

Renewable Power Limited  
Normanby HEP Scheme  
Monitoring Programme  
Annual Report  
2015-2016

Technical Report 2016-6

ISSN: 1178-1467 (Online)  
Document: 1766337 (Word)  
Document: 1777809 (Pdf)

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January 2017



## Executive summary

Renewable Power Limited (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, are located only 90 m apart. This report for the period July 2015 to June 2016 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.

The Company holds 3 resource consents, which include a total of 36 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.

**During the monitoring period, Renewable Power Ltd demonstrated an overall poor level of environmental performance.**

The Council's monitoring programme for the year under review included four compliance monitoring inspections of the site and one 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. There was also a considerable amount of time spent liaising with the Company.

The monitoring showed that the scheme is still of a relatively small scale diverting between 1.5 and 3 cumecs of water. However, management of the scheme has been very poor, including a number of instances where insufficient residual flow was released below the weir and the collection of grossly inaccurate residual flow and abstraction data. Furthermore, there has been very little progress in implementing a number of the requirements stipulated by the consents, including upgrading the fish pass, undertaking monitoring of the erosion of the river bed and banks around the scheme, and monitoring of the effects of the scheme on the residual flow reach. This includes no or inadequate baseline information being collected on the trout communities and recreational activities of the residual flow reach, despite the scheme now being operated whenever flows allow. Of most concern, was the provision of false data. In this case, the Company had copied data from the Council website, augmented it slightly and then returned it under the guise of it being residual flow data.

During the year, the Company demonstrated a poor level of environmental and administrative performance with the resource consents. Due to the Company's performance during the 2015-2016 period, they were subject to two significant investigations, and as a result of these investigations, received a number of infringement and abatement notices.

For reference, in the 2015-2016 year, 71% of consent holders in Taranaki monitored through tailored compliance monitoring programmes achieved a high level of environmental performance and compliance with their consents, while another 24% demonstrated a good level of environmental performance and compliance with their consents.

This is the first report written for this scheme, although the scheme has been operational on and off since 2010. In addition, there have been a number of changes in ownership. In terms of overall environmental and compliance performance by the consent holder, this report shows that the consent holder's performance has not improved since they took ownership in 2014.

This report includes recommendations for the 2016-2017 year, including that the compliance monitoring programme be expanded to recognise that the scheme is now fully operational, that the optional review of the consents not be undertaken, and that the Company develops and implements a plan for the large number of consent requirements that are currently outstanding.

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# **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 2015 to June 2016 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by Renewable Power Limited (the Company). The Company operates a hydro electric 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 1<sup>st</sup> combined annual report by the Council for the Company. A memorandum was compiled in 2012, which reviewed monitoring and performance of the scheme between 2009, when the consents were granted, and early 2016 (TRC, 2016). Some of the information presented in TRC (2016) is repeated in this report.

### **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 2016-2017 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’ inasmuch 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 Company, this report also assigns them a rating for their environmental and administrative performance during the period under review.

**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 significant 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 in response to unauthorised incident reports, 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 in response to unauthorised incident reports. 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 in response to unauthorised incident reports. 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.

For reference, in the 2015-2016 year, 71% of consent holders in Taranaki monitored through tailored compliance monitoring programmes achieved a high level of environmental performance and compliance with their consents, while another 24% demonstrated a good level of environmental performance and compliance with their consents.

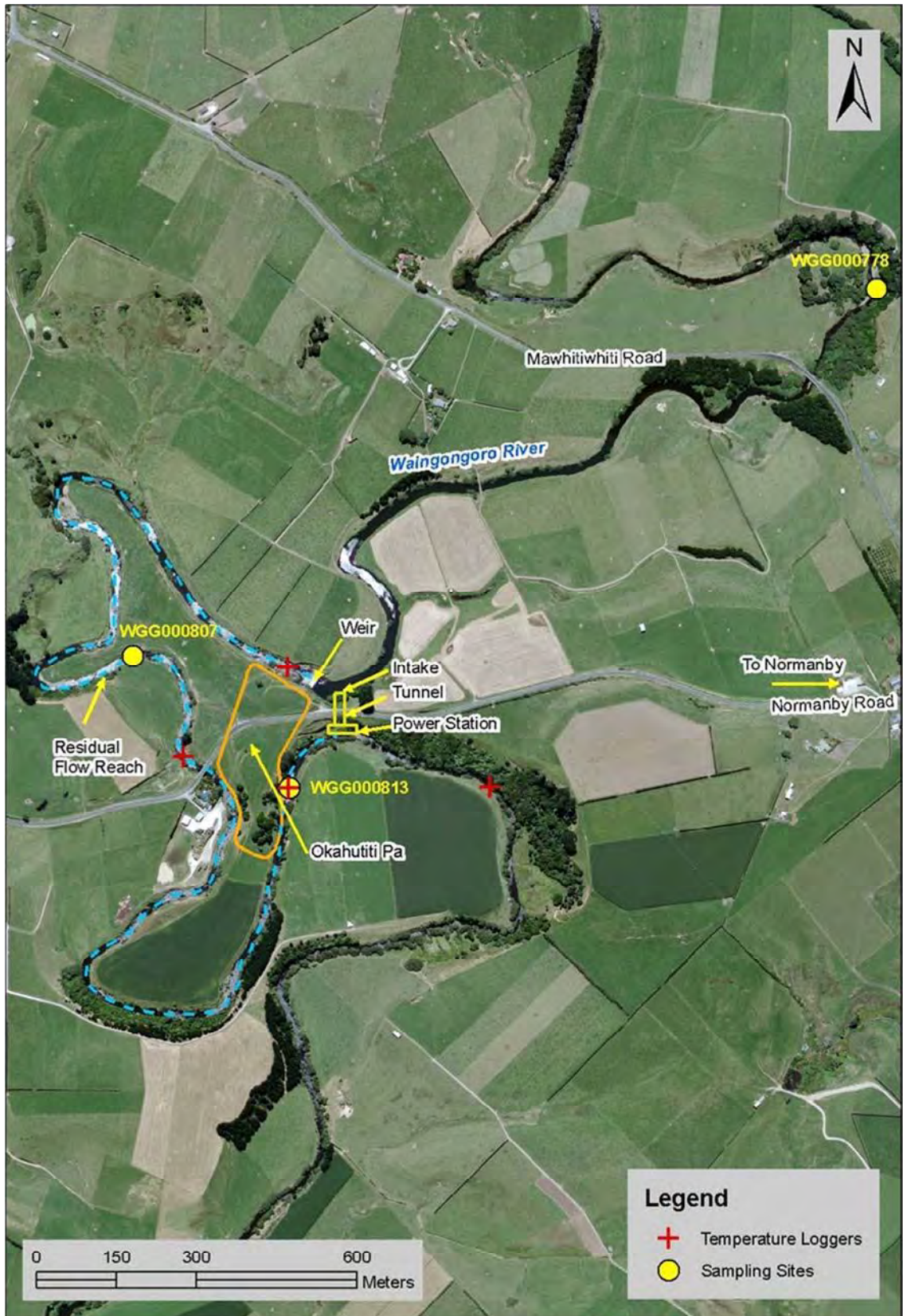
## 1.2 Process description

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.

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 cumecs through the penstocks and turbines, with an operating range from a minimum flow of 0.5 cumecs to a maximum flow of 10 cumecs. There have since been some changes made to this original proposal, and as such these numbers may no longer be accurate.

To date the consent holder has upgraded the intake structure, relined the tunnel and built a structure which supports one turbine and associated generation equipment, with room to install additional turbines (Photo 1). Further development is planned for the near future.



**Figure 1** Location and key features of the Normanby Power Ltd hydro-electric scheme



Photo 1 The Normanby HEPS

## 1.3 Resource consents

### 1.3.1 Water abstraction permit

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.

Renewable Power Ltd holds water permit **2299-3** to cover the damming of the Waingongoro River with a six metre high concrete weir for hydroelectric power generation purposes. This permit was issued by the Council on 1 September 2009 under Section 87(d) of the RMA. It is due to expire on 1 June 2029.

Condition 1 of this consent requires the Company to, in consultation with submitters, develop and undertake a monitoring programme that adequately determines the effects of this activity on the impact of any increased periphyton growth on ecological, recreation or amenity values. The programme is also to assess:

- the formation of any sediment accumulation immediately below the weir, and its effect on 'dam dropping'
- the impact of this consent on recreational activity
- the impact of this consent on trout habitat and number, and benthic macroinvertebrate communities
- the effect of this consent on fish passage.

Condition 2 requires the Company to meet with the Council and submitters at least every two years, while condition 3 is a review provision.

The Company also holds water permit **6558-1** to cover the taking and use of water from the Waingongoro River for hydroelectric power generation purposes. This permit was issued by the Council on 1 September 2009 under Section 87(d) of the RMA. It is due to expire on 1 June 2029.

Condition 1 of this consent requires the Company to notify the Council prior to exercising the consent.

Condition 2 limits the rate of take to 10 cumecs, and condition 3 specifies the residual flow that is to be provided between 1 October and 30 April (3.5 cumecs) and 1 May and 30 September (3 cumecs).

Condition 4 requires all water taken to be discharged back into the river at the power house, and conditions 5 and 6 specify the circumstances in which flushing flows are to be provided.

