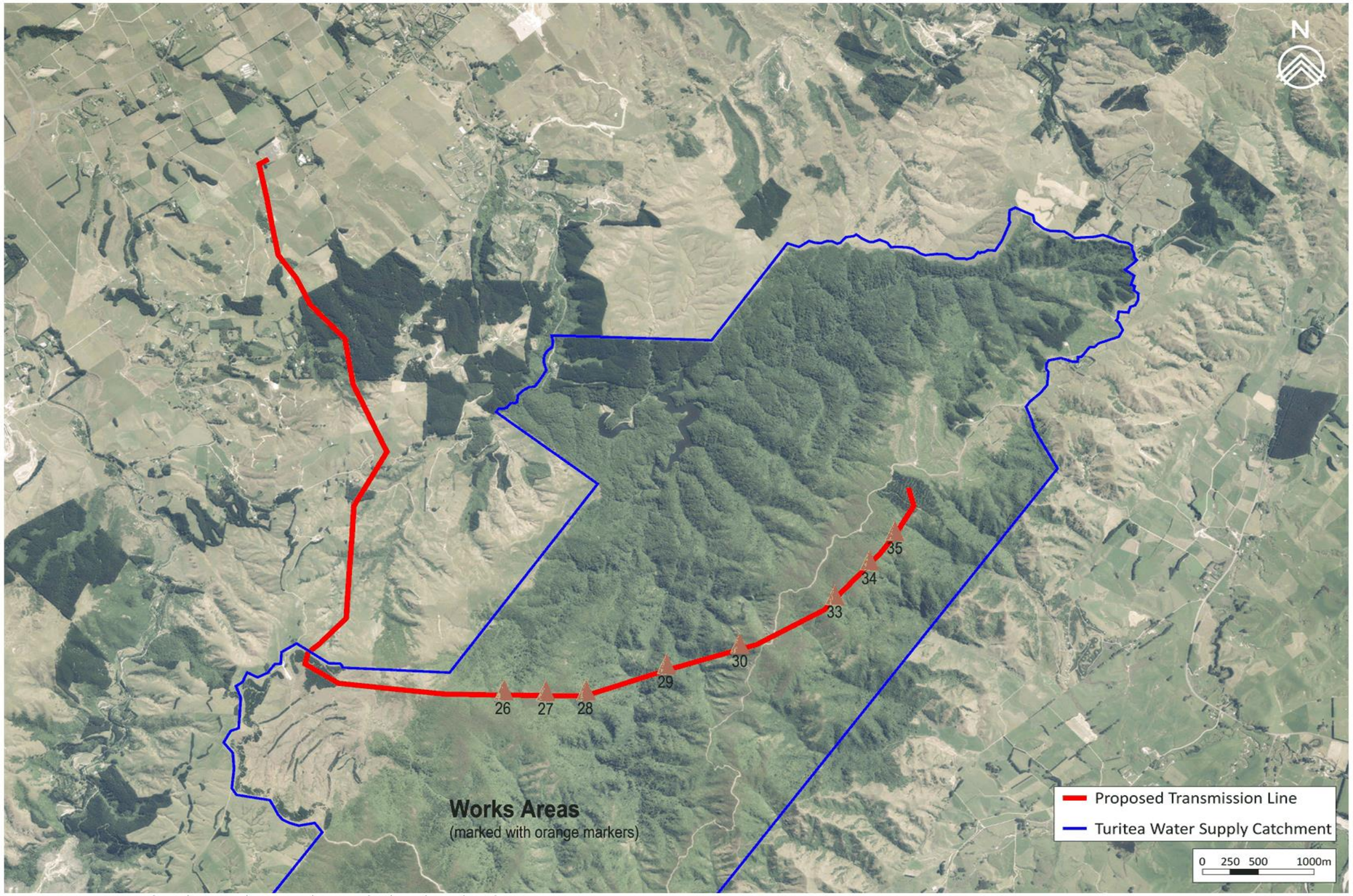
