

Greenfern Industries Limited

Monitoring Programme

Annual Report

2022-2023

Technical Report 2023-30



Working with people | caring for Taranaki

Taranaki Regional Council
Private Bag 713
Stratford

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Normanby HEP Scheme

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Executive summary

Greenfern Industries Ltd (the Company) operates a hydroelectric power station located on Normanby Road at Okaiawa, in the Waingongoro catchment. Utilising an existing weir across the Waingongoro River and tunnel under Normanby Road, water is diverted for electricity generation. The station is located approximately 3.2 km downstream of the weir, but due to the tight meander, these structures are located only 90 m apart.

This report for the period July 2022 to June 2023 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess the Company's environmental performance during the period under review. The report also details the results of the monitoring undertaken and assesses the environmental effects of the Company's activities.

During the monitoring period, Greenfern Industries Limited demonstrated an overall level of environmental and administrative performance that required improvement, while still acknowledging that significant works and investment in infrastructure was undertaken by the new operator within the first year of management.

The Company holds three resource consents, which include a total of 41 conditions setting out the requirements that the Company must satisfy. The Company holds two consents to allow it to take and use water and to dam the Waingongoro River and one consent to use and maintain a weir and ancillary structures in the Waingongoro River. The 2022-2023 monitoring year is the second year the scheme has been under management by Greenfern Industries Limited, with the scheme being inoperative since the 2016-2017 monitoring year (during which time consents were held by other parties).

The Council's monitoring programme for the year under review included two compliance monitoring inspections of the site and four hydrological monitoring inspection. In addition, data collected by the Company was received and audited, while data collected by the Council upstream and downstream of the station was also assessed.

Although improved from the previous monitoring year (2021-2022), the management of the various consents related to the scheme ranged from good to improvement required. There has been minimal progress in implementing a number of the consent requirements, including upgrading the fish pass, monitoring of the effects of the scheme on the residual flow reach, and organising a community meeting. A full year's record of abstraction and flow data was provided by the Company, with no major issues relating to water takes and flow requirements having occurred.

Due to the previous Company's performance during the 2016-2017 period, coupled with the fact that it followed on from a similar performance in the 2015-2016 period, a significant investigation and enforcement action was undertaken in 2017 by the Council. This culminated in the Environment Court issuing an enforcement order against the Company in November 2017. This Enforcement Order is still in place and has not been complied with to date. An application to modify consent conditions to comply with the Enforcement Order was lodged in November 2022. No further enforcement action was required in the 2022-2023 period.

For reference, in the 2022-2023 year, consent holders were found to achieve a high level of environmental performance and compliance for 878 (87%) of a total of 1007 consents monitored through the Taranaki tailored monitoring programmes, while for another 96 (10%) of the consents, a good level of environmental performance and compliance was achieved. A further 27 (3%) of consents monitored required improvement in their performance, while the remaining one (< 1%) achieved a rating of poor.

In terms of overall environmental and compliance performance by the consent holder, this report shows that the consent holder's performance remains at a level that requires improvement.

This report includes recommendations for the 2023-2024 year.

Table of contents

	Page
1	Introduction 1
1.1	Compliance monitoring programme reports and the Resource Management Act 1991 1
1.1.1	Introduction 1
1.1.2	Structure of this report 1
1.1.3	The Resource Management Act 1991 and monitoring 1
1.1.4	Evaluation of environmental and administrative performance 2
1.2	Process description 2
1.3	Resource consents 5
1.4	Monitoring programme 5
1.4.1	Introduction 5
1.4.2	Programme liaison and management 5
1.4.3	Site inspections 6
1.4.4	Chemical sampling 6
1.4.5	Data review 6
2	Results 7
2.1	Water 7
2.1.1	Inspections 7
2.1.2	Hydrological inspections 9
2.1.3	Provision of consent holder data 9
2.1.4	Results of receiving environment monitoring 14
2.1.5	Works required by consent 15
2.2	Stakeholder meeting 15
2.3	Investigations, interventions, and incidents 16
3	Discussion 17
3.1	Discussion of site performance 17
3.2	Environmental effects of exercise of consents 17
3.3	Evaluation of performance 18
3.4	Recommendations from the 2021-2022 Annual Report 22
3.5	Alterations to monitoring programmes for 2023-2024 22
3.6	Exercise of optional review of consent 22
4	Recommendations 24
	Glossary of common terms and abbreviations 25

Bibliography and references	26
Appendix I Resource consents held by Greenfern Industries Ltd	
Appendix II Categories used to evaluate environmental and administrative performance	
Appendix III Enforcement order (ENV-2017-WLG-000049)	

List of tables

Table 1	Resource consents held by the Company	5
Table 2	Normanby HEPS 2022-2023 gauging results upstream of weir compared to Company provided data	9
Table 3	Summary of performance for consent 7078-1	18
Table 4	Summary of performance for consent 6558-1	19
Table 5	Summary of performance for consent 2299-3	20
Table 6	Evaluation of environmental performance over time	21

List of figures

Figure 1	Location and key features of the Normanby HEPS and its associated monitoring sites	3
Figure 2	Abstraction and residual flow data, with associated residual flow consent limits, from 1 July 2022 to 1 July 2023	10
Figure 3	Comparing Company provided residual flow data with residual flow represented by 95% flow at SH45	10
Figure 4	Abstraction and flow data showing flushing flow consent limit	12
Figure 5	(a) Example of surge waves generated following the start-up and shut down of the power station. (b) Example when surge wave generation could not be identified	13

List of photos

Photo 1	Normanby HEPS July 2022	4
Photo 2	The intake and water level recorder, July 2022	7
Photo 3	New site being constructed for water level recorder, July 2022	8
Photo 4	Normanby HEPS turbine in operation, July 2022	8

1 Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is for the period July 2022 to June 2023 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by Greenfern Industries Limited (the Company). The Company operates a hydroelectric power scheme (HEPS) situated on Normanby Road at Okaiawa, in the Waingongoro catchment.

The report includes the results and findings of the monitoring programme implemented by the Council in respect of the consents held by the Company that relate to the abstraction and use of water within the Waingongoro catchment, to dam the Waingongoro River, and to use and maintain a concrete weir and ancillary structures.

One of the intents of the *Resource Management Act 1991* (RMA) is that environmental management should be integrated across all media, so that a consent holder's use of water, air, and land should be considered from a single comprehensive environmental perspective. Accordingly, the Council generally implements integrated environmental monitoring programmes and reports the results of the programmes jointly. This report discusses the environmental effects of the Company's use of water, land and air, and is the 4th combined annual report by the Council for the facility. Three previous annual reports have been prepared by the Council on the Normanby HEPS for the 2015-2016 and 2016-2017 monitoring years, while the scheme was being operated by a different company.

1.1.2 Structure of this report

Section 1 of this report is a background section. It sets out general information about:

- consent compliance monitoring under the RMA and the Council's obligations;
- the Council's approach to monitoring sites through annual programmes;
- the resource consents held by the Company in the Waingongoro catchment;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted in the Company's site/catchment.

Section 2 presents the results of monitoring during the period under review, including scientific and technical data.

Section 3 discusses the results, their interpretations, and their significance for the environment.

Section 4 presents recommendations to be implemented in the 2023-2024 monitoring year.

A glossary of common abbreviations and scientific terms, and a bibliography, are presented at the end of the report.

1.1.3 The Resource Management Act 1991 and monitoring

The RMA primarily addresses environmental 'effects' which are defined as positive or adverse, temporary or permanent, past, present or future, or cumulative. Effects may arise in relation to:

- a. the neighbourhood or the wider community around an activity, and may include cultural and social-economic effects;

- b. physical effects on the locality, including landscape, amenity and visual effects;
- c. ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;
- d. natural and physical resources having special significance (for example recreational, cultural, or aesthetic); and
- e. risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Council is recognising the comprehensive meaning of 'effects' in as much as is appropriate for each activity. Monitoring programmes are not only based on existing permit conditions, but also on the obligations of the RMA to assess the effects of the exercise of consents. In accordance with Section 35 of the RMA, the Council undertakes compliance monitoring for consents and rules in regional plans, and maintains an overview of the performance of resource users and consent holders. Compliance monitoring, including both activity and impact monitoring, enables the Council to continually re-evaluate its approach and that of consent holders to resource management and, ultimately, through the refinement of methods and considered responsible resource utilisation, to move closer to achieving sustainable development of the region's resources.

1.1.4 Evaluation of environmental and administrative performance

Besides discussing the various details of the performance and extent of compliance by the consent holders, this report also assigns a rating as to each Company's environmental and administrative performance during the period under review. The rating categories are high, good, improvement required and poor for both environmental and administrative performance. The interpretations for these ratings are found in Appendix II.

For reference, in the 2022-2023 year, consent holders were found to achieve a high level of environmental performance and compliance for 878 (87%) of a total of 1007 consents monitored through the Taranaki tailored monitoring programmes, while for another 96 (10%) of the consents, a good level of environmental performance and compliance was achieved. A further 27 (3%) of consents monitored required improvement in their performance, while the remaining one (< 1%) achieved a rating of poor.¹

1.2 Process description

The Normanby HEPS is located on Normanby Road, Okaiawa (Figure 1). The original Normanby HEPS was commissioned on the Waingongoro River in 1902, and operated until 1967 when it was abandoned after several major flood events. The scheme is located approximately 3 km east of Okaiawa, and about 3.8 km northwest of Normanby. The site is accessed via Normanby Road approximately 1.3 km from the intersection of Normanby Road and Mawhitiwhiti Road. The Waingongoro River in this area typically runs from the north to the south, but is subject to significant meandering. Hence, the river runs west along the north side of Normanby Road before doubling back on itself and continuing eastward on the south side of Normanby Road. This 3.2 km reach is known locally as the Normanby Loop, but may also be referred to as the residual flow reach.