Recreational flows are required to be provided, as per condition 7, and condition 8 requires that a log of each recreational flow release be kept, and also specifies the information that is to be recorded in this log.

Condition 9 requires the Company to measure and record the abstraction rate, and the flow provided to the residual flow reach, with these records to be provided to the Council at three monthly intervals or upon reasonable request.

Conditions 10, 11 and 12 limit the maximum aperture dimension and through screen velocity of the intake screen, specify the acceptable change in water level as a result of startup or shutdown of the station, and require that an emergency backup system is installed prior to commissioning.

Condition 13 is the same as condition 1 of consent 2299-3, requiring the monitoring of effects.

Condition 14 requires the Company to undertake riparian fencing and planting on land owned by the Company and on any adjacent land, and to maintain this riparian area.

Condition 15 is a lapse provision, condition 16 requires the Company to meet with the Council and submitters at least every two years and condition 17 is a review provision.

### **1.3.2 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.

The Company holds land use permit **7078-1** to cover the erection, placement use and maintenance of a concrete weir and ancillary structures, and to undertake related excavation and disturbance of the river bed, for hydroelectric power generation purposes. This permit was issued by the Council on 1 June 2009 under Section 87(a) of the RMA. It is due to expire on 1 June 2029.

Condition 1 requires the consent holder to adopt the best practicable option at all times, condition 2 to exercise the consent substantially in accordance with the application and condition 3 required the Company to notify the Council prior to and upon completion of any maintenance works.

Conditions 4 to 7 limit the timing of works, requires the taking of all reasonable steps to minimise the discharge of sediment, sets limits on the change in turbidity and suspended solids and limits the area of disturbance to the minimum necessary.

Conditions 8 and 9 require the existing fish pass to be upgraded and also that a baffle be installed to improve the passage of lamprey.

Condition 10 requires that the structure is not to impede the passage of specific fish species, and states that this is to be determined by a monitoring programme specifically developed to monitor the fish communities around the weir and throughout the upstream catchment.

Condition 11 is the same as condition 1 of consent 2299-3 and condition 13 of consent 6558-1, requiring the monitoring of effects.

Condition 12 requires works to cease immediately upon the discovery of any archaeological remains.

Condition 13 states that the weir and associated structures shall not cause significant erosion of the river bed or banks, and condition 14 requires the Company to provide a report to the Council detailing the existing erosion of the river and other related aspects.

This summary of consent conditions may not reflect the full requirements of each condition. The consent conditions in full can be found in the resource consents which are appended to this report.

## **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.

### 1.4.3 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;
- in discussion over monitoring requirements;
- preparation for any reviews;
- renewals;
- new consents;
- advice on the Council's environmental management strategies and content of regional plans; and
- consultation on associated matters.

### 1.4.4 Site inspections

The Normanby HEPS was visited five times during the monitoring period, including four site inspections and one hydrological monitoring inspection. 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 accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council.

### 1.4.5 Chemical sampling

The monitoring programme included 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.

### 1.4.6 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, and was compared with gauged flows to assess accuracy.

## 2. Results

### 2.1 Water

#### 2.1.1 Inspections

The first compliance monitoring inspection was completed on 16 July 2015. This site visit was performed with a number of interested stakeholders, to introduce them to the scheme, while also assessing compliance with the requirements of the consent. The station was not operating at the time, due to what the Company thought to be a failed bearing. However, this was subsequently found to not be the case, with the fault actually being within the gearbox located between the turbine and generator. It was also noted that there was no flow down the fish pass, and that the baffle required for lamprey passage was not in place, despite it being a requirement of the consent for it to be in place at this time of year.

A discussion was held about how the fish pass could be upgraded to provide passage. This concluded that the best option was to use rock to build up the pass, and create an angled ramp. The required improvements were further clarified in TRC (2016), being consistent with that originally proposed by the applicant.

On 16 October 2015, the second compliance monitoring inspection was undertaken. The Waingongoro River had a relatively low flow for this time of year, and there was some erosion noted on the true right bank, below the fish pass. The fish pass was not flowing adequately, and it was clear that the fish pass was not yet operable. Members of the public had erected kayak slalom gates downstream of the weir. Water was being taken for generation, with all water being discharged at the turbine (Photo 2). Following this inspection, the Council's hydrology team were requested to do a gauging, as it was considered a good opportunity to check the accuracy of the residual flow recorder. This hydrological inspection was completed on the same day, and unfortunately recorded a flow of 2.226 cumecs, 1.2 cumecs less than that required. This resulted in an abatement notice being issued, which is further discussed in section 2.3.



**Photo 2** The station operating, 16 October 2015.



The fourth inspection, completed on 26 January 2016, found the river to be low and clear, with no water being taken for generation. The intake screen had been damaged, with the green netting retrospectively installed to reduce the screen size no longer covering the whole intake. At the station, there was rubble, including used tyres and other domestic refuse, possibly used to lift the ground level. The Company was required to remove this material from the site, as it was too close to the river. At the fish pass, numerous elvers were observed throughout the pass, although it appeared that they were unable to get through the pipe at the top, probably due to excessive flow. A number of people were observed swimming and dam dropping at the site.

The final monitoring inspection for the 2015-2016 monitoring period was undertaken on 17 June 2016. Although there was a moderately high flow in the river, no generation was occurring. The fish pass had not yet been upgraded, although some flow was observed in the pass. The lamprey baffle had been installed, but it did not meet the specified requirements of the consent. At the station, the pelton wheel was inspected, and found to have been damaged. There were large pieces of debris caught within the jets, indicating that water was bypassing the intake screen. The Company was reminded that all water taken needed to pass through an intake screen that met the requirements of the consent. At the intake, there was an accumulation of logs and debris, directly below the water level recorder (Photo 4). The Company was advised that this was likely to impact on the accuracy of the residual flow data.



**Photo 3** The damaged pelton wheel (below) and a jet containing large debris (right)





**Photo 4** The intake and water level recorder (radar) positioned over the water where logs and other debris accumulates

## 2.1.2 Provision of Company data

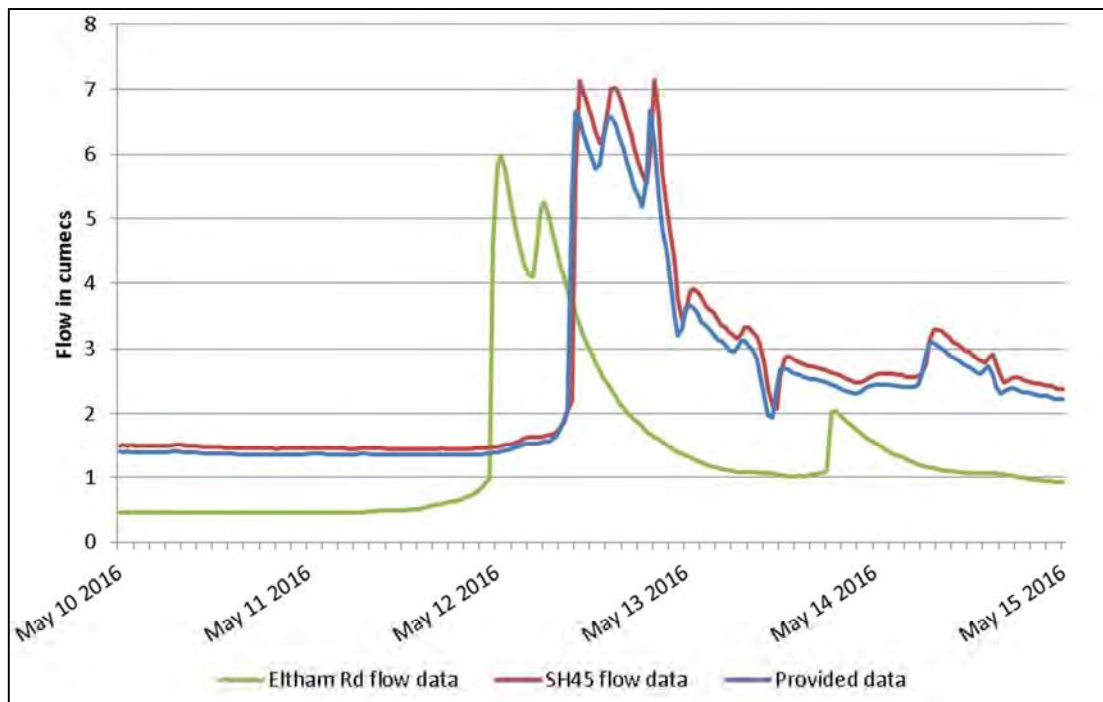
### 2.1.2.1 Residual flow and abstraction rates

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. During the reported period, the Company provided the Council with two parcels of residual flow data.

The first parcel of data was received on 22 May 2016. This data covering the period 15 April 2016 to 15 May 2016 comprised residual flow data only, as the Company stated that no generation had occurred over that time. This was assessed, and compared with the flow data recorded by the Council at State Highway 45 (SH45), downstream of the scheme, and that recorded at Eltham Road, upstream of the scheme (Figure 2).

This analysis found that some of the flow variation recorded at SH45 was not recorded at Eltham Road, indicating activity at the station. However, the data provided by the station indicates that this flow variation had occurred upstream of the station, as the flow variation was identical to that recorded at SH45, just of a slightly lower magnitude, and earlier. This data was analysed further, and it was subsequently discovered that the data provided was in fact SH45 flow data which had been copied

from the Council's website, altered slightly so that it mimicked flow recorded upstream, and then supplied back to the Council under the guise of being residual flow data. This resulted in enforcement action, and is further discussed in section 2.3.