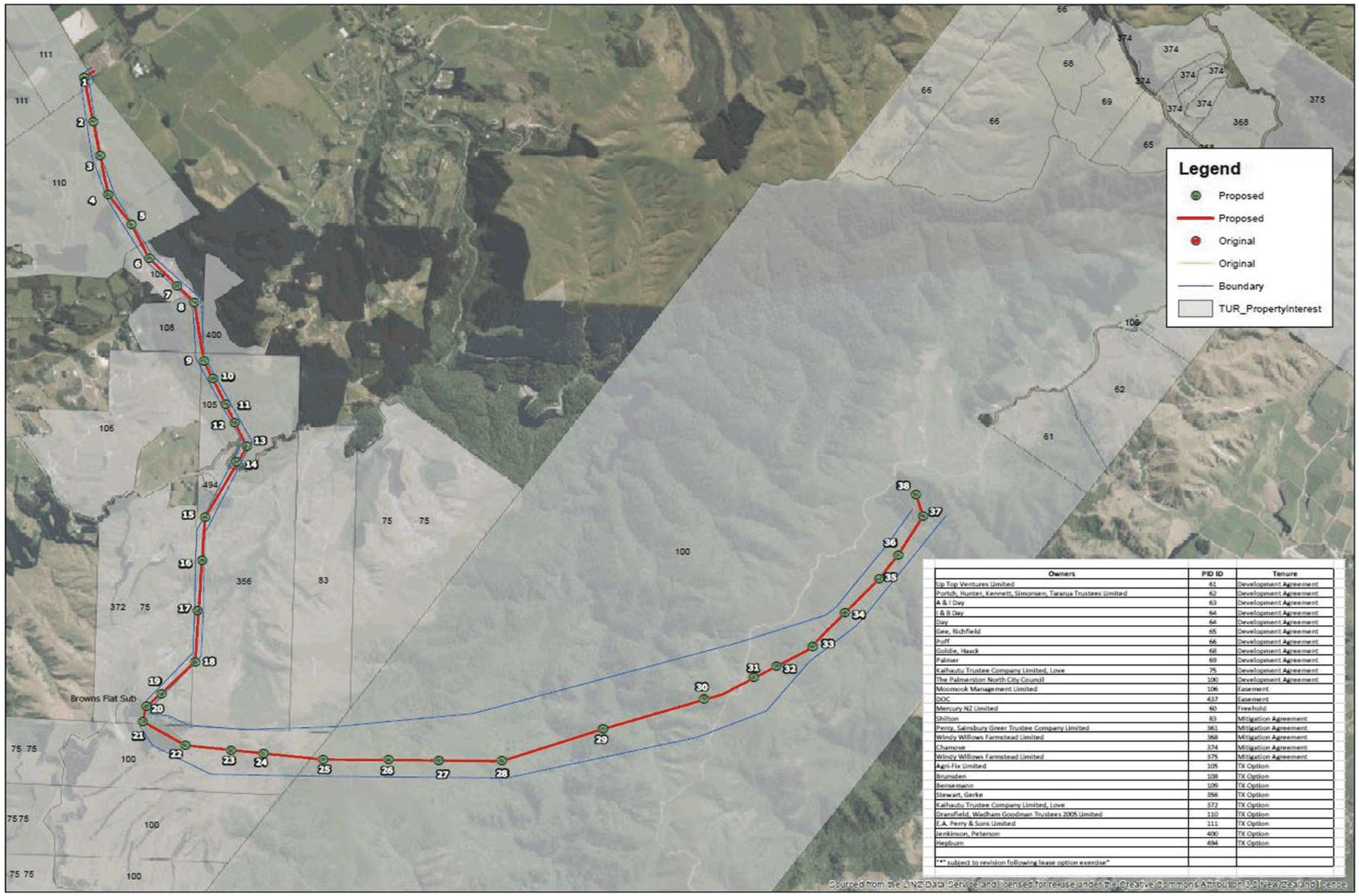