¹The Council has used these compliance grading criteria for more than 19 years. They align closely with the 4 compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018

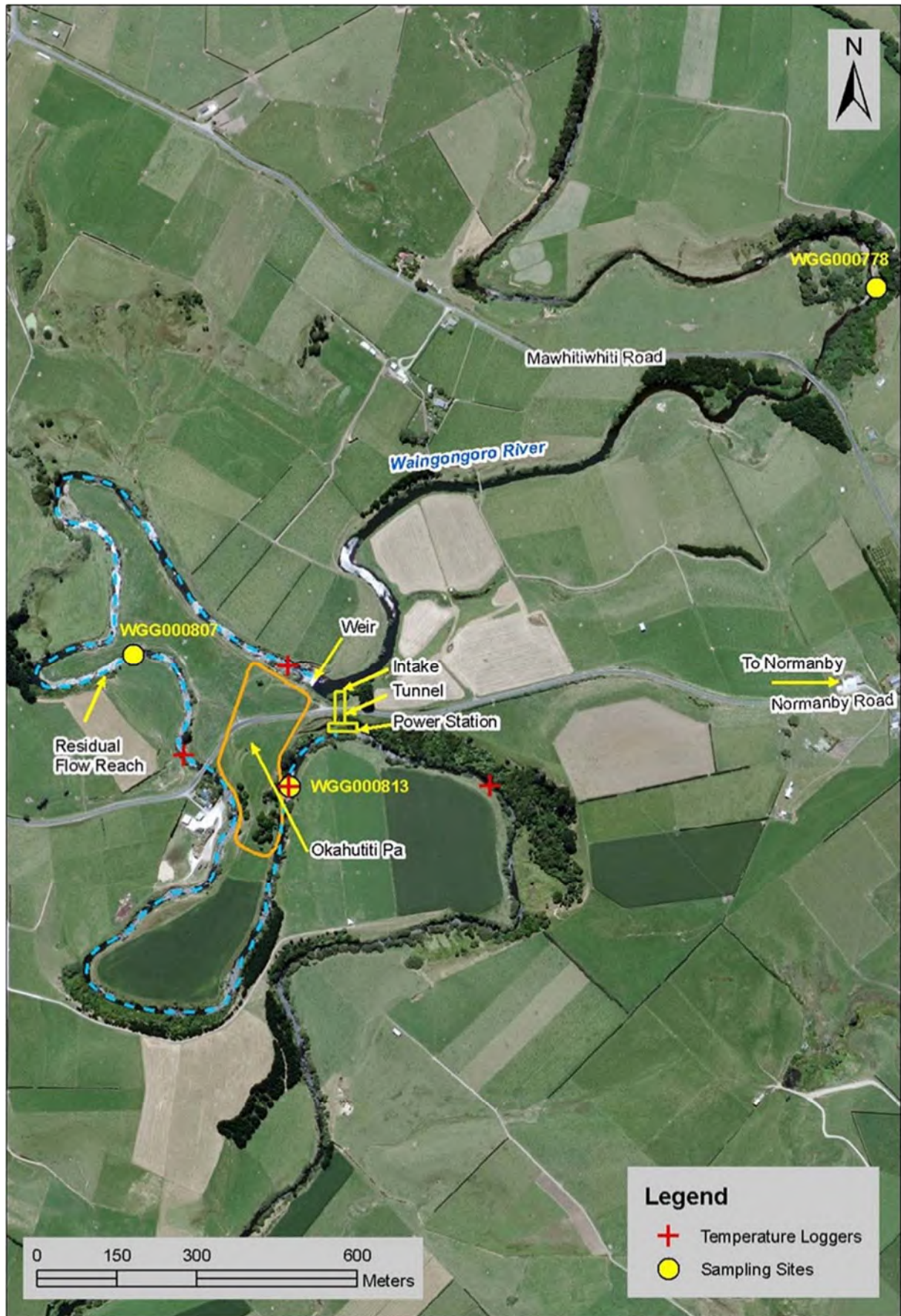


Figure 1 Location and key features of the Normanby HEPS and its associated monitoring sites

The scheme, centred on this large meandering loop of the river, operates using most of the features of the original scheme, including a 33 m wide, 6 m high weir located in the river on the northern side of Normanby Road. Above this weir, water is diverted via a 1.8 m diameter tunnel that runs under the road to the powerhouse on the south side of the road, essentially crossing the ridge contained by the meander. The water is then discharged from the powerhouse back into the Waingongoro River, 3.1 km downstream of the weir. This utilises the 18 m head difference to generate electricity.

When operational, the former scheme generated between 3 and 3.5 GWh per annum from an installed capacity of approximately 0.6 MW. According to the original consent application, when fully recommissioned, the new station will be capable of generating approximately 4.3 GWh per year from an installed capacity of 2 MW. It was also envisaged that the scheme would require an optimum flow of 6.3 m³/s through the penstocks and turbines, with an operating range from a minimum flow of 0.5 m³/s to a maximum flow of 10 m³/s. There have since been some changes made to this original proposal, and as such these figures may no longer be accurate.

During previous monitoring periods, residual flow data provided by the operator at the time was occasionally incomplete, or requiring validation. It was determined that 95% of the recorded flow of the Waingongoro River at SH45 was suitable to be used to simulate what flow would have been at the site of the Normanby road weir. This data analysis technique has also been used in the current report where necessary.

To date, the Company has upgraded the intake structure, installed a lamprey baffle, upgraded water flow recording devices, relined the tunnel and built a structure which supports one turbine and associated generation equipment, with room to install additional turbines (Photo 1).



Photo 1 Normanby HEPS July 2022

1.3 Resource consents

The Company holds three resource consents the details of which are summarised in Table 1. Summaries of the conditions attached to each permit are set out in Section 3 of this report.

A summary of the various consent types issued by the Council is included in Appendix I, as are copies of all permits held by the Company during the period under review.

Table 1 Resource consents held by the Company

Consent number	Purpose	Granted	Review	Expires
<i>Water permits</i>				
2299-3	To dam the Waingongoro River with a 6 metre high concrete weir for hydroelectric power generation purposes	01/09/2009	June 2023	01/06/2029
6558-1.1	To take and use water from the Waingongoro River for hydroelectric power generation purposes	21/05/2018	June 2023	01/06/2029
<i>Land use permits</i>				
7078-1	To erect, place, use and maintain a concrete weir and ancillary structures in the Waingongoro River; and to undertake excavation and disturbance of the river bed that is directly associated with that activity, for hydroelectric power generation purposes	01/09/2009	June 2023	01/06/2029

1.4 Monitoring programme

1.4.1 Introduction

Section 35 of the RMA sets obligations upon the Council to gather information, monitor and conduct research on the exercise of resource consents within the Taranaki region. The Council is also required to assess the effects arising from the exercising of these consents and report upon them.

The Council may therefore make and record measurements of physical and chemical parameters, take samples for analysis, carry out surveys and inspections, conduct investigations and seek information from consent holders.

The monitoring programme for the Normanby HEPS site consisted of four primary components.

1.4.2 Programme liaison and management

There is generally a significant investment of time and resources by the Council in:

- ongoing liaison with resource consent holders over consent conditions and their interpretation and application;
- discussion over monitoring requirements;
- preparation for any consent reviews, renewals or new consent applications;
- advice on the Council's environmental management strategies and content of regional plans; and
- consultation on associated matters.

1.4.3 Site inspections

The Normanby HEPS was visited five times during the monitoring period, including two site inspections and four hydrological monitoring inspections. With regard to consents held for the scheme, the main points of interest were:

- the condition of the fish passage facilities including the lamprey pass;
- the condition of the intake screen and generation equipment;
- whether the station was operating;
- to assess residual flow compliance and abstraction rate;
- to check for erosion associated with the scheme; and
- to monitor maintenance and upgrade work where appropriate.

Sources of data being collected by the Company were identified and assessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council.

1.4.4 Chemical sampling

The monitoring programme may include sampling of the water quality upstream and downstream of the station when warranted; on any occasion where maintenance or upgrade works resulted in discolouration and/or the discharge of sediment. No such works were undertaken during the reported period, and as such this sampling was not undertaken.

1.4.5 Data review

The Company provided the Council with data on the amount of water abstracted from the Waingongoro River and the flow downstream of the weir (the residual flow). The Council assessed the abstraction data to determine whether or not the abstraction/discharge rates exceeded the consented rates, and to assess it for accuracy. Similarly, the residual flow was assessed to determine whether sufficient flow was provided while water was being abstracted for generation.

2 Results

2.1 Water

2.1.1 Inspections

An application was lodged in November 2022 for a change of conditions 8 and 10 of resource consent 7078-1 to extend timeframes to install a fish passage. In January 2024, the Company provided a timeframe for when the different actions related to the fish passage construction should be completed.

The compliance monitoring inspections were completed on 7 July 2022 and 9 February 2023. The lamprey passage was in place during the July inspection, but not in February as it is required only between 1 June and 30 September each year. For the February inspection, the screen around the current water intake structure was in place. The construction of a new concrete pad for the company flow recorder has been completed, but the flow recorder was still in position near the intake, with the boom appearing to be immediately under this, which could be affecting the accuracy.



Photo 2 The intake and water level recorder, July 2022



Photo 3 New site being constructed for water level recorder, July 2022



Photo 4 Normanby HEPS turbine in operation, July 2022

2.1.2 Hydrological inspections

Four hydrological inspections were completed in the reported period. The results of the gauging are provided in Table 2. The gauging conducted upstream of the weir was used to assess the accuracy of flow data provided by the company.

Table 2 Normanby HEPS 2022-2023 gauging results upstream of weir compared to Company provided data

Date	Time (NZST)	Gauged flow (L/s)	Gauged flow $\pm 8\%$ error (L/s)	Company provided flow (L/s)	Comment
29/10/2022	12:15	4,095	3,767 – 4,423	3,842	Intake clear with no debris
27/01/2023	11:30	3,893	3,582 – 4,204	3,161	Intake clear with no debris
24/03/2023	11:03	4,807	4,422 – 5,192	3,161	-
23/05/2023	12:05	19,056	17,532 – 20,580	11,581	-

The Company provided flow was at times in agreement with the Council's gauging undertaken. However, the difference between the Company provided data and the Council's gauging was on average 31%, exceeding the 8% margin of error. This gauging difference combined with Company provided residual flow data for the monitoring period (Figure 2) is discussed in section 3.1 and suggests that the Company flow recorder may need recalibration or be suffering from interference.

2.1.3 Provision of consent holder data

2.1.3.1 Residual flow and water abstraction

The Company is required to record the rate water is abstracted from the river and the rate of flow in the Waingongoro River immediately downstream of the weir, and to provide these records to the Council at three monthly intervals. During the reported period, the Company ensured that the residual flow data was being recorded at all times, and provided the abstraction and residual flow data in the timeframes required.

The abstraction and residual flow data is also required to meet certain accuracy requirements. The abstraction rate is required to be recorded to an accuracy of $\pm 5\%$ while the residual flow is required to be recorded to an accuracy of $\pm 10\%$. The Company is required to provide independent verification of flow meter accuracy to the Council. The flow meter verification report was not provided to Council during the 2022-2023 monitoring year. The report received in 2020 confirmed that abstraction rate and residual flow data had achieved the required accuracy standards. The re-test date was due by September 2022. The inspection by the third party is scheduled for beginning of 2024.

The abstraction and residual flow data provided is displayed in Figure 2. The abstraction rate was recorded throughout the year, with 'zero' recorded when no abstraction was occurring.

The data was manually assessed to determine whether the Company had complied with the residual flow requirements whilst abstracting water for generation. For the next monitoring period, the Council will be automating this assessment. For the dates 1 October 2022 to 30 April 2023 residual flow was required to be above 3.5 m³/s. If residual flow dropped below this level abstraction would have to cease in order for the Company to comply with residual flow requirements. The data displayed in Figure 2 shows that between 1 October 2022 and 30 April 2023 the Company was not abstracting when residual flow was below 3.5 m³/s. For the dates between 1 May 2023 and 30 September 2023, the residual flow was required to be above 3.0 m³/s. If residual flow dropped below this level abstraction would have to cease in order for the Company to comply with residual flow requirements. The data displayed in Figure 2 shows that between 1 May 2023

and 30 September 2023, the Company was not abstracting when residual flow was below 3.0 m³/s. It is apparent that the Company complied with the residual flow requirements during the year under review.