**Figure 2** Flow data recorded at Eltham Rd and State Highway 45, compared with data provided by the Company, 10 May 2016 to 15 May 2016.

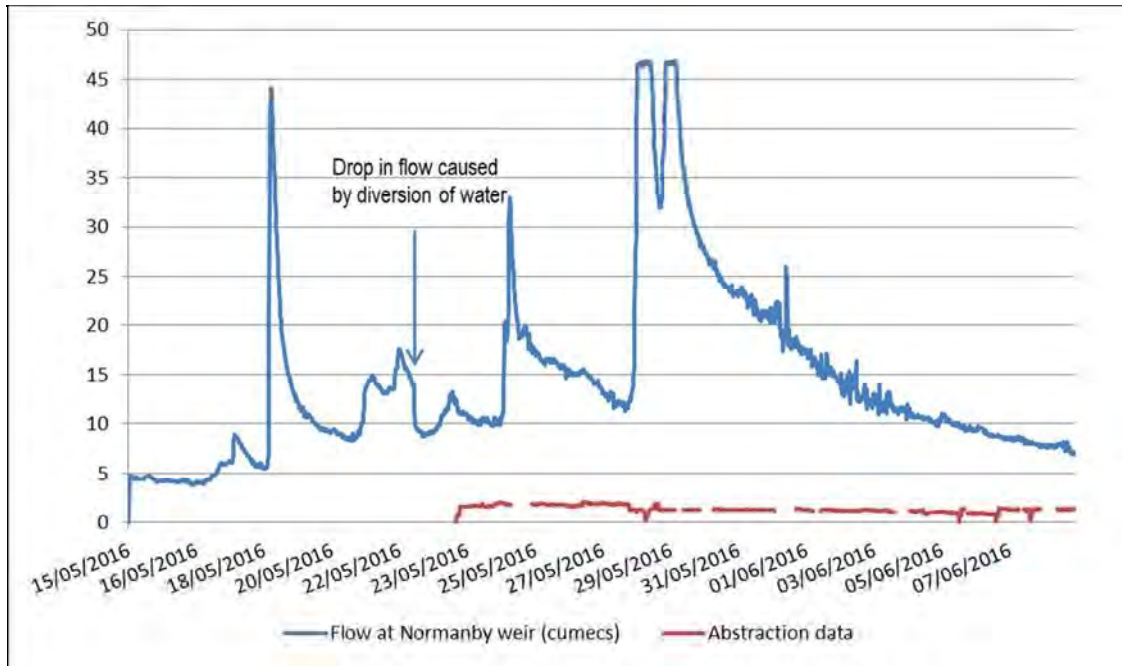
The second parcel of data was received on 11 July 2016, and included abstraction and residual flow data for the period 15 May 2016 to 1 July 2016. This data was assessed, and although this assessment concluded that it appeared to be data recorded at the appropriate location, there were a number of issues with the data provided. These concerns included duplicate dates and times in the data record, inconsistencies between the two data sets and concerns about the accuracy of both the residual flow and abstraction data.

Duplicate times and dates should not occur in the data record. The supplied data included 1,830 duplicates, with certain times being recorded on up to three separate occasions. When this data was analysed, only the first instance recorded was included, with any subsequent duplicates not included. There is potential for this to have introduced inaccuracies into the data record.

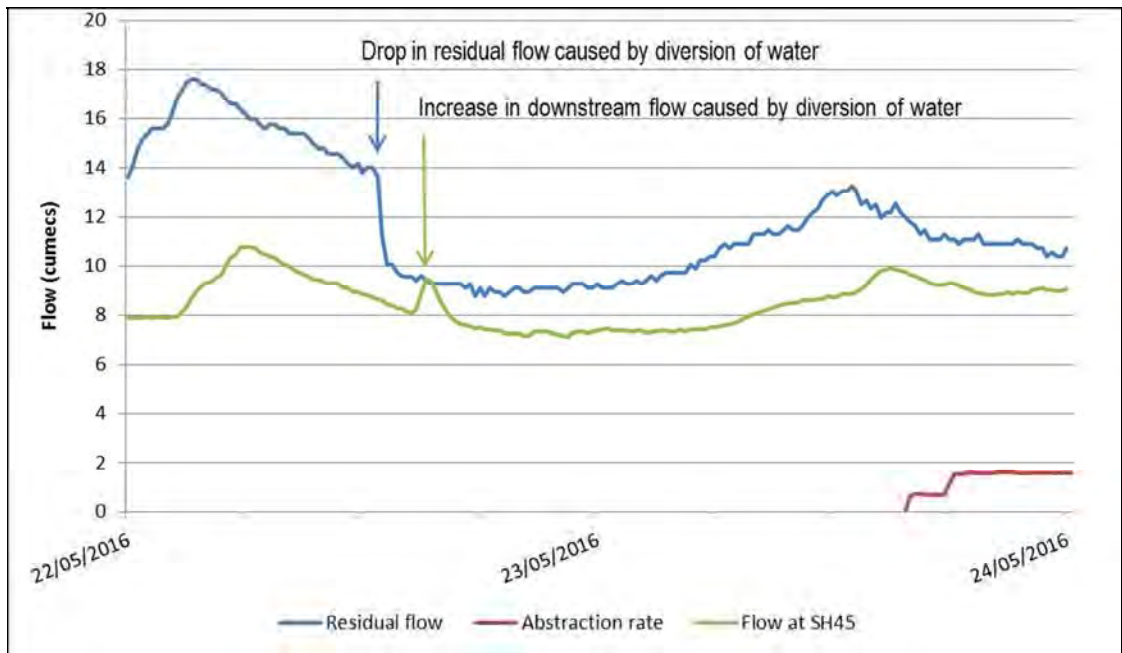
When considering consistencies of the two data sets, it is necessary to compare them side by side. Before this was done, the residual flow data needed to be augmented. This data, which was recorded every five seconds, was reduced, retaining only the data recorded every 15 minutes. This was consistent with the recording frequency for the abstraction data, facilitating a comparison. This comparison is shown in Figure 3. When the station begins generating, water is diverted from upstream of the weir. Therefore, the residual flow should quickly reduce, at the same time as the rate of abstraction quickly increases, and the rate of abstraction should be very similar to the reduction in residual flow. In Figure 3, a significant reduction in residual flow, consistent with abstraction, can be seen on 22 May 2016. However, there was no coincident increase in abstraction rate, with abstraction only increasing on 23 May 2016. Furthermore, the rate

of reduction in residual flow indicates an abstraction rate of about 3.6 cumecs, while the abstraction rate never exceeded two cumecs. This data, compared with the flow recorded at SH45, is illustrated in Figure 4. The SH45 data shows a peak on 22 May, consistent with generation.

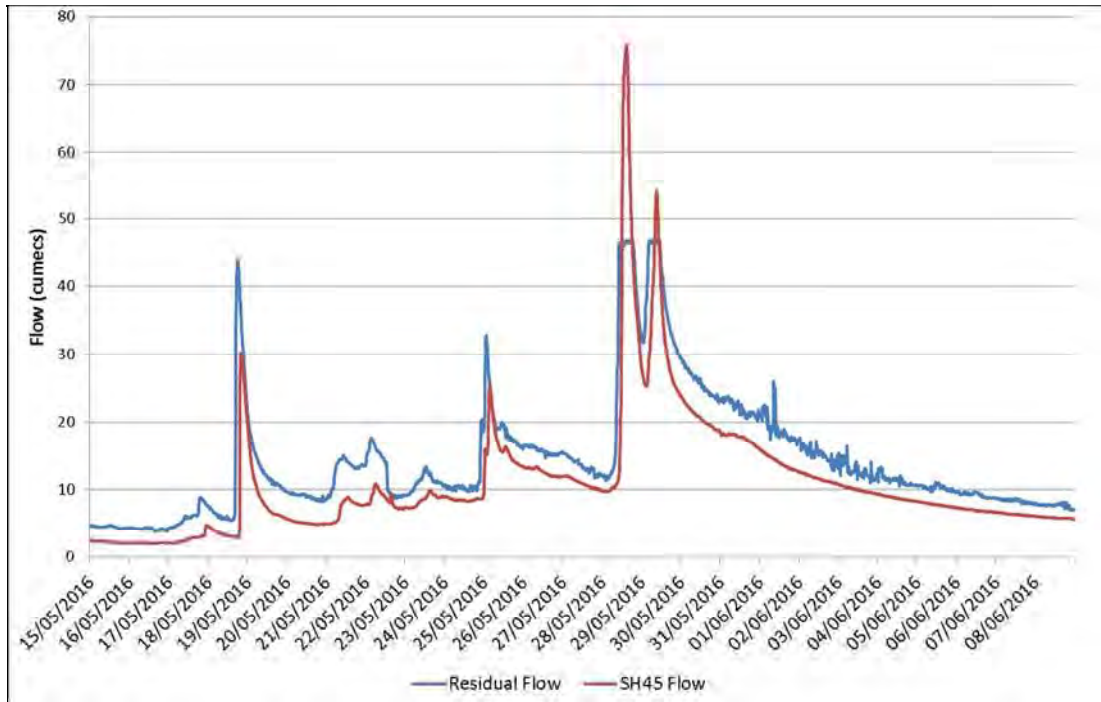
This analysis indicates that either the recording of residual flow is inaccurate, and/or the abstraction rate is not being recorded accurately. In addition, the abstraction rate was not recorded at all times. It is important that the abstraction rate data also includes a zero when abstraction is not occurring, which will allow the identification of gaps in the data record.