Figure 1: Turitea Water Supply Catchment in relation to works area with Pole numbers indicated.



Owners	PID ID	Tenure
Up Top Ventures Limited	61	Development Agreement
Portch, Hunter, Kennett, Simonsen, Tararua Trustees Limited	62	Development Agreement
A & I Day	63	Development Agreement
J & B Day	64	Development Agreement
Day	64	Development Agreement
Gee, Richfield	65	Development Agreement
Poff	66	Development Agreement
Goldie, Hawk	68	Development Agreement
Palmer	69	Development Agreement
Kaihautu Trustee Company Limited, Love	75	Development Agreement
The Palmerston North City Council	100	Development Agreement
Moomook Management Limited	106	Easement
DOC	437	Easement
Mercury NZ Limited	80	Freehold
Shilton	83	Mitigation Agreement
Percy, Salmsbury Greer Trustee Company Limited	361	Mitigation Agreement
Windy Willows Farmstead Limited	368	Mitigation Agreement
Chamove	374	Mitigation Agreement
Windy Willows Farmstead Limited	375	Mitigation Agreement
Agri-Fix Limited	105	TX Option
Brunsden	108	TX Option
Bensemann	109	TX Option
Stewart, Gerke	356	TX Option
Kaihautu Trustee Company Limited, Love	372	TX Option
Dransfield, Wadham Goodmen Trustees 2005 Limited	110	TX Option
E.A. Perry & Sons Limited	111	TX Option
Jenkinson, Peterson	400	TX Option
Hepburn	494	TX Option
"*" subject to revision following lease option exercise"		

Figure 2: Overall Transmission Alignment.

1.4 Site Walkover

A site walkover was carried out on the 22nd July 2019 with the following specialists and construction team.

Table 2: Attendees at site walkover.

Name	Role
Mason Jackson	Mercury - Consents and Compliance Manager
Gregor McLean	Southern Skies - Erosion and Sediment Consultant for Mercury
Hamish Sutherland	Horizons Monitoring Officer
Graeme Ridley	Ridley Dunphy - Erosion and Sediment Peer Review Consultant for Horizons
Kevin Small	Electrix - Project Manager
Emma Comrie-Thomson	Electrix - Environmental Manager
Jon Edwards	Electrix - Construction Manager

Figure 3: Walking Tracks into T25 to T28.

Figure 4: Walking Track into T29.

Figure 5: Walking Tracks into T33 and T35.

2. Scope of works

There are a number of steps involved in the construction of this transmission line, those relevant to environmental considerations are.

- **Construction of access tracks and work sites:** This includes a site survey, the creation or upgrade of both permanent and temporary tracks, clearing and levelling of the site for the poles/towers and creation of cranes pads for flying in of tower sections (where required);
- **Geotechnical investigation:** Carried out to better understand the geotechnical makeup of the ground which will be used to guide the design of the tower foundations;
- **Foundations:** This will include the drilling or digging of foundation holes, the placement of steel reinforcing and connecting elements between foundation and tower and pouring of concrete;
- **Construction of the tower sections:** These will be craned together with some preassembly of tower sections occurring prior to being helicoptered into place;
- **Wiring:** Running blocks will be hung on the towers and a pulling rope will be run out between the towers by helicopter. The conductor will then be attached to the pulling rope and pulled through the towers. It is planned to do this in 3 sections. In each section there will be 8 wires pulled (two circuits each containing 3 individual conductor wires and 2 OPGW earth-wires); and
- **Dressing:** Running blocks will be removed, insulating stings hung to connect the conductor to the towers and vibration dampeners fitted.

3. Work Programme

Overall the Project is anticipated to take approximately 1 year to construct. Many elements of the Project will be undertaken concurrently. This section of work is forecast be carried out as per Table 3.

Table 3: Indicative works programme.

Activity onsite	Indicative Duration
Cut Waking Tracks to Towers 26-30, 33-35	16 days
Footprint Clearance for Towers 26-30, 33-35	16 days
Foundations of Towers 26-30, 33-35	56 days
Install and Erect Towers 26-30, 33-35	81 days

4. Winter Works 'Restriction' Areas

Schedule 2 of the Consent decision, condition 3 outlines the restrictions for works being carried out in winter (defined as the months of 1 May to 30 September inclusively). The condition outlines that:

"Road or platform pavement construction (including basecourse) works, and tower foundations may be undertaken at any time of the year."