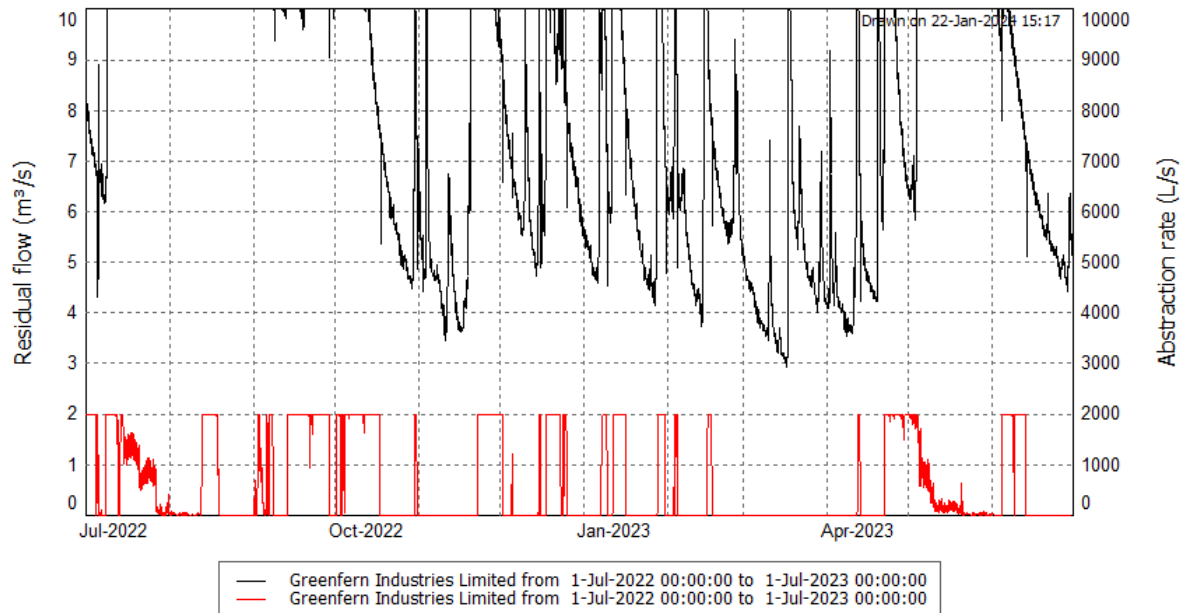


Figure 2 Abstraction and residual flow data, with associated residual flow consent limits, from 1 July 2022 to 1 July 2023

To assess the Company provided residual flow data, it was compared with residual flow graphed as 95% of the flow recorded at SH45 in Figure 3. The vertical shift between this two graphs and the difference between Company provided data and the gauging results are discussed in section 3.1 of this report.

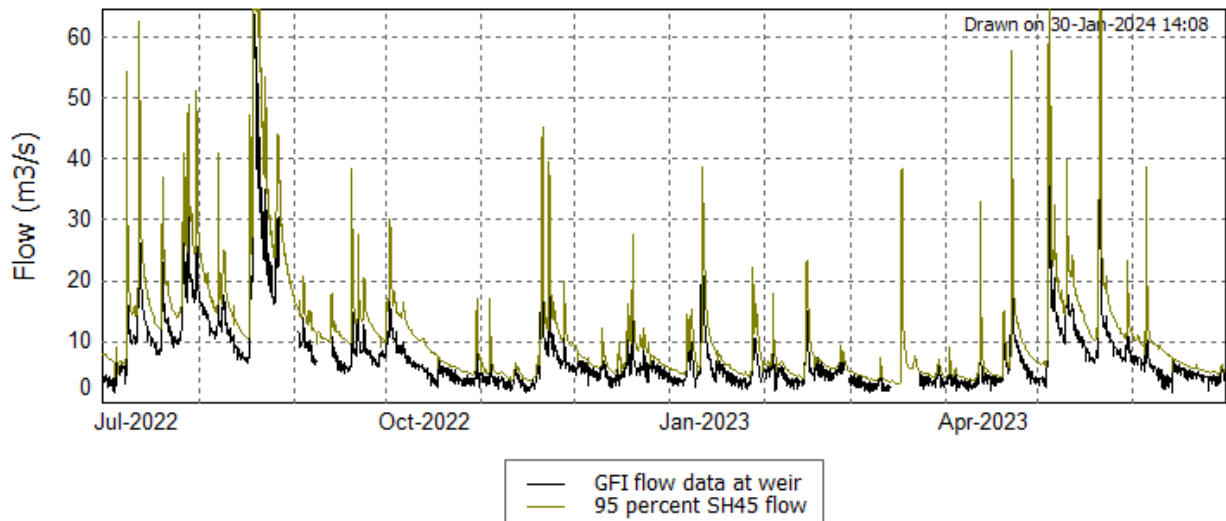


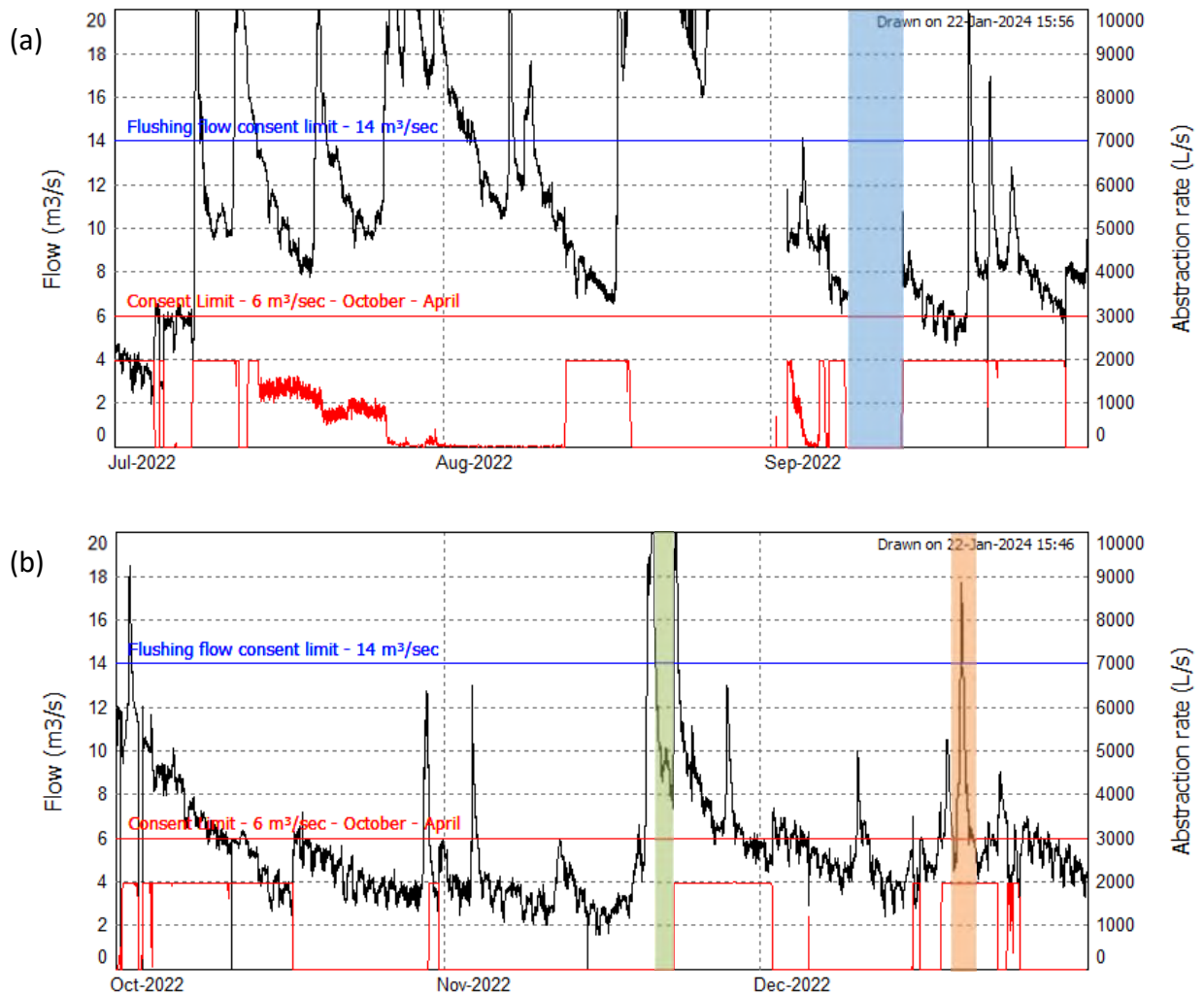
Figure 3 Comparing Company provided residual flow data with residual flow represented by 95% flow at SH45

2.1.3.2 Flushing flows

Consent 6558-1.1 requires the Company to take specific actions should specific flow conditions occur. Condition 5 requires that the station ceases to take water for eight hours on any occasion when the river flow exceeds 14 m³/s, following a continuous period of at least 15 days during which flows at the weir did not exceed 14 m³/s. A comparison of the abstraction data with the flow data (refer Figure 4) indicates that there were six occasions where these conditions occurred. Of these six occurrences the company was

compliant on three occasions (20/11/2022, 28/01/2023 and 15/02/2023) and non-compliant on three occasions (20/12/2022, 11/01/2023, and 28/01/2023). Compliance in September 2022 could not be assessed as no flow was recorded between 8 September 2022 and 13 September 2022.

Although the flushing flows required by condition 5 were not provided for three of the six occurrences during the reported period, this only becomes an environmental issue if generation capacity increases beyond current levels, and the residual flow is kept at the minimum for extended periods of time. The non-compliance noted in the reported period is unlikely to have resulted in the deterioration of biological communities within the residual flow reach, and rather than taking enforcement action, it was deemed more appropriate to educate the consent holder on these conditions, so that they are better able to comply if generation capacity increases.