**Figure 3** Residual flow data and abstraction rate data, provided by the Company.



**Figure 4** Residual flow data and abstraction rate data, compared with SH45 flow data.

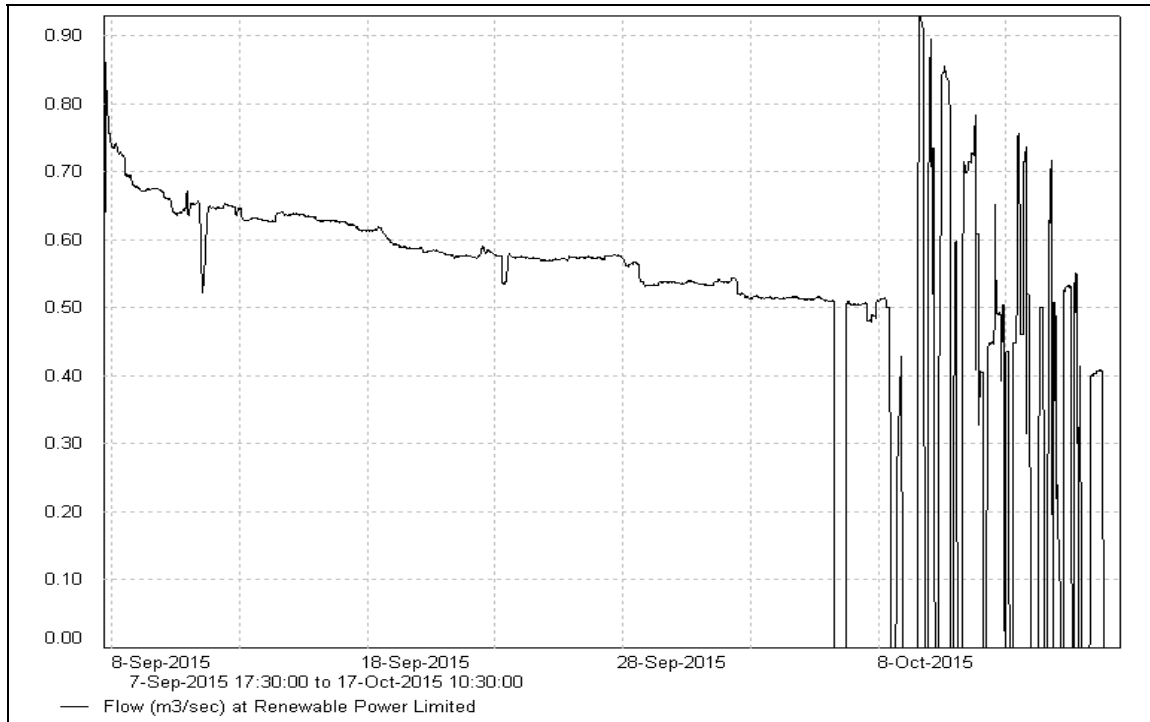


**Figure 5** The recorded residual flow compared with flow recorded at SH45 – 15 May 2016 to 9 June 2016.

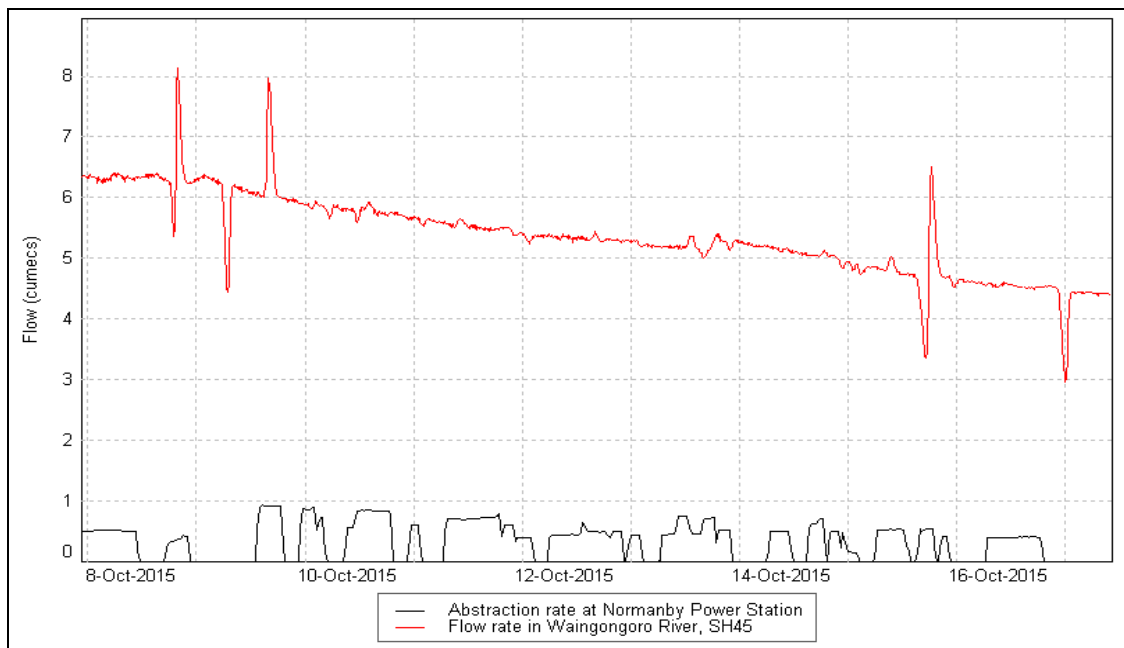
An assessment of the residual flow accuracy can be made by comparing the recorded residual flow with that recorded at SH45. Part of this comparison is shown in Figure 5. The most notable aspect of this comparison is that the flow recorded at the weir is predominantly higher than that recorded at SH45, exceeding the flow recorded at SH45 by 30% on average. In addition, the floods that occurred on 28 & 29 May 2016 were not recorded to their fullest extent, evident by the 'flatline' recorded at their peak. The actual flow had a much higher and sharper peak, as displayed by the SH45 data. Finally, the residual flow data shows significant periods of instability, with this most evident between 31 May and 4 June. This period included variation of almost 10 cumecs, with this variation caused by debris accumulating below the water level radar (Photo 4). The actual flow was not this variable.

This assessment shows that the residual flow data recorded over that time was grossly inaccurate, to the point of being of little use. Consequently, it was not imported into the Council database. Of most concern is that the Company should use this data to effectively manage their residual flow. If it is inaccurate, it will be difficult to manage their residual flow while maximising generation.

The accuracy of the abstraction rate data can be checked by comparing the flow variation recorded at the station and at SH45 with the recorded abstraction rate. Two parcels of abstraction data were provided during the 2015-2016 period. The raw data included in the first parcel is shown in Figure 8, while Figure 9 shows how flow varied at SH45 during station start-up and shutdown. The flow fluctuation recorded at SH45 was in excess of one cumec, after it had been attenuated in the reach between the station and the highway. This is more than the recorded abstraction rate at any time. In addition, the SH45 data indicates that the residual flow was breached. This is discussed further in section 2.3.



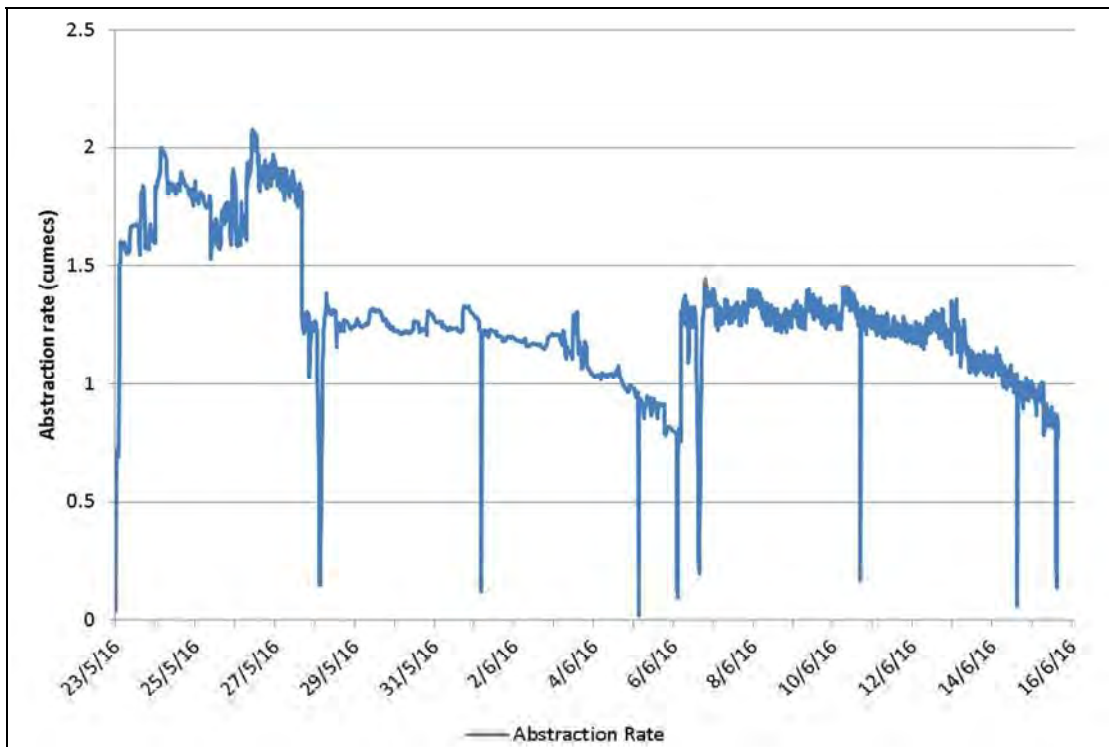
**Figure 6** Abstraction data supplied by the Company, 7 September 2015 to 17 October 2015