The works outlined in section 2 above meets with the above condition and therefore is not restricted.

5. Environmental Risk

A preliminary Environmental Risk Register is attached as Appendix A. The Risk Register is a live document which will be used by the Project team. As construction progresses the risk register will be reviewed and updated as required.

6. Method Statement

6.1 Site Access Construction

Access to work sites will be by ground-based methods, aerial methods or a combination of both. Where ground-based access are to be used to any work site, a walking track route has been selected in consultation with the Project Ecologists. The route selected, as the access walking route to any work site, has considered impacts on; other land use activities, environmental impacts (including ecological), safety of the route for the workers that will be required to use it and cost.

All ground-based access routes have been marked on plans (figures 3-5) that clearly indicate the proposed access route, referenced with structure number. Walking tracks will be utilised for working access and egress as well as for any emergency.

Each ground-based access route will be marked on site with suitable pegs/pickets/markers prior to construction. Where the access routes are not along already formed tracks or roads, the markers shall be sufficiently frequent to enable the route to be easily assessed and followed.

New access routes will produce limited amounts of stockpile which will be utilised along the new access route. Areas where larger amounts of cut require the spoil to be transported away from the project, and outside of the Turitea Water Supply Catchment, consultation between the landowner and Electrix will determine where the spoil will be placed (within the property boundary or disposed of appropriate off-site), in accordance with required authorities (e.g. PNCC, Horizons One Plan Permitted Activity requirements.

Should temporary stockpiling be required on-site, these areas will be -

- Located outside the water catchment area;
- At a distance of at least 20m from a waterbody; and
- Bunded on the uphill side to divert clean water runoff away from the stockpile.

Should any stockpile be required to remain onsite for more than 4 consecutive weeks, a perimeter silt fence will be installed, and stockpile will be hydroseeded, as per Schedule 2: Condition 23.

7. Walking Tracks

A series of aerials showing the specific locations of the works are illustrated in figure 3 -5.

- Track lengths are shown in green; and
- With existing track maintenance in yellow.

Table 4 outlines the volumes of disturbance to occur for the track works.

Table 4: Track lengths.

Track Tower Number	Track length	Track Width
Tower 26	664m	1-1.2m
Tower 27	570m	
Tower 28	525m	
Tower 29	605m	
Tower 30	164m	
Tower 33	271m	
Tower 34	365m	
Tower 35	355m	

8. Vegetation Clearance

All tracks, whether new, or upgrades to existing tracks or pest animal control tracks, are to be 1 - 1.2 metres wide. This is to allow worker access and egress, should weather restrict helicopter access, as well as for any emergency.

Vegetation clearance for the pylon locations (225 m^2 per pylon) was included in the mitigation proposed for Browns Flat (Schedule 2 Condition 35).

Works will be carried out in accordance with *Ecological Assessment of Potential Vegetation Clearance for Transmission Pylons at the Turitea Wind Farm*, report by Wildlands.

9. Erosion and Sediment Control

Due to the surrounding land use, limited erosion and sediment control measures will be put in place. However, to minimise potential adverse effects the project will be staged so as to minimise the amount of exposed earth at any time. This will be achieved through staging of the works and progressive site stabilisation.

Around the tower locations, the project will utilising erosion and sediment control measures (where required) which meet (or exceed) industry best practice and guidelines such as Greater Wellington Regional Council's '*Erosion and Sediment Control Guidelines*'. These will be determined once the vegetation removal areas are pegged out.

As part of the erosion and sediment control methodology we will utilise onsite, there will be ongoing site monitoring by the Project team to ensure that our works do not have an adverse effect on the environment.

This monitoring will include ensuring that: erosion and sediment control measure have been installed correctly and that methodologies are being followed and are functioning effectively throughout the duration of the works.

Sediment control measures will be provided for potential silt run-off during construction and until the stabilisation of ground is established.