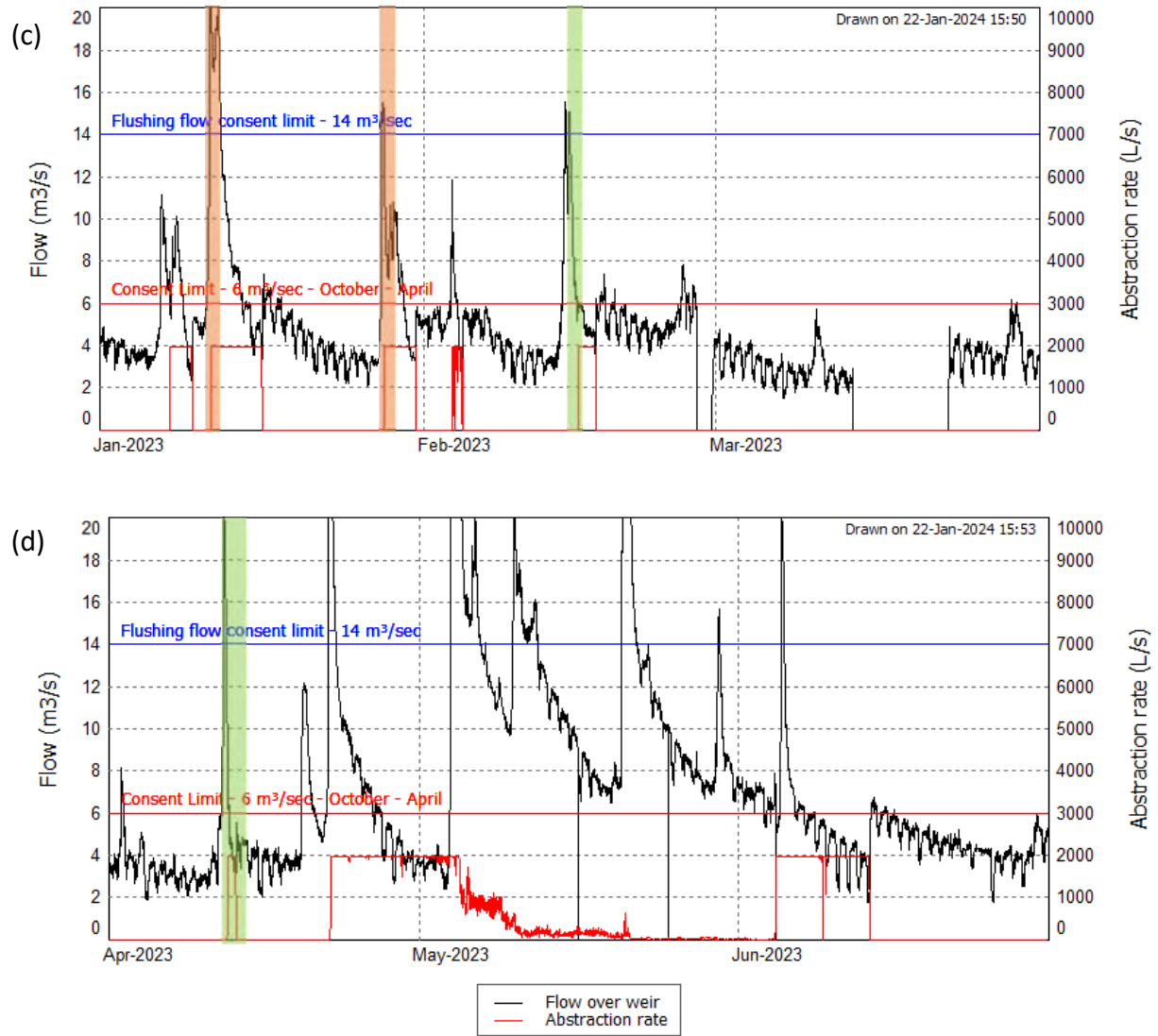


Figure 4 Abstraction and flow data showing flushing flow consent limit

Note: Flow over the weir and abstraction rate between (a) 1-Jul-2022 to 30-Sep-2022, (b) 1-Oct-2022 to 31-Dec-2022, (c) 1-Jan-2023 to 31-Mar-2023, and (d) 1-Apr-2023 to 30-Jun-2023. The blue shading represents time when the flow over the weir was not recorded, the green shading represents compliance with condition 5, and orange shading a non-compliance

Condition 6 requires that if the flow over the weir does not exceed 6 m³/s during any continuous 14 day period between 1 October and 30 April, the consent holder shall within 24 hours, stop taking so that the entire river flow passes over the weir for at least three hours. There was one occasion where the Company were required to stop taking water due to these conditions. The Company complied with this requirement.

The compliance with conditions 5 and 6 of consent 6558-1.1 was assessed manually by the Council. For the next monitoring year, the Council will be looking at automating this assessment.

2.1.3.3 Surge waves

In addition to flushing flows, condition 16 requires that the start-up and shutdown of the station does not generate a change in water level in excess of 200 mm in height. Starting generation causes a positive surge wave, resulting in a short-term increase in water level. The reverse occurs when generation stops, causing a short-term reduction in water level. Figure 5a shows an example of surge waves being generated following up the start-up of the power station (orange shading) and following the shutdown of the power station

(blue shading). In some instance, the generation of a surge wave could not be identified, as shown by the grey shading in Figure 5b, due to the river level increasing unrelated to the power station activity. During the year under review, no surge wave inducing a change greater than 200 mm in height was recorded at SH45 station downstream of the weir. It should be noted that the SH45 recorder is located approximately 12 km downstream of the station outlet, and as such the change in water level will be somewhat attenuated at this point. This means that at the station, the variation in water level will be greater.

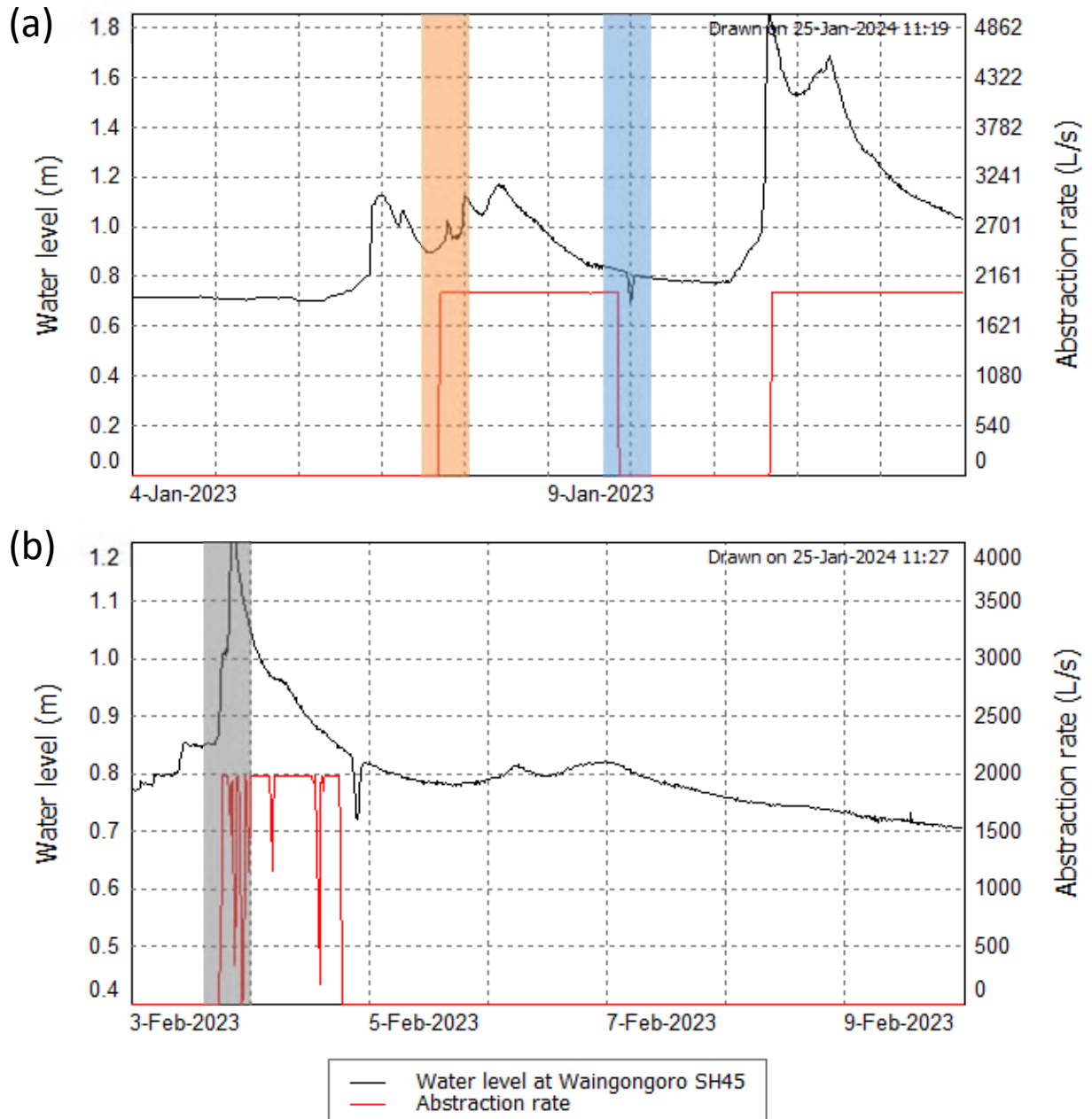


Figure 5 (a) Example of surge waves generated following the start-up and shut down of the power station.
(b) Example when surge wave generation could not be identified

Note: The orange shading is a surge wave following the start-up of the power station and the blue shading following shut down. In grey is an example of a noisy signal

Finally, the Company is also required to provide a recreational flow up to twelve times a year, should they receive a written request at least 48 hours beforehand from the New Zealand Recreational Canoe Association. They are also required to keep a log of these recreational release flows to be provided to

the Council. It is understood the Company did not receive any such requests during the reporting period.

2.1.4 Results of receiving environment monitoring

The Council did not undertake any receiving environment monitoring during the year under review. The consents held for the scheme specify the receiving environment monitoring required to be performed by the Company.

The following monitoring requirements are set out in the resource consents:

“A monitoring programme shall be developed and undertaken in reasonable consultation with submitters. The monitoring programme shall ensure that the effects of this consent are adequately determined and monitored to the reasonable satisfaction of the Chief Executive, Taranaki Regional Council, having considered any independent expert advice he may seek.

The monitoring programme shall commence within 6 months of the consent commencing [in terms of section 116 of the Resource Management Act] and shall include an assessment of:

- a. Preparation of a “baseline report” addressing the matters listed in paragraphs b) to f) of this condition that records the representative baseline against which the effects of the scheme can be assessed. The baseline report shall:
 - i. Incorporate all reasonably available existing information, including the data submitted with the assessment of environmental effects, as well as additional data specifically obtained for the purpose of preparing the report; and
 - ii. Be provided to the Chief Executive, Taranaki Regional Council before the scheme is commissioned
- b. An assessment of the impact of any increased periphyton growth, as a result of this consent, on ecological, recreation and amenity values;
- c. An assessment of the formation of any sediment accumulation immediately below the weir and its effect on ‘dam dropping’;
- d. An assessment of the impact of this consent on recreational activity [including fishing] in the residual flow reach;
- e. An assessment of the impact of this consent on trout habitat, juvenile and adult trout numbers and benthic macroinvertebrates in the residual flow reach; and
- f. An assessment of the effect of this consent on fish passage.

The monitoring programme shall be reviewed and reported on annually.”

To date no baseline data has been collected on the trout communities in the residual flow reach, and little baseline information has been collected on the recreational activity in the residual flow reach. A site visit and meeting took place on site on 6 July 2022 where representatives from the Council and the Company discussed consent requirements including environmental monitoring. It was acknowledged that the Company had upgraded infrastructure associated with the hydro scheme under its first year of new ownership in order to provide and comply with data reporting requirements, as this aspect of the operation had been inadequate under previous ownership. The need for sufficient environmental monitoring to satisfy the requirements of the consent was also discussed, and was tabled as a main agenda item for a stakeholder meeting in 2022-2023. The stakeholder meeting did not take place during the 2022-2023 monitoring year, and will be scheduled for the 2023-2024 monitoring year.

The previous operating Company had provided an erosion report as required by condition 14 of consent 7078-1. This report, received on 21 April 2017, made some recommendations including planting willows in

one location, monitoring another location so that remedial action can be taken if required, and to spray the vegetated island in the river channel, to keep it clear of vegetation in order to improve channel capacity. The consent does not require these recommendations be implemented, but it is anticipated that as a responsible consent holder, the current operating Company will implement them in the near future.

During the monitoring year under review, the Company mainly focused on the application to modify consent conditions 8 and 10 in order to build the fish passage, hence complying with the existing Enforcement Order (ENV-2017-WLG-000049). Significant improvement is still required to comply with the resource consents. However, improvements were made compared to the previous monitoring year.