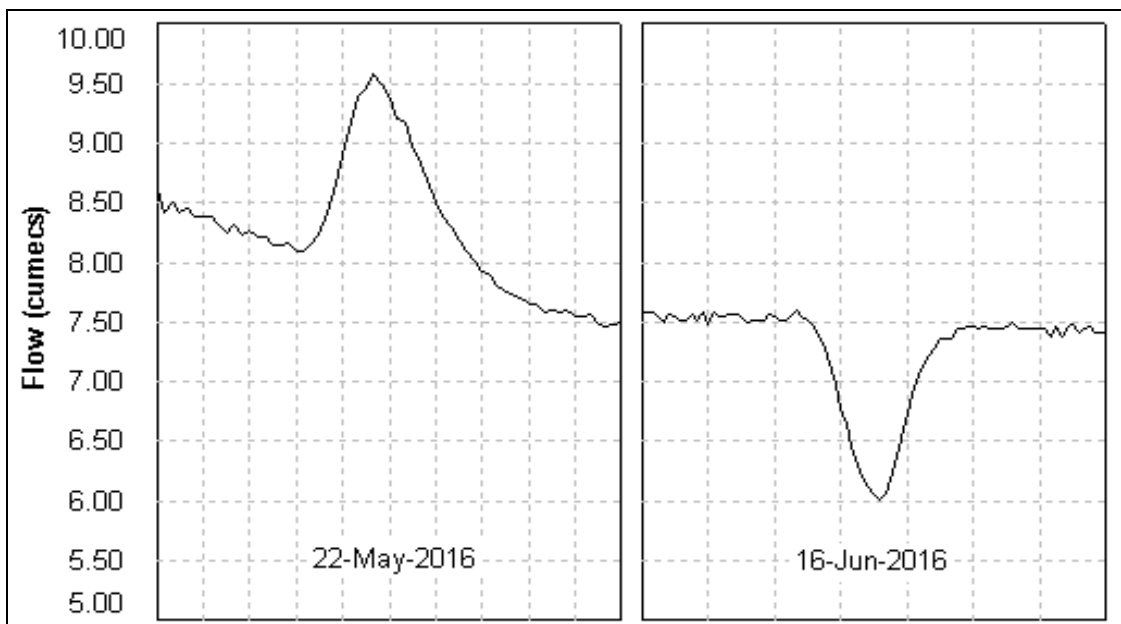
**Figure 7** Abstraction data provided for the Normanby Power Station downstream of the weir, compared with the flow recorded in the Waingongoro River at State Highway 45, 8 October to 17 October 2015.

As with the residual flow data provided with the second parcel of abstraction data, the abstraction data also contained duplicate dates and times, with 160 times being duplicated in the supplied data. The raw data is shown in Figure 8, and the flow recorded at SH45 when the flow variation caused by station start-up and shutdown is shown in Figure 9. The recorded abstraction rate at station start-up on 23 May 2016 was approximately 1.5 cumecs, and this compares well with the flow variation recorded at SH45, where a positive peak of approximately 1.5 cumecs was recorded. However, this

needs to be considered with the understanding that due to the distance between the station and SH45 (approximately 12 km), there will be some flow attenuation, and therefore the actual abstraction rate was likely to be in excess of 1.5 cumecs. When the station was shut down, on 16 June 2016, the abstraction rate was recorded at about 0.85 cumecs, and this coincided with a negative peak of about 1.5 cumecs at SH45. This will have also been subject to flow attenuation, and therefore the actual abstraction rate will have likely exceeded 1.5 cumecs. This indicates that the abstraction rate recorded at this time was inaccurate.



**Figure 8** Raw abstraction data supplied by the Company 23 May 2016 to 16 June 2016



**Figure 9** Flow in the Waingongoro River at SH45 during station start-up (left) and shutdown (right).

The abstraction rate needs to be recorded to an accuracy of 5% as per the consent. It is clear that this is not being achieved, and the Company has been advised that they need to improve the accuracy of this data.

The Council's monitoring of the scheme is also improving, with the number and location of gaugings changing. If the station is operating when the Council Officer arrives on site, then a gauging will be performed immediately downstream of the station, and immediately upstream of the station. If the upstream gauging records a flow close to the residual flow, a third gauging will be undertaken immediately downstream of the weir. This will allow an assessment of the residual flow and abstraction rate, while also providing data which can be used to assess the accuracy of the recorded data.

The final area of concern regarding the provision of data is the frequency that data is being recorded. The residual flow data provided to the Council is being recorded every five seconds. This produced a significant amount of data, and consequently it takes much longer to process than the standard 15 minute data recorded by other companies. It would be in the interest of the Company to reduce the frequency that the residual flow data is being recorded.

Due to the state and quality of this data, it was not imported into the Council's database. The quality of this data needs to improve. An improvement in data quality, coupled with a reduced frequency of recording, should result in an improved data auditing process, which should result in reduced costs for the Company.

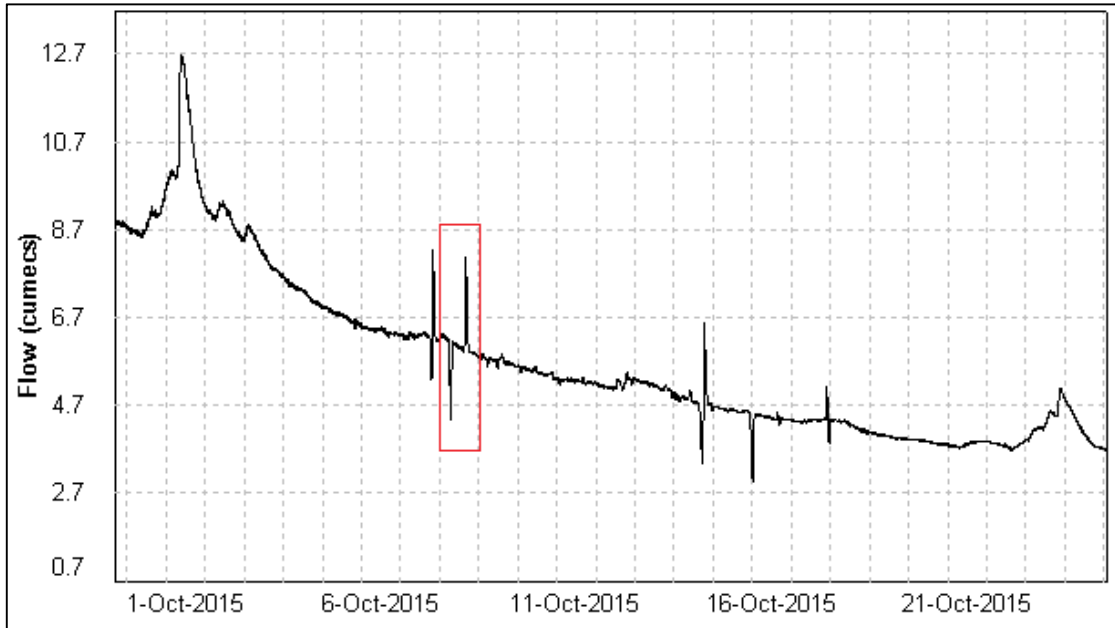
#### **2.1.2.2 Flushing flows and surge waves**

Consent 6558-1 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 at the weir exceeds 14 cumecs, following a continuous period of at least 15 days during which flows at the weir didn't exceed 14 cumecs. Compliance with this condition was assessed using SH45 data, due to the inaccuracies in the residual flow data. When these consents were originally granted, it was accepted that the flow at the weir was approximately 95% of that recorded at SH45. Therefore, the SH45 flow equivalent of 14 cumecs at the weir is 14.74 cumecs. Add to this a conservative abstraction rate of 1.5 cumecs, and the trigger flow at SH45 is 16.24 cumecs. A comparison of the abstraction data with the SH45 flow data indicates that this condition was complied with throughout the 2015-2016 period.

Condition 6 requires that if the flow over the weir does not exceed six cumecs 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. As per the calculations conducted for condition 5 above, the trigger flow at SH45 is 7.82 cumecs. Figure 10 shows the flow recorded at SH45 in October 2015, while the station was operating. This period included a 14 day period when flow did not exceed 7.82 cumecs. However, the station shut down for approximately seven hours on 9 October, indicated by the red box in Figure 10, and this effectively provided the release flow early and as such, this condition was complied with.