The construction and environmental management and monitoring requirements include:

- The management of sediment inputs to water courses from earthworks via stormwater and / or windblown dust;
- Best management practices to minimise the chance of accidental spillage or loss of hydrocarbons and non-stabilised cement products to watercourses; and
- Adoption of best practice sediment and erosion control measures.

Annex C

9.1 Decommissioning and re-stabilising erosion and sediment control measures

The project will be staged so as to minimise the amount of exposed earth at any time. This will be achieved through staging of the works and progressive site stabilisation.

Other parts of the site will be vegetated in a way that achieves a good level of vegetative cover (>80%) as quickly as possible to minimise erosion. Re-vegetation will be through hydroseeding and spreading of topsoil and grassing (mulching may be required in some areas). Hydroseeding will primarily be used on cut slopes and spoil sites. Where appropriate direct transfer of native vegetation from adjacent parts of the site will be used.

Once the construction phase of the Project is complete, and the area is stabilised, the erosion and sediment control methods described above will be removed from site.

9.2 Monitoring

Given the extent of the works (and the existing land-use) we believe there is low risk of discharge especially given the installation of the above controls. Where works are in more open terrain there may be an opportunity for upstream and downstream monitoring (control and impact) which can occur following rainfall/meteorological events.

9.2.1 General Site Monitoring

In addition to environmental monitoring, general site monitoring will be undertaken:

- Daily - Electrix Delivery team and/or the Health Safety and Environmental Team will conduct inspection and issues will be noted. These inspections are informal visual inspection in order to check compliance with the CEMP.
- Weekly - Formal site inspections are to be completed by the Health Safety and Environmental Team. Site specific checklists will be developed to check compliance against the SEMP (including resource consent conditions). Issues will be noted if they present significant environmental risks (e.g. works near watercourses).
- Monthly - The Electrix Project Management Team and the Construction Manager will undertake a monthly site with the Environmental Manager to confirm the environmental monitoring programmes and work procedures containing environmental controls are being implemented in accordance with the SEMP and resource consents.

9.3 Rainfall Trigger Events

Rainfall forecasts and records for a site-specific and telemetered rainfall gauge will be monitored throughout the construction period.

These triggers are referenced to a site-specific and telemetered rainfall gauge:

- A rainfall event with an intensity equal to or greater than 15 mm/hr; and
- 25 mm or more total rainfall over any 24-hour period.

The rainfall triggers can be adjusted and refined through the course of construction phase as more data become available and as necessary to the minimise incidence of false alarm responses and/or missed events.

Mercury has installed a project specific telemetered rainfall gauge at the northern end of the Wind Farm site (shown by Mast 11 in Figure 6). This data is sent to a website where programmable triggers can be

set, and alerts can be sent to designated construction project staff. Electrix has subscribed to these notifications.

Exceedances of the established rainfall triggers will lead to site inspections of erosion and sediment controls and water quality monitoring for turbidity at all event-based monitoring sites where works are in progress or the sites are un-stabilised in the respective catchments.