2.1.5 Works required by consent

The resource consents held for the scheme require some physical works to be undertaken. Consent 7078-1 requires specific modification to the fish pass structure to allow for passage of brown trout, rainbow trout, torrentfish, smelt, inanga, and redfin bullies. These modifications were required to have been completed by previous owners of the hydro scheme, however, given the lack of progress towards improving the fish pass, and the ongoing non-compliance, an Enforcement Order (ENV-2017-WLG-000049) was issued on 30 November 2017. Paragraph 10 of this Enforcement Order makes it clear that the current owners of the Company are still subject to this Enforcement Order. Draft plans for a new fish pass were provided to the Council and other interested parties in August 2021 with these appearing fit for purpose and being given approval by TRC and Fish and Game. Since then the Company has provided a timeline on the different events related to the completion of the fish passage construction.

This consent also requires a baffle be installed from 1 June to 30 September each year to improve lamprey passage. The Company has installed a suitable steel baffle on the true right of the weir. In order for the baffle to be effective, flow must be reduced to the associated section of the weir. The Company has maintained reduced flow to this section of the weir during the required period by engaging a contractor to place rocks upstream of the baffle. The works have been repeated during the required period when rocks have been displaced by high flow events.

Consent 6558-1 requires the intake screen to have a maximum aperture dimension of 30 mm. The new screen installed by the Company before the beginning of the 2021-2022 monitoring period is compliant with the consent conditions. Although the intake screen can be raised for maintenance, it was always found to be secured in place during inspections. Suitable equipment is on site to clear and maintain the intake screen.

This consent also requires the station to have an emergency backup system. This system is required so that should there be a failure of transmission or generation equipment resulting in an emergency shutdown, the ramping rate condition can still be complied with. The Company has informed the Council that the site has emergency power for 48 hours.

The Company is also required to undertake riparian planting and fencing of their land, and of any adjacent land where landowners provide written agreement. The Company has begun riparian planting in some areas and intends to expand on this.

2.2 Stakeholder meeting

No formal stakeholder meeting was held in the 2022-2023 monitoring period. Affected parties have been consulted during this time regarding plans for the proposed new fish pass. Stakeholder meetings are required under consent conditions once every two years. It is expected that the Company will organise a stakeholder meeting in the 2023-2024 year.

2.3 Investigations, interventions, and incidents

The monitoring programme for the year was based on what was considered to be an appropriate level of monitoring, review of data, and liaison with the Company. During the year matters may arise which require additional activity by the Council, for example provision of advice and information, or investigation of potential or actual causes of non-compliance or failure to maintain good practices. A pro-active approach that in the first instance avoids issues occurring is favoured.

In the 2022-2023 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with the Company's conditions in resource consents or provisions in Regional Plans.

Three instances of flushing flow requirements not being complied with during the monitoring period occurred. It was determined that undertaking enforcement action would not be required as the majority of flushing flow requirements were met. The instances of non-compliance were deemed to have negligible environmental impact at current generation rates.

The Enforcement Order (ENV-2017-WLG-000049), relating to the fish pass, is active and applicable to the Company. Undertaking enforcement action in relation to non-compliance with fish passage requirements was not considered necessary during the 2022-2023 monitoring year as an application to modify consent conditions in order to comply with the Enforcement Order was submitted.

3 Discussion

3.1 Discussion of site performance

The 2022-2023 monitoring year is the second year the scheme has been under management of the current Company, Greenfern Industries Ltd.

Several issues that remained unresolved under previous ownership were sufficiently rectified by the Company in its first year of new ownership. This included the intake screen being replaced with a compliant screen and being well maintained. The accuracy and reporting of abstraction and flow data was also of a high standard, having improved significantly under the new ownership. During the second year of holding the consents, the Company lodged an application to modify consent conditions, in order to make progress on the fish passage construction.

A gauging undertaken in the 2022-2023 period recorded a difference beyond the margin of error when compared to the Company provided flow data. The comparison of Company provided residual flow data with residual flow data represented by 95% flow at SH45 showed a close relationship. Although the two graphs appear to differ by a vertical shift, the two display the same overall trends. This difference in graphed flow data, combined with a difference between Company data and the gauging data, suggests that the Company flow recorder is accurately recording changes in the river flow but may need recalibration or be suffering from interference. The construction of a new site to move the Company water level recorder to is underway, and should provide more accurate data as the new site will not be susceptible to debris accumulation and water height changes due to intake start up and shut down. This issue does not affect the abstraction rate data however, and it is apparent that the Company complied with the maximum consented abstraction rates.

In order to continue operating, the Company must meet the requirements of the consent conditions. The monitoring undertaken to date shows that there has been inadequate progress on meeting three of the consent requirements where the Company is required to undertake fish passage works (consent 7078-1 condition 10), perform monitoring (consent 6558-1 condition 18) and conducting a community meeting (consent 6558-1.1 condition 21, consent 7078-1 condition 15 and consent 2299-3 condition 2).

3.2 Environmental effects of exercise of consents

The Council is not aware of any monitoring of the effects of the scheme undertaken by the Company, although this was discussed and is to be a main agenda item in the 2023-2024 stakeholder meeting. To date, the greatest environmental effect of the scheme is that on fish passage within the Waingongoro River. The Normanby Weir presents a barrier to all but the best climbing species, and even for these species it is likely that only a small proportion of the fish arriving at the weir manage to migrate past it. The lamprey passage was in place for the required period.

The reduction in flow currently caused by the scheme is likely to be having only a minor impact on the biological communities of the residual flow reach, as the amount of water currently being diverted is much less than the maximum consented rate of take of 10 m³/s. Monitoring of the fish communities in relation to fish passage will likely commence following upgrading of the fish pass.

An erosion report was provided by the previous Company in the 2016-2017 period, and this concluded that while erosion was not a significant issue, some maintenance works were required to keep it at bay. The new Company has begun implementing the fencing and planting of riparian margins as required by consent, although this will take some time due to the scale and cost of this task. Future riparian planting is being considered and will be discussed at the community meeting.

The Company did not meet all of the flushing flow requirements during the reported period, but it is unlikely they resulted in a deterioration in the biological communities of the residual flow reach, as the current rate of abstraction is still relatively small. No surge wave exceeding the consent limits was detected at the downstream SH45 water level recorder. For the next monitoring year, modelling the change in water level at the weir using data recorded at SH45 will be considered to better assess compliance and have an idea of the surge wave generated. The start-up and shut down needs to be managed with care, especially if the Company is intending to increase the generation capacity at the site. The flushing and release flows will become more important if the generation capacity of the scheme is increased, and there will also be potential for the ramping rates to increase. Therefore the Company will need to ensure that compliance with these conditions is incorporated into the management of the scheme.

3.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Table 3 to Table 5. An evaluation of the consent holder's compliance record over time is provided in Table 6.

Table 3 Summary of performance for consent 7078-1

Purpose: To erect, place, use and maintain a concrete weir and ancillary structures in the Waingongoro River; and to undertake excavation and disturbance of the river bed that is directly associated with that activity		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Best practicable option	Inspections of the site	Yes
2. Activity undertaken largely in accordance with application	Inspections of the site	Yes
3. Notification requirements	Notification received – lamprey baffle maintenance	Yes
4. Timing of works	Notification received and Inspections of site	N/A
5. Minimise sediment and associated effects	Inspections of site	N/A
6. Receiving environment limits	Inspections of site & sampling – no maintenance works completed during reporting period	N/A
7. Minimise area of disturbance	Inspections of site	Yes
8. Upgrade fish pass as specified	Inspections of site	No
9. Install baffle for lamprey passage	Inspections of site	Yes
10. Structure not to pose barrier to listed species, and undertake monitoring	Receipt of monitoring results	No
11. Monitoring of effects of this consent	Receipt of monitoring results	No
12. Cease works upon discovery of archaeological remains	Inspections of site	N/A
13. Weir and structures not to cause significant erosion	Inspections of site	Yes
14. Undertake erosion report	Receipt of monitoring results	Yes

Purpose: To erect, place, use and maintain a concrete weir and ancillary structures in the Waingongoro River; and to undertake excavation and disturbance of the river bed that is directly associated with that activity

Condition requirement	Means of monitoring during period under review	Compliance achieved?
15. Stakeholder meeting	Attending meeting at least every two years	No
16. Review provision	No review undertaken	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		Improvement required
Overall assessment of administrative performance in respect of this consent		Improvement Required

N/A = not applicable

Table 4 Summary of performance for consent 6558-1

Purpose: To take and use water from the Waingongoro River		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Notification requirement	Notification received of initial commissioning	Yes
2. Maximum rate of take not to exceed 10 m ³ /s	Hydrological gaugings, review of records	Yes
3. Minimum flow to be provided below the weir	Hydrological gaugings, review of Council and Company records	Yes
4. All water to be discharged at powerhouse	Inspections	Yes
5. Flushing flow to be provided in specific circumstances	Review of data	Partially
6. Release flow to be provided in specific circumstances	Review of data	Yes
7. Provision of recreational flow upon request from NZ Recreational Canoe Association	Review of data, liaison with Company – no requests received	N/A
8. A log of recreational flows to be maintained and provided to Council	Receipt of log – no requests received	N/A
9. Record residual flow and abstraction rate accurately and provide records to Council	Receipt and review of data	Yes
10. Provide independent verification as to the accuracy of flow measuring devices	Receipt of verification	No
11. Repair and notification of equipment failure	Review of data	N/A

Purpose: To take and use water from the Waingongoro River		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
12. Data provided in suitable format	Review of data	Yes
13. Shutdown notification	Review of data	Yes
14. Notification of water take following shutdown	Review of data	Yes
15. Intake screen size and velocity	Inspections	Yes
16. Restriction of surge wave magnitude	Inspections, data review	Yes
17. Installation of emergency backup system	Inspections, liaison with Company	Yes
18. Monitoring of effects of this consent	Receipt of monitoring results	No
19. Undertake riparian planting on Company land and on adjacent land	Inspections of site and liaison with Company	Yes
20. Lapse provision	Consent exercised	N/A
21. Stakeholder meeting	Attending meeting at least every two years	No
22. Review provision	No review undertaken	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		Good Improvement Required

Table 5 Summary of performance for consent 2299-3

Purpose: To dam the Waingongoro River with a 6 metre high concrete weir		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Monitoring of effects of this consent	Receipt of monitoring results	No
2. Stakeholder meeting	Attending meeting at least every two years	No
3. Review provision	No review undertaken	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		Improvement required Improvement required

Table 6 Evaluation of environmental performance over time

Year	Consent no	High	Good	Improvement req	Poor
2014-2015	7078-1	-	-	1	-
	6558-1	-	-	1	-
	2299-3	-	1	-	-
2015-2016	7078-1	-	-	-	1
	6558-1	-	-	-	1
	2299-3	-	1	-	-
2016-2017	7078-1	-	-	-	1
	6558-1	-	-	-	1
	2299-3	-	1	-	-
2021-2022	7078-1	-	-	-	1
	6558-1	-	1	-	-
	2299-3	-	1	-	-
2022-2023	7078-1	-	-	1	-
	6558-1	-	1	-	-
	2299-3	-	-	1	-
Totals		0	6	4	5

*see text for qualifying comments

During the year under review, the Company demonstrated a good level of environmental performance with regard to resource consent 6588-1 as defined in Section 1.1.4, but only to the extent demonstrated by the monitoring that was undertaken. A number of other monitoring obligations required by the consents are still to be put into effect. Although environmental monitoring conditions within the residual flow reach were not complied with, this is largely related to issues fish with passage requirements in resource consent 7078-1 discussed earlier. Flushing flow and surge wave requirements were met in the majority of instances, with non-compliance likely to have had minor to negligible environmental effects.