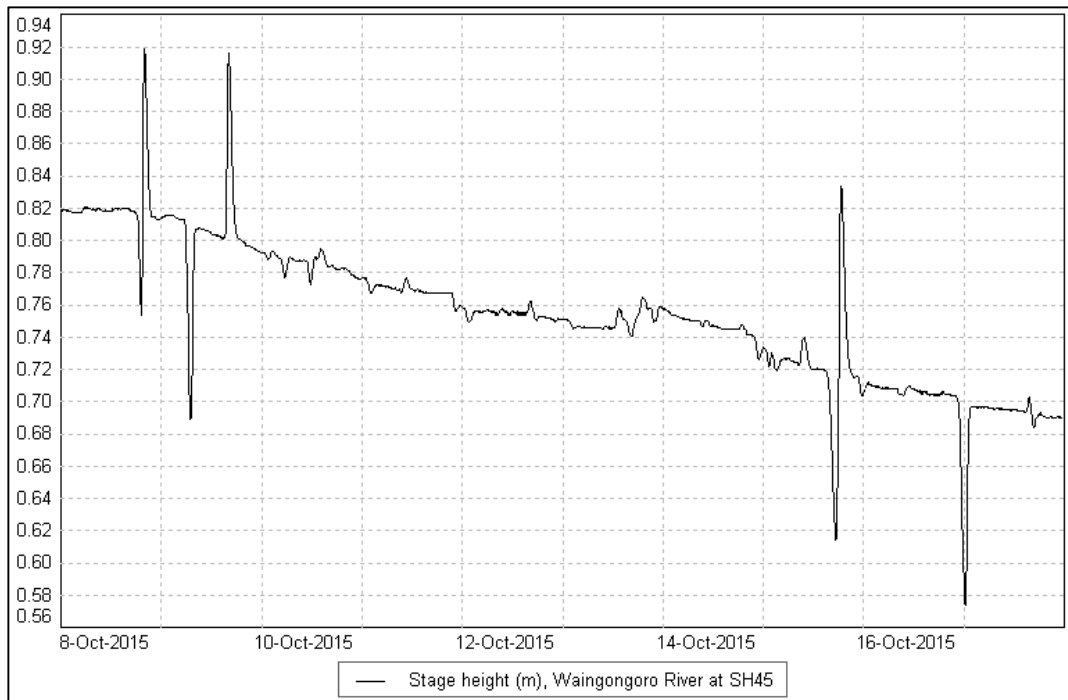




**Figure 10** Flow recorded at SH45 in October 2015.

In addition to flushing flows, condition 11 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 11 shows how water level changed at SH45 during station start up and shut down in October 2015. 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. It is clear from the October 2015 data that start up and shut down caused a change in water level in excess of 100 mm. On 15 October 2015, the station appears to have started and stopped in quick succession, and this resulted in an increase in water level of 220 mm. This is a breach of the consent condition. This indicates that the start up and shut down needs to be managed with more care, especially if there is to be an increased rate of take in the future. It was originally discussed in the officer report that the limit of 200 mm be applied to a 30-minute period. However, this was not included in the consent condition, and as such the limit of 200 mm is absolute.

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.



**Figure 11** Change in water level (stage height) in the Waingongoro River at SH45 during station start up and shut down.

### 2.1.3 Results of receiving environment monitoring

The Council did not undertake any receiving environment monitoring in the reported period. The consents held by the scheme specify the receiving environment monitoring required to be performed by the Company. This includes baseline monitoring to be performed prior to commissioning, some of which was performed and reported on by the Council (TRC, 2010).

The monitoring required by the resource consents is as follows:

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. The Company was advised that should they wish to operate the scheme prior to collecting the baseline trout community data, they needed to consult with Fish and Game. No subsequent information was received from the Company, so it is unclear how this was resolved. It appears the Company has chosen to operate without adequate baseline trout community data being collected.

The Company has also not provided any further monitoring data, nor has the programme been reviewed since the current owner took ownership, more than two years ago. Furthermore, the erosion report required by condition 14 of consent 7078-1 has still not been received. It is clear that the Company has not given sufficient priority to the monitoring requirements of the consent, and this is an area where significant improvement is required.

The fish passage monitoring requirements (condition 10 of consent 7078-1) don't specify a timeframe. However, it is anticipated that this will commence once the upgrades to the fish pass are completed.

#### **2.1.4 Works required by consent**

The resource consents held for the scheme also require a number of actions to be undertaken.

Consent 7078-1 requires specific modification to the fish pass, with these modifications to have been completed by 1 September 2010. This timeframe was extended due to extenuating circumstances, although an abatement notice was eventually issued requiring these works to be completed by 31 May 2015. This abatement notice was never complied with, but due to ownership changes, it is no longer valid. The Council is currently in discussion with the current owners of the scheme to determine a practical timeframe for this task. The Council is taking a pragmatic approach to requiring compliance with this condition for two reasons. Firstly, the financial position of the Company is not strong, and therefore it is necessary for the Company to budget for these works. Secondly, the monitoring requirements of the consents require that the

impact of the scheme on the trout communities of the residual flow reach be determined. However, if fish passage was to be reinstated before this impact has been determined, it will be impossible to differentiate between the impact of the scheme and the impact of the remediated passage. It could be that the numbers of trout in the residual flow reach drops markedly, but it would be unclear whether they emigrated due to the change in the flow regime caused by the station, or that they moved upstream following reinstatement of the fish passage.

It is recommended that the Company develops a plan for implementation, which follows these steps:

1. Establish baseline conditions of residual flow reach trout communities.
2. Determine the impact of the current generation setup on these communities.
3. Prior to any upgrades to the generation equipment that will result in a change in the flow regime of the residual flow reach, upgrade the fish pass.
4. Following reinstatement of the fish passage, repeat the monitoring of the trout communities in the residual flow reach, to determine whether there has been a change.

This plan will need to include reasonable timeframes, which the Company is confident it can meet, so that implementation can be enforced.

This consent also requires a baffle be installed from 1 June to 30 September each year to improve lamprey passage. The Company made a number of attempts to get this right, and an inspection done in the 2016-2017 period found that a steel baffle had been installed which appeared to meet the specifications of the consent, although this is yet to be properly assessed (Photo 5). An attempt to measure this baffle may be made in the 2016-2017 period when flows allow. The Company intends for this baffle to remain in place throughout the year.



**Photo 5** The baffle installed on the weir to improve lamprey passage

Consent 6558-1 requires the intake screen to have a maximum aperture dimension of 30 mm. The screen was originally intended to be a grid of 30 mm triangles. However, the triangular grid was not included in the consent condition. Inspection found that the screen was a grid of rectangles, with a maximum aperture (distance from corner to opposite corner) in excess of 30 mm. The Company has been advised that the intake screen is not compliant with the consent, and they have been working towards varying the consent to allow for the larger screen size. While they were working through this process, the Company installed temporary netting over the screen, in an effort to comply with this requirement, although some of this netting has since been lost, possibly in a flood. It is understood that the Company is currently liaising with affected parties prior to lodging the variation to consent. In the meantime the Company has decided to abstract water while knowingly having a non-compliant 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, and that the station is currently being shutdown manually, using a butterfly valve. In time, it is intended for the station to be controlled automatically, allowing for a shutdown that can be controlled remotely when necessary.

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 is in touch with the Council's land management team to develop a riparian management plan. They are also making contact with the adjacent landowners to identify those who are interested. It is expected that the Company will develop a plan for implementing this condition, as due to financial constraints, it is unreasonable to expect the Company to entirely comply with this condition immediately. It is anticipated that future reports will be able to report on the progress of implementing this plan.

## **2.2 Stakeholder meeting**

A stakeholders meeting was held on 29 May 2015. This was a good opportunity for the Company representative, Mr Tim Johnson, to meet those parties that had an interest in and valued the river. A number of points were discussed, including monitoring requirements, likely impacts downstream of the scheme, and fish passage. Mr Johnson also committed to having a compliant, permanent intake screen in place within six months. This has not yet been done.

This meeting was followed up by a site visit to the scheme by most stakeholders, as detailed in section 2.1.1. During this visit, the Company agreed to install a boom, to discourage swimmers from approaching the intake. This has not yet been done.

It is anticipated that the next meeting will be scheduled prior to 29 May 2017.

## **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 courses of non-compliance or failure to maintain good practices. A pro-active approach that in the first instance avoids issues occurring is favoured.

The Council operates and maintains a register of all complaints or reported and discovered excursions from acceptable limits and practices, including non-compliance with consents, which may damage the environment. The incident register includes events where the Company concerned has itself notified the Council. The register contains details of any investigation and corrective action taken.

Complaints may be alleged to be associated with a particular site. If there is potentially an issue of legal liability, the Council must be able to prove by investigation that the identified company is indeed the source of the incident (or that the allegation cannot be proven).

In the 2015-2016 period, the Council was required to undertake significant additional investigations and interventions and record incidents, in association with the Company's conditions in resource consents or provisions in Regional Plans.

