

Taranaki Thoroughbred Racing  
Monitoring Programme  
Annual Report  
2015-2016

Technical Report 2016-63

ISSN: 1178-1467 (Online)  
Document: 1751351 (Word)  
Document: 1767514 (Pdf)

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January 2017



## Executive summary

Taranaki Thoroughbred Racing (TTR) owns and operates the Pukekura Raceway located on Coronation Avenue, New Plymouth. The site is located within the Te Henui catchment and forms part of the eastern boundary of Pukekura Park.

TTR hold resource consent 7470-1.1 which authorises the take and use of groundwater from a bore for watering of racetracks and general purposes, at the Taranaki Thoroughbred Racing Club, as well as watering gardens and other general purposes at Pukekura Park. The consent was issued by the Council on 10 June 2014 and contains 10 special conditions which set out the requirements that TTR must satisfy. The consent has a maximum daily abstraction limit of 500 m<sup>3</sup>/day.

This report for the period July 2015 to June 2016 describes the monitoring programme carried out by the Council to assess TTR's environmental performance and level of compliance with consent 7470-1.1.

The Council's monitoring programme for the period under review included five inspection visits to the site. Inspection visits typically comprised of:

- a visual inspection of the production bore, abstraction pipework monitoring equipment and associated infrastructure; and
- obtaining manual measurements of groundwater levels in the production and observation bores and retrieving electronic data.

To monitor the exercising of consent 7470-1.1 abstraction volume and rate data are recorded electronically at the site by a data logging system and transferred to the Council via telemetry, so the data can be viewed in real time. Three groundwater monitoring bores were also installed within the vicinity of the production bore to monitor the effects of the abstraction on local groundwater levels. Groundwater levels within two of the monitoring bores (GND2102 and GND2103) are monitored electronically by pressure transducers. Groundwater levels were also recorded in an additional bore (GND2119) in the grounds of Pukekura Park. The pressure transducers installed are programmed to record measurements at 30 minute intervals.

Data collected via the Council's monitoring programme indicated that there have been no significant impacts to the groundwater system from the authorised abstraction.

There were no unauthorised incidents recording non-compliance in respect of this consent holder during the period under review.

**During the year, TTR demonstrated a high level of environmental performance with the resource consent.**

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.

In terms of overall environmental and compliance performance by the consent holder over the last several years, this report shows that the consent holder's performance remains at a high level.

This report includes recommendations for the 2016-2017 year.

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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 the resource consent held by Taranaki Thoroughbred Racing (TTR). TTR operates a race track and associated facilities on Coronation Avenue, New Plymouth. The site is located within the Te Henui catchment. Consent 7470-1.1 authorises the abstraction of up to 500 m<sup>3</sup>/day of groundwater from a production bore at the site, at a rate not exceeding 10 L/s.

The report includes the results and findings of the monitoring programme implemented by the Council in respect of the consent held by TTR for the abstraction of groundwater within the Te Henui catchment.

This report also discusses the environmental effects of TTR's use of groundwater and is the fourth monitoring programme report by the Council for TTR.

### 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 Resource Management Act 1991 (RMA) and the Council's obligations;
- the Council's approach to monitoring sites through annual programmes;
- the resource consents held by TTR in the Te Henui catchment;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted at TTR's site.

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 TTR, 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 TTR'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 Background

The production bore operated by TTR was drilled and constructed by Borewell NZ Ltd. The construction of the bore was completed on 27 March 2009 and the bore was assigned Council reference code GND2010. The bore is located to the south of the main race track approximately 40 m from the site's boundary with Pukekura Park (Figure 1).

The geological log of the bore indicates volcanic sand and gravel layers interbedded with peat horizons were encountered to a depth of 86 m. Mudstone (papa) was encountered from 86 m to 131 m (total depth). The bore log indicates that three separate water bearing layers were identified during drilling. The bore was completed with alternating 150 mm stainless steel spacers and 178 mm diameter stainless steel screen between 62 m and 83 m. The total screen length is 12 m.

Three groundwater monitoring bores (GND2102 – GND2104) were also constructed using 50 mm PVC to monitor groundwater levels at the site. Bore details are summarised in Table 1. A fourth monitoring bore GND 2119, located within Pukekura Park, was added to the programme in 2016 following a recommendation from the 2014-2015 Monitoring Programme Report.

**Table 1** Abstraction and monitoring bore details

Site code	NPDC reference	Coordinates (NZTM)		Date Constructed	Bore diameter	Drilled depth	Bore depth	Screened depth
		Eastings	Northings		mm	m	m BGL	m BGL
GND2010	TRC1	1693946	5675085	31/03/2009	200	131	98	62 - 83
GND2102	PMB1	1693939	5675090	15/04/2009	50	28.5	27	24-27
GND2103	PMB2	1693940	5675072	15/04/2009	50	78	76	66-76
GND2104	PMB3	1693949	5675055	15/04/2009	50	54	52	42-52
GND2119	MW5	1693784	5675148	25/09/2009	50	4.2	4.2	1.1-4.2



Figure 1 Location of TTR site abstraction and monitoring bores

## 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.

TTR holds water permit **7470-1.1** to cover the take and use of groundwater from a bore for:

- watering of racing tracks and general purposes at the TTR Club;
- filling of water tanks for watering of New Plymouth District Council (NPDC) owned gardens; and
- other general purposes within Pukekura Park.