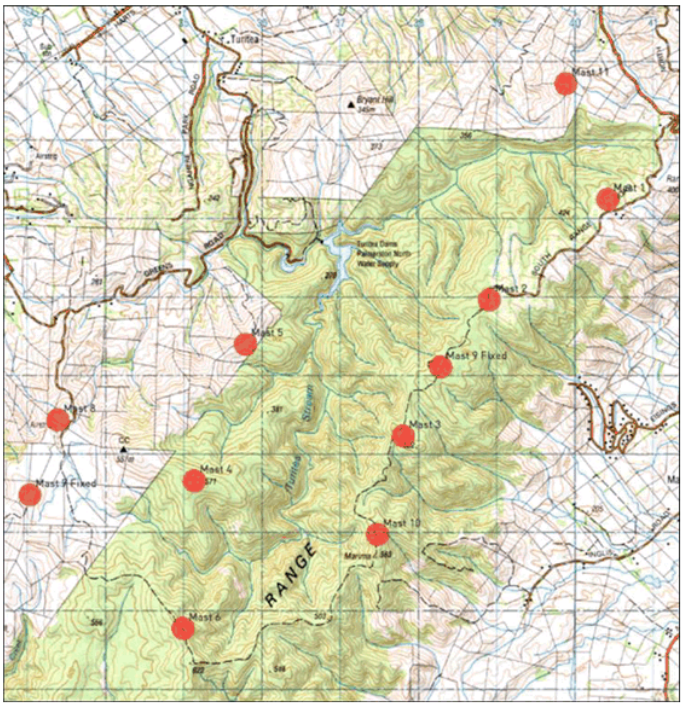


Figure 6: Weather Monitoring Masts.

9.4 Water Quality Monitoring

Turbidity will be used as the key parameter for monitoring construction effects on waterways, and trigger levels for further construction effects monitoring and investigation will be based on turbidity.

Turbidity will be measured at upstream and downstream of works using a calibrated hand-held meter in response to the established rainfall triggers. Field measurements will be gathered as soon as possible following the trigger rainfall event, when safe to do so and during working hours.

Clarity monitoring (e.g. horizontal sight range of a black disk) will be undertaken to monitor construction related effects on water quality of the waterbody. Monitoring of water clarity will be undertaken upstream of the project site area and approximately 200 m[1] downstream (to allow for reasonable mixing), to assess the change in clarity due to the works. Visual clarity monitoring will be undertaken as soon as

[1] Horizon's One-Plan defines the length for reasonable mixing as the lower value of 7 x median width of the river or 200 m downstream of the discharge.

practicable during daylight hours following a trigger rainfall event. A photographic record will be maintained of these inspections.

Water Quality Assessment

A trigger of >30% change in visual clarity will be adopted to initiate adaptive management actions.

If the reason for discolouration cannot be isolated to a specific area within the work site:

- Further discussions with the site team and/or additional site audits may be required to determine the contributing source (if any); and
- We will assess the appropriateness of existing erosion and sediment control measures within the catchment.

10.Truck movements

Works will be carried out in accordance with the Project Construction Traffic Management Plan (CTMP). Electrix will manage truck movements to minimise effects in ways that are in general accordance with the consent conditions. In brief summary:

- There will be no truck movements on Greens Road (until such time that it has been upgraded);
- A 'driver comments' free phone number will be operated in accordance with Conditions 69 and 76 of Schedule 3; and
- Records of vehicle movements will be kept in accordance with Conditions 73 and 74 of Schedule 3.

In accordance with Schedule 3: condition 63 of the Resource Consent, vehicles entering or exiting the site will travel on Greens Road or Kahuterawa Road following their respective upgrades (required pursuant to Schedule 3, Condition 53 of the Consents) and at the following times:

Table 5: Vehicle restrictions: Greens Rd and Kahuterawa Road.

Time Period	Light Vehicles	Trucks
Weekdays	No restrictions	6.30am to 7.30am; 8.15am to 3.15pm; and 4.30pm to 6.00pm. Except that trucks shall not use the roads when particular events, notified through community consultation, are held, and which involve a peak in the presence of vulnerable road users, such as equestrian or cycling events. In addition, the prohibition on access from 7.30am to 8.15am and 3.15pm to 4.30pm only applies on school days.
Weekends and statutory holidays*	6.30am to 7.30am; and 5.00pm to 6.00pm; Except that up to 10 other light vehicle movements may occur outside of these times each day.	No truck access, except that up to 6 truck movements per day may occur on weekends and statutory holidays between the hours of 8am and 6pm.

*Light vehicle access is also allowed at any time for the purposes of site security and site supervisors (associated with the monitoring of health and safety and environmental effects). Additionally, light vehicle and truck access is allowed at any time for the purpose of maintenance / emergency response, to carry out emergency maintenance works or to respond to a health and safety matter that cannot reasonable wait until a weekday.

11.Spill Response

Best management practices will be adopted to minimise the chance of accidental spillage or loss of hydrocarbons and non-stabilised cement products to watercourses. A monitoring programme will provide the basis for an adaptive management response to issues that may arise during the construction phase of the Wind Farm.