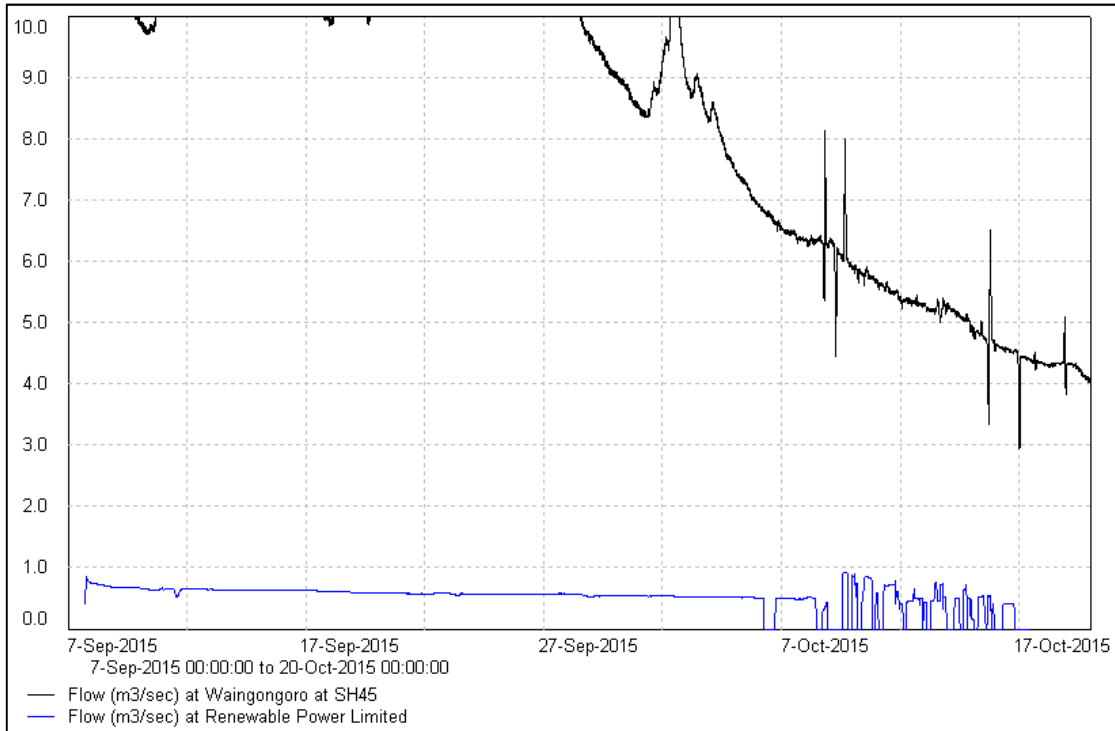
The first incident was a result of the hydrological gauging completed on 16 August 2015. This gauging recorded insufficient residual flow. While investigating this incident, the Council discovered that the Company had only been recording the abstraction rate, not the residual flow.

This incident was investigated further by analysing the abstraction data. This analysis found that the company had started generating on 7 September 2015, and that generation occurred almost continuously up until 16 October 2015. Unfortunately, it is also apparent that the abstraction rate being recorded was inaccurate to the point of being non-compliant with the consent. This is clearly apparent when the flow variation at SH45 caused by the station is compared to the abstraction rate (Figure 12). The variation at the SH45 recorder indicates an abstraction rate of between approximately 1.5 and 2 cumecs, while the abstraction data indicates an abstraction rate of no more than 0.93 cumecs.

In total, water was taken on 38 days, with no accurate residual flow or abstraction rate data collected on these days. This constitutes 38 separate offences.

In addition, the recorder at SH45 showed that the flow at this point dropped to as low as 3.35 cumecs on 15 October 2015 during station shutdown, compared with a residual flow requirement of 3.5 cumecs. This means that at the station, where flows would have been even lower, there was insufficient residual flow below the weir. Following the gauging done on 16 October 2015, when a flow of 2.226 cumecs was recorded below the weir, the Company was contacted and they proceeded to shutdown the station. The abstraction data indicated that the station was shutdown at 19:30 that day. The flow at SH45 dropped as low as 2.942 cumecs following this shutdown, confirming that the gauging correctly recorded insufficient residual flow.

As a result of this incident the Company was issued six infringement notices and one abatement notice. The abatement notice required the Company to, in summary, comply with the residual flow requirements, and to record the abstraction and residual flow data as stipulated by the resource consent.



**Figure 12** Abstraction data provided by the Company, compared with SH45 flow data, 7 September 2015 to 20 October 2015.

The Company appears to have complied with the residual flow requirement since this abatement notice was issued, but is having some trouble ensuring that the data recorded is of sufficient accuracy. It is for the Company to decide how to ensure the data is of sufficient accuracy, but it is recommended that the Company follows the relevant National Environmental Standards (NEMS 2012, 2013, 2016). Should subsequent monitoring discover that the data is still not being recorded accurately, it is possible that further enforcement action will be taken.

The second incident related to the provision of false data to the Council. As briefly discussed in section 2.1.2.1, the Company had copied flow data from the Council website, modified it slightly so that it appeared to be data recorded at the station, and then returned it to the Council in an effort to comply with the resource consent and abatement notice.

Once this was discovered, the SH45 data was assessed more closely, and it was discovered that water had been diverted at the station resulting in insufficient residual flow on 12<sup>th</sup>, 13<sup>th</sup> and 14<sup>th</sup> of May 2015. When the Company was asked for abstraction data covering this period, they stated that no abstraction had occurred, hence no data existed. The Company gave permission for the Council to be provided data from Simply Energy, the Company who receives the electricity generated by Renewable Power Ltd. This data did not indicate that generation had occurred on the aforementioned dates. The Company representative, Mr Tim Johnson, was invited to the Council offices for a meeting, which he did on 24 August 2016. When presented with the SH45 flow data, Mr Johnson appeared surprised about the flow variation recorded in May. He was given an opportunity to return to the station to investigate what may have occurred, and his resultant explanation was that members of the public must have accessed the site and opened the valve that controlled the abstraction of

water. This explanation was accepted, but the Company was issued one infringement notice for the unauthorised taking of water and the associated supply of false data. The Company has committed to improving security at the site.



### **3. Discussion**

#### **3.1 Discussion of site performance**

The current owner of the station, Renewable Power Ltd., has owned the station since July 2015, since the amalgamation with Normanby Power Ltd. However, both Companies had the same sole director, Mr Tim Johnson. Mr Johnson has managed the scheme since the end of 2014, and therefore should be well aware of the various consent requirements.

Although the scheme is clearly subject to a certain degree of financial stress, the Company must prioritise compliance with the consent conditions. The monitoring undertaken to date shows that there has been inadequate progress on meeting many of the consent requirements where the Company is required to undertake works or perform monitoring.

The Council is not aware of any monitoring of the effects of the scheme undertaken by the Company, and the Company is yet to provide the Council an erosion report, which is now significantly overdue. The intake screen is not compliant with the consent, and although the Company claims to be going through the process of varying the consent to make the screen compliant, no application has been lodged, despite it being almost two years since the Company was first notified of the issue. The Company continues to generate, despite knowing that they do not have a compliant intake screen. The Company has been advised that knowingly operating in contravention of a resource consent may result in enforcement action.

Now that the station is fully operational and taking water when flows allow, the monitoring programme has expanded accordingly. The single gauging undertaken in the 2015-2016 period recorded non-compliance with the residual flow, and inspections of the scheme noted various issues, including the placing of rubbish and rubble too close to the stream, poor screening of the intake and inadequate fish passage facilities.

Finally, the Company was found to have provided false data to the Council, in a possible attempt to hide non-compliance, and while being investigated for this, suggested that they were subject to unfair and biased treatment by the Council. The Company needs to alter their approach to consent compliance, understanding that they are only permitted to take water if they comply with all of their conditions, while taking responsibility for their actions or inactions. Any further attempts to mislead the Council will not be viewed favourably, but if the Company is to take ownership of the issues, and make a concerted and genuine effort to plan and implement compliance with their conditions, then this will go a long way in developing a positive and productive working relationship with the Council. The Company has been told on numerous occasions that if they were having trouble meeting consent conditions, they should contact the Council early on so such issues can often be worked through without the need for enforcement action. Non-compliance being discovered through Council's monitoring is the worst case scenario, and more likely to result enforcement action, especially when the Company attempts to mislead the Council. To date, Council's treatment of the Company has been very lenient, but this is unlikely to continue without the Company taking significant positive steps to improve compliance.

### **3.2 Environmental effects of exercise of consents**

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 proportion of the fish arriving at the weir manage to migrate past it. Some works were undertaken during the reported period to improve fish passage for lamprey. Although this baffle was not having the desired effect on flow at the time of inspection, it is hoped that as flows recede, the baffle results in less flow over the true left edge of the weir, making it easier for lamprey to climb up. This baffle will be checked during the 2016-2017 period when flows allow, to ensure it meets the specifications of the consent.

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 ten cumecs. The Company is yet to provide the Council with any monitoring results for the residual reach. It is expected that the Company will be initiating this monitoring in the 2016-2017 period, including both the erosion monitoring and monitoring of the effects of the scheme. Monitoring of the fish communities in relation to fish passage will likely commence following upgrading of the fish pass.

The Company has met all the flushing and release flow requirements during the reported period, although more care is required in the control of ramping rates. The flushing and release flows will become more important as 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 Tables 1 to 3.