During the year under review, the Company demonstrated a level of environmental and administrative performance that needed improvement with resource consent 2299-3 and 7078-1 as defined in Appendix II. During the year under review the Company demonstrated a lack of progress in implementing consent requirements, including fish passage improvements, environmental monitoring, and community meeting. This lack of fish passage has been compounding over time, contributing to this rating. An enforcement order remains in place against the Company, having been issued against the previous operator. An improvement in the Company's environmental performance is required, with the significance of the need for fish passage resulting in an overall rating of "improvement required" for the 2022-2023 monitoring year.

3.4 Recommendations from the 2021-2022 Annual Report

In the 2021-2022 Annual Report, it was recommended:

1. THAT in the first instance, monitoring of consented activities at the Normanby HEPS in the 2022-2023 year continue at the same level as in 2021-2022. The ongoing issues of non-compliance with fish passage and environmental monitoring consent conditions prevent a reduction in monitoring requirements.
2. THAT should there be issues with environmental or administrative performance in 2022-2023, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Recommendation 1 was implemented in the 2022-2023.

3.5 Alterations to monitoring programmes for 2023-2024

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- reporting to the regional community.

The Council also takes into account the scope of assessments required at the time of renewal of permits, and the need to maintain a sound understanding of industrial processes within Taranaki exercising resource consents.

It is proposed that for 2023-2024, the monitoring programme remains mostly unchanged from the 2022-2023 year. The ongoing issues of non-compliance with fish passage and environmental monitoring consent conditions prevent a reduction in monitoring requirements. However, the assessment of the surge wave height generated during start-up and shut down procedures might be reviewed.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2023-2024.

3.6 Exercise of optional review of consent

The three resource consents held for the scheme provide for optional reviews as follows:

- a. annually during the month of June until the June following the third anniversary of the scheme first operating; and/or
- b. at three yearly intervals during the month of June after the June following the third anniversary of the scheme first operating;
- c. after receipt of monitoring reports that show adverse effects on those matters that required to be monitored for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or are of a greater scale than predicted, or which it was not appropriate to deal with at the time.

Although there is no date when the scheme was formally commissioned, for the purposes of the above condition, the scheme was commissioned on 1 October 2010. Therefore, the opportunity to review as per the first point listed above has passed, and the next review date under the second point is June 2023. The third point listed above is not yet of relevance, as no monitoring reports have been received by the Council.

Therefore, the option exists for the Council to exercise the optional review of consent provision in June 2023. However, at this time it is considered that the current conditions of the consents, if adhered to, provide sufficient provision to ensure adequate environmental protection of the Waingongoro River.

4 Recommendations

1. THAT in the first instance, monitoring of consent activities at the Normanby HEPS in the 2023-2024 year continue at the same level as in 2022-2023.
2. THAT the residual flow compliance assessment will be automated.
3. THAT the assessment of the surge wave generated at the weir following start-up and shutdown of the power station will be reviewed.
4. THAT the surge wave height compliance assessment will be automated.
5. THAT should there be issues with environmental or administrative performance in 2023-2024, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Glossary of common terms and abbreviations

The following abbreviations and terms may be used within this report:

Biomonitoring	Assessing the health of the environment using aquatic organisms.
Bund	A wall around a tank to contain its contents in the case of a leak.
Cumec	A volumetric measure of flow- 1 cubic metre per second (1 m ³ s ⁻¹).
Fresh	Elevated flow in a stream, such as after heavy rainfall.
g/m ² /day	Grams/metre ² /day.
g/m ³	Grams per cubic metre, and equivalent to milligrams per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures.
Incident	An event that is alleged or is found to have occurred that may have actual or potential environmental consequences or may involve non-compliance with a consent or rule in a regional plan. Registration of an incident by the Council does not automatically mean such an outcome had actually occurred.
Intervention	Action/s taken by Council to instruct or direct actions be taken to avoid or reduce the likelihood of an incident occurring.
Investigation	Action taken by Council to establish what were the circumstances/events surrounding an incident including any allegations of an incident.
Incident Register	The Incident Register contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan.
L/s	Litres per second.
MCI	Macroinvertebrate community index; a numerical indication of the state of biological life in a stream that takes into account the sensitivity of the taxa present to organic pollution in stony habitats.
Mixing zone	The zone below a discharge point where the discharge is not fully mixed with the receiving environment. For a stream, conventionally taken as a length equivalent to 7 times the width of the stream at the discharge point.
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water.
Physicochemical	Measurement of both physical properties (e.g. temperature, clarity, density) and chemical determinants (e.g. metals and nutrients) to characterise the state of an environment.
Resource consent	Refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15).
Residual flow	Flow required to maintain fish passage and/or aquatic habitat.
RMA	<i>Resource Management Act 1991</i> and including all subsequent amendments.
SS	Suspended solids.
SQMCI	Semi quantitative macroinvertebrate community index.
Temp	Temperature, measured in °C (degrees Celsius).
Turb	Turbidity, expressed in NTU.

For further information on analytical methods, contact an Environment Quality Manager.

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Appendix I

Resource consents held by Greenfern Industries Ltd

(For a copy of the signed resource consent
please contact the TRC Consents department)

Water abstraction permits

Section 14 of the RMA stipulates that no person may take, use, dam or divert any water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or it falls within some particular categories set out in Section 14. Permits authorising the abstraction of water are issued by the Council under Section 87(d) of the RMA.

Water discharge permits

Section 15(1)(a) of the RMA stipulates that no person may discharge any contaminant into water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or by national regulations. Permits authorising discharges to water are issued by the Council under Section 87(e) of the RMA.

Land use permits

Section 13(1)(a) of the RMA stipulates that no person may in relation to the bed of any lake or river use, erect, reconstruct, place, alter, extend, remove, or demolish any structure or part of any structure in, on, under, or over the bed, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Land use permits are issued by the Council under Section 87(a) of the RMA.

Water Permit
Pursuant to the Resource Management Act 1991
a resource consent is hereby granted by the
Taranaki Regional Council

Name of
Consent Holder: Greenfern Industries Limited
687 Inland Road
RD 2
Helensville 0875

Decision Date 1 September 2009

Commencement Date 1 September 2009

Conditions of Consent

Consent Granted: To dam the Waingongoro River with a 6 metre high concrete weir for hydroelectric power generation purposes

Expiry Date: 1 June 2029

Review Date(s): See condition 3

Site Location: Normanby Road, Okaiawa

Grid Reference (NZTM) 1706150E-5624519N

Catchment: Waingongoro

*For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document*

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. In conjunction with special condition 13 of consent 6558-1 and special condition 11 of consent 7078-1, a monitoring programme shall be developed and undertaken in reasonable consultation with submitters. The monitoring programme shall ensure that the effects of this consent are adequately determined and monitored to the reasonable satisfaction of the Chief Executive, Taranaki Regional Council, having considered any independent expert advice he may seek.

The monitoring programme shall commence within 6 months of the consent commencing [in terms of section 116 of the Resource Management Act] and shall include:

- a. Preparation of a “baseline report” addressing the matters listed in paragraphs b) to f) of this condition, that records the representative baseline against which the effects of the scheme can be assessed. The baseline report shall:
 - i. Incorporate all reasonably available existing information, including the data submitted with the assessment of environmental effects, as well as additional data specifically obtained for the purpose of preparing the report; and
 - ii. Be provided to the Chief Executive, Taranaki Regional Council before the scheme is commissioned
- b. An assessment of the impact of any increased periphyton growth, as a result of this consent, on ecological, recreation and amenity values;
- c. An assessment of the formation of any sediment accumulation immediately below the weir and its effect on ‘dam dropping’;
- d. An assessment of the impact of this consent on recreational activity [including fishing] in the residual flow reach;
- e. An assessment of the impact of this consent on trout habitat, juvenile and adult trout numbers and benthic macroinvertebrate communities in the residual flow reach; and
- f. An assessment of the effect of this consent on fish passage.

The monitoring programme shall be reviewed and reported on annually.

2. The consent holder shall meet as appropriate and at least every two years with staff of the Taranaki Regional Council and interested submitters to the consent to discuss any matter relating to the exercise of this resource consent, including the monitoring programme design, implementation and interpretation.
3. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
 - a. annually during the month of June until the June following the third anniversary of the scheme first operating; and/or
 - b. at three yearly intervals during the month of June after the June following the third anniversary of the scheme first operating;
 - c. after receipt of monitoring reports that show adverse effects on the matters listed in condition 1 (b) – (f).

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or are of a greater scale than predicted, or which it was not appropriate to deal with at the time.

Transferred at Stratford on 10 February 2021

For and on behalf of
Taranaki Regional Council



A D McLay
Director - Resource Management

Water Permit
Pursuant to the Resource Management Act 1991
a resource consent is hereby granted by the
Taranaki Regional Council

Name of
Consent Holder: Greenfern Industries Limited
687 Inland Road
RD 2
Helensville 0875

Decision Date
(Change): 21 May 2018

Commencement Date
(Change): 21 May 2018 (Granted Date: 1 September 2009)

Conditions of Consent

Consent Granted: To take and use water from the Waingongoro River for
hydroelectric power generation purposes

Expiry Date: 1 June 2029

Review Date(s): June at 3-yearly intervals

Site Location: Normanby Road, Okaiawa

Grid Reference (NZTM) 1706160E-5624470N

Catchment: Waingongoro

*For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document*

General condition

- a. The consent holder shall pay to the Taranaki Regional Council all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

1. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least seven days prior to the exercise of this consent. Notification shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz.
2. The rate of taking shall not exceed 10 cubic metres per second.
3. The taking of water authorised by this consent shall be managed to ensure that the flow in the Waingongoro River immediately below the intake point is no less than 3,500 litres per second in the period 1 October to 30 April inclusive and no less than 3,000 litres per second in the period 1 May to 30 September inclusive. In the period 1 October to 30 April inclusive, no taking shall occur when the flow is less than 3,500 litres per second. In the period 1 May to 30 September inclusive, no taking shall occur when the flow is less than 3,000 litres per second.
4. All water taken shall be discharged back into the river adjacent to the power house.
5. If a 'flushing flow' (defined as a flow over the weir that exceeds 14 cubic metres per second) does not occur during any continuous period of 15 days, the consent holder shall facilitate a flushing flow at the next opportunity. To facilitate a flushing flow the consent holder shall ensure that on the next occasion that the river flow exceeds 14 cubic metres per second, taking shall cease for 8 hours.
6. If the flow over the weir does not exceed 6 cubic metres per second during any continuous period of 14 days between 1 October and 30 April, the consent holder shall, within 24 hours, stop taking so that the entire river flow passes over the weir for at least 3 hours. Once a release flow has occurred, the 14 day period shall restart, irrespective of the total flow which passed over the weir during the release.
7. On up to 12 occasions per year the consent holder shall regulate, or stop, taking to allow a 'recreational flow' over the weir. A 'recreational' flow shall:
 - a. be the entire flow of the river;
 - b. occur for a maximum duration of 3 hours;
 - c. only occur at the written request of a person delegated to make such requests by the New Zealand Recreational Canoe Association, received by the consent holder no less than 48 hours beforehand; and
 - d. occur at the time reasonably requested, or agreed to, by the organisation.