Emergency response and spill contingency plans will be implemented on site to minimise risks.

The risk of accidental spillages of hydrocarbons and other potentially harmful substances during construction will be minimised by the adoption of best management practices such as refuelling in bunded sites out of sensitive sub-catchments and regular servicing / maintenance of hydraulic hoses on heavy machinery.

All stored fuel will be protected by a bund for an appropriate volume to prevent spillage of fuel during normal use or by accidental rupture. A fuel bowser will then be used to transfer smaller quantities of fuel to plant employed around the Site.

All Safety Data Sheet (SDS) will be available and understood by all personnel handling (or with access to) the substance.

All heavy plant will carry their own spill kits with storage containers and additional spill kits carried in each of the vehicles.

Hazardous materials will be stored in a container which will be bunded. Storage containers will be at the laydown yard (within Property G).

11.1 Concrete and Grout

Concrete will be transported onto this site via concrete truck (off-road vehicle) and via helicopter. Grout maybe used to secure the ground anchors into the pads.

Grout and concrete works will be managed by ensuring:

- Refilling areas are at least 20 m away from waterways;
- Specific concrete and grout wash-down areas are provided;
- The collect and disposing of excess concrete are removed from site; and
- Spill kits are available and accessible for use.

12.Site Contact Details

Table 6: Contact details for the contractor undertaking the work.

Position	Name	Organisation	Phone	Email
Environmental Manager	Emma Comrie-Thomson	Electrix	Ph: 021 755 509	emmac@4sight.co.nz
Construction Manager	Jon Edwards	Electrix	Ph: 021 953 336	jon.edwards@electrix.co.nz
Project Manager	Kevin Small	Electrix	Ph: 021 312796	kevin.small@electrix.co.nz
HSEQ Assessor	Alison Gardiner	Electrix	Ph: 021 822 900	alison.gardiner@electrix.co.nz

APPENDIX A:

ENVIRONMENTAL RISK REGISTER

Mercury

electrix

Environmental Risk Register

Risk Rating					
		Likelihood			
		Probable	Possible	Improbable	
Consequence	Minor	Medium	Low	Low	**Minor:** Low environmental impact. Short term and can typically be remedied.
	Moderate	High	Medium	Low	**Moderate:** Environmental effect/s which can be remediated. Discharge off site occurs.
	Major	High	High	Medium	**Major:** Significant environmental effect resulting in costly restoration under Resource Management Act.

CEMP = Construction Environmental Management Plan
CLG = Community Liaison Group
SEMP = Site Environmental Management Plan
Electrix Environmental Manager = EEM
Electrix Project Manager = EPM
Electrix Project Ecologist = PE

Electrix Construction Manager = CM
Construction Noise Management Plan = CNMP
Assessment of Environmental Effects = AEE
Electrix Environmental Management Team = EEMT
Electrix Site Supervisor = SS