**Table 1** Summary of performance for consent 7078-1

<b>Purpose: To erect, place, use and maintain a concrete weir ancillary structures in the Waingongoro River; and to undertake excavation and disturbance of the river bed that is directly associated with that activity</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
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 – no maintenance works completed during reporting period	Yes
4. Timing of works	Inspections of site – no maintenance works completed during reporting period	Yes
5. Minimise sediment and associated effects	Inspections of site – no maintenance works completed during reporting period	Yes
6. Receiving environment limits	Inspections of site & sampling – no maintenance works completed during reporting period	Yes
7. Minimise area of disturbance	Inspections of site – no maintenance works completed during reporting period	Yes
8. Upgrade fish pass as specified	Inspections of site	No
9. Install baffle for lamprey passage	Inspections of site	No (completed in 2016-2017)
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 – no maintenance works completed during reporting period	Yes
13. Weir and structures not to cause significant erosion	Inspections of site, receipt of monitoring results	Unclear
14. Undertake erosion report	Receipt of monitoring results	No
15. Stakeholder meeting	Attending meeting at least every two years	Yes
16. Review provision	No review undertaken	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>Poor</b>
Overall assessment of administrative performance in respect of this consent		<b>Improvement Required</b>

N/A = not applicable

**Table 2** Summary of performance for consent 6558-1

<b>Purpose: To take and use water from the Waingongoro River</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
1. Notification requirement	Notification received of initial commissioning	Yes
2. Maximum rate of take not to exceed 10 cumecs	Hydrological gaugings, review of records	Yes
3. Minimum flow to be provided below the weir	Hydrological gaugings, review of Council and Company records	No
4. All water to be discharged at powerhouse	Inspections	Yes
5. Flushing flow to be provided in specific circumstances	Review of data	Yes
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	No
10. Intake screen size and velocity	Inspections	No
11. Restriction of surge wave magnitude	Inspections, data review	No
12. Installation of emergency backup system	Inspections, liaison with Company	Yes
13. Monitoring of effects of this consent	Receipt of monitoring results	No
14. Undertake riparian planting on Company land and on adjacent land	Liaison with Company & landowners – initiated in 2016	Yes
15. Lapse provision	Consent exercised	N/A
16. Stakeholder meeting	Attending meeting at least every two years	Yes
17. Review provision	No review undertaken	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>Poor</b>
Overall assessment of administrative performance in respect of this consent		<b>Poor</b>

**Table 3** Summary of performance for consent 2299-3

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

During the year, the Company demonstrated a poor level of environmental and administrative performance with the resource consents as defined in Section 1.1.4. During the year under review the Company demonstrated a lack of progress in implementing certain consent requirements. In addition, they submitted false data, and breached residual flow requirements. They have also failed to meet commitments made to the Council and stakeholders, specifically regarding the installation of a boom at the intake, and the replacement of the intake screen. Ratings are as defined in Section 1.1.4.

### 3.4 Recommendations from the 2014-2015 Annual Report

As this is the first report for the scheme, there were no recommendations to be implementing in the 2015-2016 year.

### 3.5 Alterations to monitoring programmes for 2016-2017

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

- the extent of information made available by previous authorities;
- its relevance under the RMA;
- its obligations to monitor emissions/ discharges and effects under the RMA;
- and
- to report 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 emitting to the atmosphere/ discharging to the environment.

Now that the station has been fully commissioned, and is generating when flows allow, it is proposed that for 2016-2017 the monitoring programme is expanded.

It is recommended that the following changes are to be made to the programme:

1. Increase data audit time from 15 hours per year to 40 hours per year to allow for auditing of residual flow data recorded at 5 second intervals, abstraction rate data recorded at 15 minute intervals, and recognising the poor quality of this data
2. Increase the number of inspections from four to nine per year.

3. Include gaugings of the residual flow downstream of the weir, and of the river either upstream of the intake, or downstream of the outlet, to facilitate an assessment of the abstraction rate.

In addition, due to the issues that occurred in the 2015-2016 period, the time allocated to management of the monitoring and liaising with the Company has been increased from ten to fifteen hours.

If future monitoring finds that the ramping rate requirements are potentially being breached, consideration will be given to installing a temporary water level monitoring site immediately downstream of the station. Notwithstanding this, a temporary water level monitoring site will be installed should a second turbine be installed.

### **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 first point listed above is no longer relevant, and the next review date under the second point is June 2017. The third point listed above is not yet of relevance, as no monitoring reports have been received by the Council.

There are currently no grounds that require a review to be pursued or grounds to exercise the review option in June 2017, as the conditions are currently considered adequate for the current scheme.

## 4. Recommendations

1. THAT monitoring of consented activities at the Normanby HEPS in the 2016-2017 year be amended from that undertaken in 2015-2016, by increasing the time allocated to monitoring and liaising with the Company to 15 hours per year and the time allocated to data auditing to 40 hours per year, increasing the number of inspections to nine per year and including gaugings of the Waingongoro River to assess the residual flow and abstraction rate.
2. THAT the option for a review of the resource consents in June 2017, as set out in conditions of these consents, not be exercised, on the grounds that the conditions are currently considered adequate for the current scheme.
3. That the consent holder develops a plan for implementation that includes timeframes for the following tasks:
  - a. Resolution of the non-compliant intake screen.
  - b. Establishing the baseline condition of the trout communities in the residual flow reach.
  - c. Establishing of the baseline recreational use of the residual flow reach
  - d. Implementing the monitoring of the effects of the scheme as required by the consents.
  - e. The upgrade of the fish pass to that detailed in the consent and associated application (see TRC, 2016).
  - f. Develop and implement a monitoring programme to determine fish passage in the vicinity of the weir as well as changes in target fish distribution throughout the upstream catchment.
  - g. Undertake fencing and planting of the Company's land and any adjacent properties who have given written permission, and maintenance thereof.

with this plan provided to Council within one month of this report being published.

## 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 <sup>3</sup> s <sup>-1</sup> ).
DO	Dissolved oxygen.
Fresh	Elevated flow in a stream, such as after heavy rainfall.
g/m <sup>2</sup> /day	grams/metre <sup>2</sup> /day.
g/m <sup>3</sup>	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.
m <sup>2</sup>	Square Metres.
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).
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.  
UI Unauthorised Incident.

For further information on analytical methods, contact the Council's laboratory.

## Bibliography and references

- Jansma, B. 2010: *Baseline biomonitoring of the Waingongoro River in relation to the Normanby Power Scheme, March 2010*. Internal Memorandum, Number BJ089 Document Number 1654130.
- NEMS, 2012: *Open Channel Flow Measurement – Measurement, Processing and Archiving of Open Channel Flow Data*. National Environmental Monitoring Standards, New Zealand.
- NEMS, 2013: *Water Level Recording - Measurement, Processing and Archiving of Water Level Data*. National Environmental Monitoring Standards, New Zealand.
- NEMS, 2016: *Rating Curves – Construction of stage-discharge and velocity-index ratings*. National Environmental Monitoring Standards, New Zealand.
- Taranaki Regional Council, 2010: *Normanby Power Ltd, Normanby Power Scheme, Baseline Monitoring Report*. Technical Report 2010-18.
- Taranaki Regional Council (2016): *Normanby Power Station – review of monitoring and performance to date*. Internal Memorandum, Document Number 1654130.

## **Appendix I**

### **Resource consents held by Renewable Power Ltd**

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



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

Name of  
Consent Holder: Renewable Power Limited  
22 Campbell Street  
Hawera 4610

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

Legal Description: Subdivision 2 of Section 63 Block I Hawera SD  
Part Subdivision 1 of Section 63 Blk I Hawera SD  
Part Subdivisions 1 of Section 20 Blk I Hawera SD  
Part Subdivisions 2 of Section 20 Blk I Hawera SD  
Lot 1 DP 5613 being Part Okahu B No. 4B Blk, Blk I  
Hawera SD, Section 73 & 74 Blk I Hawera SD

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;

Consent 2299-3

- 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 19 October 2015

For and on behalf of  
Taranaki Regional Council



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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: Renewable Power Limited  
22 Campbell Street  
Hawera 4610

Decision Date: 1 September 2009

Commencement 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): See condition 17

Site Location: Normanby Road, Okaiawa

Legal Description: Subdivision 2 of Section 63 Block I Hawera SD  
Part Subdivision 1 of Section 63 Blk I Hawera SD  
Part Subdivisions 1 of Section 20 Blk I Hawera SD  
Part Subdivisions 2 of Section 20 Blk I Hawera SD  
Lot 1 DP 5613 being Part Okahu B No. 4B Blk, Blk I  
Hawera SD, Section 73 & 74 Blk I Hawera SD

Grid Reference (NZTM) 1706164E-5624471N

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. 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](mailto: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.
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 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.
11. 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.
12. 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.
13. 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.


14. 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.
15. 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.
16. 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.

17. 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 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 19 October 2015

For and on behalf of  
Taranaki Regional Council



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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: Renewable Power Limited  
22 Campbell Street  
Hawera 4610

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

Legal Description: Subdivision 2 of Section 63 Block I Hawera SD  
Part Subdivision 1 of Section 63 Blk I Hawera SD  
Part Subdivisions 1 of Section 20 Blk I Hawera SD  
Part Subdivisions 2 of Section 20 Blk I Hawera SD  
Lot 1 DP 5613 being Part Okahu B No. 4B Blk, Blk I  
Hawera SD Sec 73 & 74 Blk I Hawera SD

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](mailto: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<sup>-3</sup>, 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.

## Consent 7078-1

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 19 October 2015

For and on behalf of  
Taranaki Regional Council



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A D McLay

**Director - Resource Management**