Consent 6558-1.1

8. A log of recreational release flows shall be maintained and provided to the Chief Executive, Taranaki Regional Council and/or the New Zealand Recreational Canoe Association upon request. Such a log shall include:
 - a. name of person making the request;
 - b. date and time the request was made;
 - c. date of release flow;
 - d. time and duration of release flow; and
 - e. maximum flow released.
9. The consent holder shall measure and electronically record at intervals not exceeding 15 minute intervals the:
 - rate that water is taken from the Waingongoro River to an accuracy of $\pm 5\%$;
 - flow in the Waingongoro River immediately downstream of the weir to an accuracy of $\pm 10\%$;

and shall provide these records to the Chief Executive, Taranaki Regional Council, at three monthly intervals or upon reasonable request.

10. The consent holder shall provide to the Chief Executive, Taranaki Regional Council independent written verification ('the Verification') as to the accuracy of both the residual flow and abstraction flow measuring devices used to undertake the measurements and recording as required by Special condition 9 of this Consent.

The verification must:

- a. be undertaken by an independent, suitably qualified person as agreed by the Chief Executive of the Taranaki Regional Council.
- b. be completed no less frequently than once yearly during each July-June period and provided to the Taranaki Regional Council no later than 30 June each year.
- c. detail the methodology and the date and results of any tests undertaken to assess the accuracy of both the residual flow and abstraction flow measuring devices.

Note: For the purposes of this condition, 'residual flow' refers to the flow in the Waingongoro River immediately downstream of the weir located at (NZTM) 1706153E-5624500N.

11. If any measuring or recording equipment breaks down, or for any reason is not operational, the consent holder shall advise the Chief Executive, Taranaki Regional Council immediately. Any repairs or maintenance to this equipment must be undertaken by a suitably qualified person and a maintenance report provided to the Chief Executive, Taranaki Regional Council within 30 days of the work occurring.
12. The records of water shall:
 - a. be in a format that, in the opinion of the Chief Executive, Taranaki Regional Council, is suitable for auditing; and
 - b. specifically record the water taken as 'zero' when no water is taken (abstraction data only).

13. On each occasion that the station does not operate for a period of 24 hours or longer (a 'shutdown') the consent holder shall notify the Taranaki Regional Council of the shutdown within 24 hours by sending an email to worknotification@trc.govt.nz. The notification shall include:
- 'Normanby Power Station' in the subject heading;
 - the consent number;
 - the date and that the shutdown commenced; and
 - the residual flow rate immediately before the shutdown takes place.

Note: For the purposes of this condition, 'residual flow' refers to the flow in the Waingongoro River immediately downstream of the weir located at (NZTM) 1706153E-5624500N.

14. On each occasion that the consent holder is going to recommence taking water for generation, after a shutdown has occurred, the consent holder shall notify the Taranaki Regional Council before taking occurs by sending notification by email to worknotification@trc.govt.nz. The notification shall include:
- 'Normanby Power Station' in the subject heading;
 - the consent number;
 - the date and time that the taking recommenced; and
 - the residual flow rate immediately before the take is recommenced.

Note: For the purposes of this condition, 'residual flow' refers to the flow in the Waingongoro River immediately downstream of the weir located at (NZTM) 1706153E-5624500N.

15. The intake shall be screened with a screen having a maximum aperture dimension of 30 mm. The maximum through screen velocity shall be 0.3 metres per second.
16. That start-up and shutdown of the power station shall not generate a change in water level (including both positive and negative surge waves) in excess of 200 mm in height downstream of the weir or power station discharge.
17. That an emergency backup system (power and communication) be installed prior to commissioning of the scheme to ensure that generation can continue to be managed during emergency situations for up to 48 hours.

18. In conjunction with special condition 1 of consent 2299-3 and special condition 11 of consent 7078-1, a monitoring programme shall be developed and undertaken in reasonable consultation with submitters.

The monitoring programme shall ensure that the effects of this consent are adequately determined and monitored to the reasonable satisfaction of the Chief Executive, Taranaki Regional Council, having considered any independent expert advice he may seek. The monitoring programme shall commence within 6 months of the consent commencing (in terms of section 116 of the Resource Management Act) and shall include an assessment of:

- a. preparation of a “baseline report” addressing the matters listed in paragraphs b) to f) of this condition, that records the representative baseline against which the effects of the scheme can be assessed. The baseline report shall:
 - i. Incorporate all reasonably available existing information, including the data submitted with the assessment of environmental effects, as well as additional data specifically obtained for the purpose of preparing the report; and
 - ii. Be provided to the Chief Executive, Taranaki Regional Council before the scheme is commissioned;
- b. an assessment of the impact of any increased periphyton growth, as a result of this consent, on ecological, recreation and amenity values;
- c. an assessment of the formation of any sediment accumulation immediately below the weir and its effect on ‘dam dropping’;
- d. an assessment of the impact of this consent on recreational activity (including fishing) in the residual flow reach;
- e. an assessment of the impact of this consent on trout habitat, juvenile and adult trout numbers and benthic macroinvertebrate communities in the residual flow reach; and
- f. an assessment of the effect of this consent on fish passage.

The monitoring programme shall be reviewed and reported on annually.

19. The consent holder shall undertake riparian planting on any land owned by the consent holder, and on any adjacent land where individual landowners provide written agreement, in the area that is affected by the power scheme. The purpose of the planting shall be to mitigate the environmental effects of the water take. The planting shall include fencing, planting and on-going maintenance of the riparian area for the duration of the consent.
20. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
21. The consent holder shall meet as appropriate and at least every two years with staff of the Taranaki Regional Council and interested submitters to the consent to discuss any matter relating to the exercise of this resource consent, including the monitoring programme design, implementation and interpretation.

Consent 6558-1.1

22. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
- annually during the month of June until the June following the third anniversary of the scheme first operating; and/or
 - at three yearly intervals during the month of June after the June following the third anniversary of the scheme first operating;
 - after receipt of monitoring reports that show adverse effects on the matters listed in condition 13 (b)–(f).

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or are of a greater scale than predicted, or which it was not appropriate to deal with at the time.

Transferred at Stratford on 10 February 2021

For and on behalf of
Taranaki Regional Council



A D McLay

Director - Resource Management

Land Use Consent
Pursuant to the Resource Management Act 1991
a resource consent is hereby granted by the
Taranaki Regional Council

Name of
Consent Holder: Greenfern Industries Limited
687 Inland Road
RD 2
Helensville 0875

Decision Date 1 September 2009

Commencement Date 1 September 2009

Conditions of Consent

Consent Granted: To erect, place, use and maintain a concrete weir and ancillary structures in the Waingongoro River; and to undertake excavation and disturbance of the river bed that is directly associated with that activity, for hydroelectric power generation purposes

Expiry Date: 1 June 2029

Review Date(s): See condition 16

Site Location: Normanby Road, Okaiawa

Grid Reference (NZTM) 1706150E-5624519N

Catchment: Waingongoro

*For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document*

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

- 1. Notwithstanding any other condition of this consent the consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this resource consent.
- 2. The exercise of this consent shall be undertaken substantially in accordance with the documentation submitted in support of application 4558. In the case of any contradiction between the documentation submitted in support of application 4558 and the conditions of this consent, the conditions of this consent shall prevail.
- 3. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least seven days prior to the exercise of this consent and at least 48 hours prior to and upon completion of any maintenance works which would involve disturbance of or deposition to the river bed or discharges to water. Notification shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz.
- 4. Any disturbance of parts of the riverbed covered by water and/or any works which may result in downstream discolouration of water shall be undertaken only between 1 November and 30 April, except where this requirement is waived in writing by the Chief Executive, Taranaki Regional Council.
- 5. The consent holder shall take all reasonable steps to:
 - a. minimise the amount of sediment discharged to the river;
 - b. minimise the amount of sediment that becomes suspended in the river; and
 - c. mitigate the effects of any sediment in the river.

Undertaking work in accordance with *Guidelines for Earthworks in the Taranaki region*, by the Taranaki Regional Council, will achieve compliance with this condition.

6. After allowing for reasonable mixing, within a mixing zone extending 100 metres downstream of any discharge, that discharge shall not give rise to either of the following effects in the receiving waters of the Waingongoro River:
 - a. an increase in suspended solids concentration in excess of 10 gm^{-3} , when the stream turbidity as measured immediately upstream of the discharge point in the Waingongoro River is equal to or less than 5 NTU [nephelometric turbidity units]; or
 - b. an increase in turbidity of more than 50% when the stream turbidity as measured immediately upstream of the discharge point in the Waingongoro River is greater than 5 NTU [nephelometric turbidity units].
7. The consent holder shall ensure that the area and volume of river bed disturbance shall be the practical minimum necessary to achieve its purpose. Any areas which are disturbed shall, as far as practicable, be reinstated.
8. Within one year of the commencement of this consent the consent holder shall modify the existing fish pass by:
 - Extending the bottom of the fish pass and adjusting weir heights to get a 7.9 degree gradient throughout the fish pass; and
 - Forming a rock ramp in each concrete pool that generates a central channel with emergent rocks on each side.
9. Within one year of the commencement of this consent the consent holder shall construct an angled, rounded timber baffle 2m long [or similar structure that achieves the same effect], which can be placed on the dam crest, to provide for lamprey passage past the weir. This is to be installed and operative during the lamprey migration season defined as 1 June to 30 September each year.
10. The structure authorised by this consent shall not significantly affect the passage of the following target fish species:
 - Brown trout;
 - Rainbow trout;
 - Torrentfish;
 - Smelt;
 - Inanga;
 - Redfin bullies;

as determined by a specific monitoring programme undertaken to determine fish passage in the immediate vicinity of the weir as well as changes in target fish distribution throughout the upstream catchment. Notwithstanding special condition 8 above, if monitoring confirms the fish pass is not providing adequate passage for any target fish species, further changes to the fish pass may be required within three months or a time reasonably agreed by the Chief Executive, Taranaki Regional Council.

11. In conjunction with special condition 1 of consent 2299-3 and special condition 13 of consent 6558-1, a monitoring programme shall be developed and undertaken in reasonable consultation with submitters. The monitoring programme shall ensure that the effects of this consent are adequately determined and monitored to the reasonable satisfaction of the Chief Executive, Taranaki Regional Council, having considered any independent expert advice he may seek.