Appendix A: Environmental Risk Register

pg. 1

Mercury electrix

Issue	Likelihood	Consequence	Risk	Mitigation
Public complaints	Possible	Moderate	Medium	Keep Community Liaison Group (CLG) informed of works and progress. Record complaint using the Complaints Form. Advise EEM.
Waste management	Possible	Moderate	Medium	All waste is to be collected and removed from site and disposed at an appropriately licensed facility. No domestic waste water will be discharged to ground or water within the water supply catchment.
Waterway contamination due to sediment discharge	Possible	Moderate	Medium	SEMP outlines site specific sediment controls. Methodologies within these documents need to be carefully followed. EEMT will be responsible for regular inspection and maintenance of all erosion and sediment controls and audits. Weather dependant checks will also be required from the EPM, CM and SS.
Waterway contamination due to washing of vehicles and equipment	Improbable	Moderate	Low	No vehicle/equipment washing is to occur with Turitea Water Supply Catchment. No routine maintenance of equipment or machinery within the Turitea Water Supply Catchment or refuelling within 10 metres of the tributaries of any watercourse on site.
Lack of environmental awareness	Possible	Moderate	Medium	Project environmental induction, SEMP induction and toolbox meetings.
Spill during refuelling of plant equipment to land or water	Possible	Moderate	Medium	No refuelling and servicing is to occur with Turitea Water Supply Catchment. Refuelling and servicing to occur in approved locations only. No refuelling within 10 metres of the tributaries of any watercourse. Spill kits to be within easy reach and appropriately sized.
Spill of hazardous substances to land or water	Possible	Moderate	Medium	Spill kits to be within easy reach and appropriately sized. Appropriate training given to staff. Identify contaminant, stop source, protect receiving environment, contact EEM, clean up. Review and report using Environmental Incident Form. Store hazardous substances in bunded area or appropriately sized container. All storage containers to be labelled. Safety Data Sheet (SDS) to be stored with substances.
Sediment discharge during dewatering	Possible	Moderate	Medium	Install perimeter controls to divert clean water away from areas of disturbance. Controls to be inspected before use and maintained during use.
Contamination of surrounding area during insitu concreting and grouting	Possible	Major	Medium	Isolation of work area away from waterways. Collect and dispose of excess concrete. Spill kits to be within easy reach and appropriately sized. Appropriate training given to staff.

Mercury electrix

Issue	Likelihood	Consequence	Risk	Mitigation
Construction noise	Possible	Major	Medium	Plan and carry out works in accordance with Construction Noise Management Plan (CNMP). Ensure any high-risk noise methodologies are communicated to CLG. Helicopter's to be used in accordance with hours of work provisions outlined in CEMP and SEMP.
Dust	Possible	Major	Medium	Controls to be inspected before use and maintained during use. Wetting down of any area of concern. Surfaces and structures to be kept clean. Stabilisation of haul roads. All entrances and exits from site are to be stabilised entrance ways. These are to be maintained and may have wheel washes associated with them. Road sweeping if required.
Archaeological disturbance	Possible	Major	High	Avoidance of sensitive sites in design and acknowledgement of tangata whenua relationship with natural resources. Accidental Discovery Protocol to be followed and form part of the Project Environmental Induction.
Contamination due to works around waterways	Possible	Major	High	Slurry to be captured and disposed to pit, bin or off-site. Use of a wet-vac to capture contaminated slurry (e.g. concrete). Do not allow discharges to enter waterways or stormwater drains. Culvert replacement and works within waterways to follow specific methodologies within SEMPs. Ensure timing of these works is appropriately managed with weather monitoring etc.
Ecology - vegetation clearance for tower pads and walking track formation	Possible	Major	High	Works to be carried out in accordance with the *Ecological Assessment of Potential Vegetation Clearance for Transmission Pylons, by Wildlands.*
Ecology - Fauna (birds, bats, lizards, snails)	Possible	Major	High	Works to be carried out in accordance with the *Incidental Fauna Discovery Plans, by Wildlands.*
Ecology - stream ecology	Possible	Major	High	Works to be carried out in accordance with the *Adaptive Aquatic Ecology Management Response Plan, by Tonkin & Taylor Ltd.*

Report No.	20-03
Information Only - No Decision Required	

PRESENTATION: TE AHU A TURANGA PROJECT

1. PRESENTATION

1.1 Lonnie Dalzell, Tim Watterson and Damien McGahan from the Te Ahu Turanga Alliance will make a presentation to the Environment Committee on the Te Ahu A Turanga project.

1.2 The project will be the largest civil construction project in the region for many years. Horizons is involved in the consenting process and then compliance as construction develops.

1.3 The project is strategically significant for the region and has been a focus for the Accelerate25 working group Accessing Central New Zealand.

1.4 The presentation will outline NZTA's approach, process and plans.

1.5 Members will receive regular updates on progress over this term of Council

2. RECOMMENDATION

That the Committee recommends that Council:

a. receives the presentation from New Zealand Transport Agency.

3. SIGNIFICANCE

3.1. This is not a significant decision according to the Council's Policy on Significance and Engagement.

Greg Bevin
REGULATORY MANAGER

ANNEXES

There are no attachments for this report.