The monitoring programme shall commence within 6 months of the consent commencing [in terms of section 116 of the Resource Management Act] and shall include an assessment of:

- a. Preparation of a “baseline report” addressing the matters listed in paragraphs b) to f) of this condition, that records the representative baseline against which the effects of the scheme can be assessed. The baseline report shall:
 - i. Incorporate all reasonably available existing information, including the data submitted with the assessment of environmental effects, as well as additional data specifically obtained for the purpose of preparing the report; and
 - ii. Be provided to the Chief Executive, Taranaki Regional Council before the scheme is commissioned
- b. An assessment of the impact of any increased periphyton growth, as a result of this consent, on ecological, recreation and amenity values;
- c. An assessment of the formation of any sediment accumulation immediately below the weir and its effect on ‘dam dropping’;
- d. An assessment of the impact of this consent on recreational activity [including fishing] in the residual flow reach;
- e. An assessment of the impact of this consent on trout habitat, juvenile and adult trout numbers and benthic macroinvertebrates in the residual flow reach; and
- f. An assessment of the effect of this consent on fish passage.

The monitoring programme shall be reviewed and reported on annually.


12. In the event that any archaeological remains are discovered as a result of works authorised by this consent in the river bed, the works shall cease immediately at the affected site and Tangata Whenua and the Chief Executive, Taranaki Regional Council, shall be notified within one working day. Works may recommence at the affected area when advised to do so by the Chief Executive, Taranaki Regional Council. Such advice shall be given after the Chief Executive has considered: Tangata Whenua interest and values, the consent holder’s interests, the interests of the public generally, and any archaeological or scientific evidence. The New Zealand Police, Coroner, and Historic Places Trust shall also be contacted as appropriate, and the work shall not recommence in the affected area until any necessary statutory authorisations or consents have been obtained.
13. The weir and associated structures shall not cause any significant erosion of the river bed or banks.

14. A report investigating erosion of the river bed and banks for a distance of 100 m downstream of the weir shall be provided to the Chief Executive, Taranaki Regional Council within one year of the commencement of this consent. The report shall be prepared by a suitably qualified river engineer and shall detail:
 - a. existing erosion of the river bed and banks;
 - b. the potential for further erosion;
 - c. the impact of existing and potential erosion on any land, the weir and any wāhi tapu site [including urupa];
 - d. the extent that the erosion may be caused by any structures authorised by this consent; and
 - e. recommendations for any work to mitigate erosion.
15. The consent holder shall meet as appropriate and at least every two years, with staff of the Taranaki Regional Council and interested submitters to the consent to discuss any matter relating to the exercise of this resource consent, including the monitoring programme design, implementation and interpretation.
16. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
 - a. annually during the month of June until the June following the third anniversary of the scheme first operating; and/or
 - b. at three yearly intervals during the month of June after the June following the third anniversary of the scheme first operating;
 - c. after receipt of monitoring reports that show adverse effects on the matters listed in condition 11 (b) – (f).

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or are of a greater scale than predicted, or which it was not appropriate to deal with at the time.

Transferred at Stratford on 10 February 2021

For and on behalf of
Taranaki Regional Council


A D McLay
Director - Resource Management

Appendix II

Categories used to evaluate environmental and
administrative performance

Categories used to evaluate environmental and administrative performance

Environmental performance is concerned with actual or likely effects on the receiving environment from the activities during the monitoring year. Administrative performance is concerned with the Company's approach to demonstrating consent compliance in site operations and management including the timely provision of information to Council (such as contingency plans and water take data) in accordance with consent conditions.

Events that were beyond the control of the consent holder and unforeseeable (that is a defence under the provisions of the RMA can be established) may be excluded with regard to the performance rating applied. For example loss of data due to a flood destroying deployed field equipment.

The categories used by the Council for this monitoring period, and their interpretation, are as follows:

Environmental Performance

High: No or inconsequential (short-term duration, less than minor in severity) breaches of consent or regional plan parameters resulting from the activity; no adverse effects of significance noted or likely in the receiving environment. The Council did not record any verified unauthorised incidents involving environmental impacts and was not obliged to issue any abatement notices or infringement notices in relation to such impacts.

Good: Likely or actual adverse effects of activities on the receiving environment were negligible or minor at most. There were some such issues noted during monitoring, from self-reports, or during investigations of incidents reported to the Council by a third party but these items were not critical, and follow-up inspections showed they have been dealt with. These minor issues were resolved positively, co-operatively, and quickly. The Council was not obliged to issue any abatement notices or infringement notices in relation to the minor non-compliant effects; however abatement notices may have been issued to mitigate an identified potential for an environmental effect to occur.

For example:

- High suspended solid values recorded in discharge samples, however the discharge was to land or to receiving waters that were in high flow at the time;
- Strong odour beyond boundary but no residential properties or other recipient nearby.

Improvement required: Likely or actual adverse effects of activities on the receiving environment were more than minor, but not substantial. There were some issues noted during monitoring, from self-reports, or during investigations of incidents reported to the Council by a third party. Cumulative adverse effects of a persistent minor non-compliant activity could elevate a minor issue to this level. Abatement notices and infringement notices may have been issued in respect of effects.

Poor: Likely or actual adverse effects of activities on the receiving environment were significant. There were some items noted during monitoring, from self-reports, or during investigations of incidents reported to the Council by a third party. Cumulative adverse effects of a persistent moderate non-compliant activity could elevate an 'improvement required' issue to this level. Typically there were grounds for either a prosecution or an infringement notice in respect of effects.

Administrative performance

High: The administrative requirements of the resource consents were met, or any failure to do this had trivial consequences and were addressed promptly and co-operatively.

Good: Perhaps some administrative requirements of the resource consents were not met at a particular time, however this was addressed without repeated interventions from the Council staff. Alternatively adequate reason was provided for matters such as the no or late provision of information, interpretation of 'best practical option' for avoiding potential effects, etc.

Improvement required: Repeated interventions to meet the administrative requirements of the resource consents were made by Council staff. These matters took some time to resolve, or remained unresolved at the end of the period under review. The Council may have issued an abatement notice to attain compliance.

Poor: Material failings to meet the administrative requirements of the resource consents. Significant intervention by the Council was required. Typically there were grounds for an infringement notice.

Appendix III

Enforcement order (ENV-2017-WLG-000049)

BEFORE THE ENVIRONMENT COURT

Decision No. [2017] NZEnvC 192

IN THE MATTER

of an application under ss 314 and 316
of the Resource Management Act 1991

BETWEEN

TARANAKI REGIONAL COUNCIL
(ENV-2017-WLG-000049)

Applicant

AND

RENEWABLE POWER LIMITED

First Respondent

AND

TIM MARK JOHNSON

Second Respondent

Court: Environment Judge B P Dwyer

Heard: In Chambers, under s 309 of the Resource Management Act
1991

Date of Decision: 30 November 2017

Date of Issue: 30 November 2017

ENFORCEMENT ORDERS



1. The Court, by consent, makes these enforcement orders under subsections 314(1)(a)(i), 314(1)(b)(i), 314(1)(b)(ii), 314(1)(d)(iii), 314(3) and 314(5) and section 316 of the Resource Management Act 1991 with the terms and conditions as set out below.
2. The name and address of the Respondents against whom the enforcement orders are granted are:
 - a. First Respondent: Renewable Power Limited, 22 Campbell Street, Hawera, 4610.
 - b. Second Respondent: Tim Mark Johnson, 22 Campbell Street, Hawera, 4610.

1. This Enforcement Order applies to the Normanby Power Scheme and includes the Normanby Power Station at Normanby Road, Okaiawa which is located on the land described below:

- a. Computer freehold register identifier TNA3/1320, legal description Subdivision 2 and Part Subdivision 1, Section 63 Block I Hawera Survey District and Part Subdivision 1 – 2 Section 20 Block I Hawera Survey District, comprising 1.4083 hectares more or less, Taranaki Land Registration District.
- b. Computer freehold register identifier TN140/151, legal description Lot 1 Deposited Plan 5613, comprising 195 square metres more or less, Taranaki Land Registration District.
- c. Computer freehold register identifier TN191/81, legal description Section 73-74 Block I Hawera Survey District, comprising 1621 square metres more or less, Taranaki Land Registration District.



**CHANGE OF CONDITIONS OF RESOURCE CONSENT 6558-1 -
ACCURACY OF MEASURING DEVICES**

2. The Respondents shall within 60 working days from the date of service of this Order submit, to the Taranaki Regional Council, a complete application for change of conditions of Resource Consent 6558-1 (made in accordance with all applicable requirements of section 88 of the Resource Management Act 1991) to add a condition or conditions to the Resource Consent 6558-1 that will confirm the accuracy of both the residual flow and abstraction flow measuring devices used to undertake the measurements and recording required by condition 9 of Resource Consent 6558-1 and to facilitate compliance with conditions 2, 3, 5 and 6 of Resource Consent 6558-1.

COMPLIANCE WITH CONDITIONS OF RESOURCE CONSENTS

3. The Respondents shall comply with Special Conditions 3, 9 and 13 of Resource Consent 6558-1.
4. The Respondents shall comply with Special Condition 10 of Resource Consent 6558-1 by 1 December 2017.
5. The Respondents shall comply with Special Condition 1 of Resource Consent 2299-3.
6. The Respondents shall comply with Special Condition 11 of Resource Consent 7078-1.

CHANGE OF CONDITIONS OF RESOURCE CONSENT 7078-1 – FISH PASS

7. The Respondents shall, within 60 working days from the date of service of this Order submit, to the Taranaki Regional Council, a complete application for change of Resource Consent 7078-1 (made in accordance with all applicable requirements of section 88 of the Resource Management Act 1991) to change special

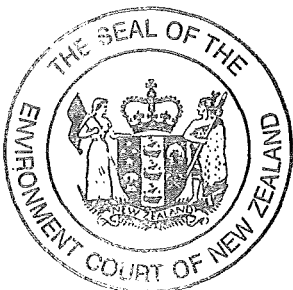


conditions 8 and 10 of the Resource Consent 7078-1. The Respondents shall include with the application a Project Plan for the installation of a fish pass which shall include as a minimum (but not be limited to) the following:

- a. An overall project plan; and
- b. Completion dates for the various stages of development of the fish pass; and
- c. A date by which the project will be completed and become operational; and
- d. Outcome of the consultation process undertaken with Taranaki Fish and Game Council.

FURTHER REQUIREMENTS/MATTERS

8. The Respondents shall not restrict Enforcement Officers of the Taranaki Regional Council and/or any experts instructed by the Taranaki Regional Council (with such assistance from other people as is necessary) to enter and re-enter the Normanby Power Station Site for the purposes of checking on compliance with this Enforcement Order, provided that all persons (other than Enforcement Officers of the Taranaki Regional Council) entering the Normanby Power Station Site are accompanied by an Enforcement Officer of the Taranaki Regional Council.
9. The Respondents shall reimburse the Taranaki Regional Council, in full, for actual and reasonable costs incurred by the Taranaki Regional Council (that are not recoverable pursuant to section 36 of the Resource Management Act 1991) for:
 - a. Monitoring of this Order including inspections pursuant to this Order; and
 - b. Any costs for experts (excluding costs for experts employed by the Council) incurred by the Taranaki Regional Council.
10. This Order shall apply to the personal representatives, successors, and assigns of the Respondents to the same extent as it applies to



the Respondents.

11. Leave is reserved to the Taranaki Regional Council; the Respondents; and the personal representatives, successors, and assigns of the Respondents, to seek further directions and/or orders from the Court.

12. This Order shall take effect when it is served on the Respondents.


B P Dwyer
Environment Judge