Consent 7470-1 was granted on 20 August 2009 under Section 87(d) of the RMA and superseded by Consent 7470-1.1 on 10 June 2014. It is due to expire on 1 June 2020.

Consent 7470-1.1 includes 10 special conditions setting out specific requirements with which the consent holder must comply. The conditions attached to the consent are summarised below:

- Condition 1 imposes limits on the volume and rate of abstraction;
- Condition 2 requires the consent holder to install a water meter to record the volume of water being abstracted and an electronic data logging device which meets the required specification;
- Condition 3 requires the data required in condition 2 to be transmitted to the Council in a 'real time' format;
- Condition 4 requires that the bore be labelled with the Council reference code;
- Condition 5 requires the consent holder to maintain a continuous record of groundwater level in observation bores by installing automatic level recording devices which meet the required specification;
- Condition 6 requires that an additional observation bore remain accessible for New NPDC to monitor water levels;
- Condition 7 requires all records of water abstraction and groundwater level monitoring to be submitted to NPDC at stipulated intervals;
- Condition 8 requires the consent holder to adopt the best practicable option to prevent or minimise any actual or likely adverse effect on the environment associated with the abstraction of groundwater, including the efficient use of water;
- Condition 9 is a lapse condition; and
- Condition 10 is a review condition.

The permit is attached to this report in Appendix I.

## 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 TTR site consisted of four primary components.

#### **1.4.2 Programme liaison and management**

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

- ongoing liaison with resource consent holders over consent conditions and their interpretation and application;
- 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.

#### **1.4.3 Site inspections**

The TTR site was visited on five occasions during the period under review for the purpose of undertaking inspections. A typical inspection visit included:

- obtaining static water level measurements from the production and observation bores;
- taking instantaneous abstraction volume and rate readings from the production bore flow meter;
- taking instantaneous abstraction volume and rate readings from the datalogger display for comparison with flow meter readings;
- downloading electronic abstraction and groundwater level data; and
- carrying out a general visual inspection of the production bore headworks, pipework and groundwater storage infrastructure.

#### **1.4.4 Monitoring and review of abstraction data**

The volume and rate of abstraction from GND2010 is recorded electronically on a datalogging unit and transferred to the Council via telemetry. In order to assess compliance with the special conditions of consent 7470-1.1, a review of all abstraction data is carried out for comparison against stipulated limits. All data needs to be processed and checked for accuracy before any analysis can be carried out. All data is then provided to NPDC as per consent condition requirements.

#### **1.4.5 Monitoring and review of groundwater level data**

Groundwater levels are monitored to assess the effects of the abstraction authorised under resource consent 7470-1.1 on the local groundwater system. Groundwater levels were measured manually in both the production and monitoring bores during inspection visits. Pressure transducers were installed in monitoring bores GND2102

and GND2103. In addition, an atmospheric logger was also installed to measure and record barometric pressure. The electronic data was downloaded by Council Officers during inspection visits. A pressure transducer was also installed and the data downloaded from a pre-existing monitoring bore (GND2119), located within Pukekura Park, in adherence with the recommendation made in the 2014-2015 compliance monitoring report.

Manual measurements of groundwater level could not be obtained from GND2104 during the inspection visits as this bore has been sealed.

## **2. Results**

### **2.1 Inspections**

During the period under review five inspection visits were carried out in relation to consent 7470-1.1. The following observations were recorded:

#### **27 October 2015**

Abstraction was not occurring during the inspection. Manual groundwater level measurements were carried out at GND2010, GND2102 and GND2103. GND2104 was sealed shut and could not be accessed to get a groundwater level measurement. Groundwater level data was downloaded from the hobo logger in GND2102 and the solinst level logger in GND2103. Atmospheric pressure data was downloaded from the barometric hobo logger.

#### **22 January 2016**

Abstraction was not occurring during the inspection. Manual groundwater level measurements were carried out at GND2010, GND2102 and GND2103. GND2104 was sealed shut and could not be accessed to get a groundwater level measurement. Groundwater level data was downloaded from the hobo logger in GND2102 and the solinst level logger in GND2103. Atmospheric pressure data was downloaded from the barometric hobo logger.

#### **25 February 2016**

Abstraction was occurring during the inspection. Manual groundwater level measurements were carried out at GND2010, GND2102 and GND2103. GND2104 was sealed shut and could not be accessed to get a groundwater level measurement. Groundwater level data was downloaded from the hobo logger in GND2102 and the solinst level logger in GND2103. Atmospheric pressure data was downloaded from the barometric hobo logger. A solinst groundwater level logger was installed in GND2119 to monitor shallow groundwater levels in Pukekura Park. The frequency of groundwater level logging was changed in all loggers from 15 minute intervals to 30 minute intervals.

#### **31 May 2015**

Abstraction was not occurring during the inspection. Manual groundwater level measurements were carried out at GND2010, GND2102 and GND2103. GND2104 was sealed shut and could not be accessed to get a groundwater level measurement. Groundwater level data was downloaded from the hobo logger in GND2102 and the solinst level logger in GND2103 and GND2119. Atmospheric pressure data was downloaded from the barometric hobo logger.

#### **18 August 2016**

Abstraction was occurring during the inspection. Manual groundwater level measurements were carried out at GND2010, GND2102 and GND2103. GND2104 was sealed shut and could not be accessed to get a groundwater level measurement. Groundwater level data was downloaded from the hobo logger in GND2102 and the solinst level logger in GND2103 and GND2119. Atmospheric pressure data was downloaded from the barometric hobo logger.

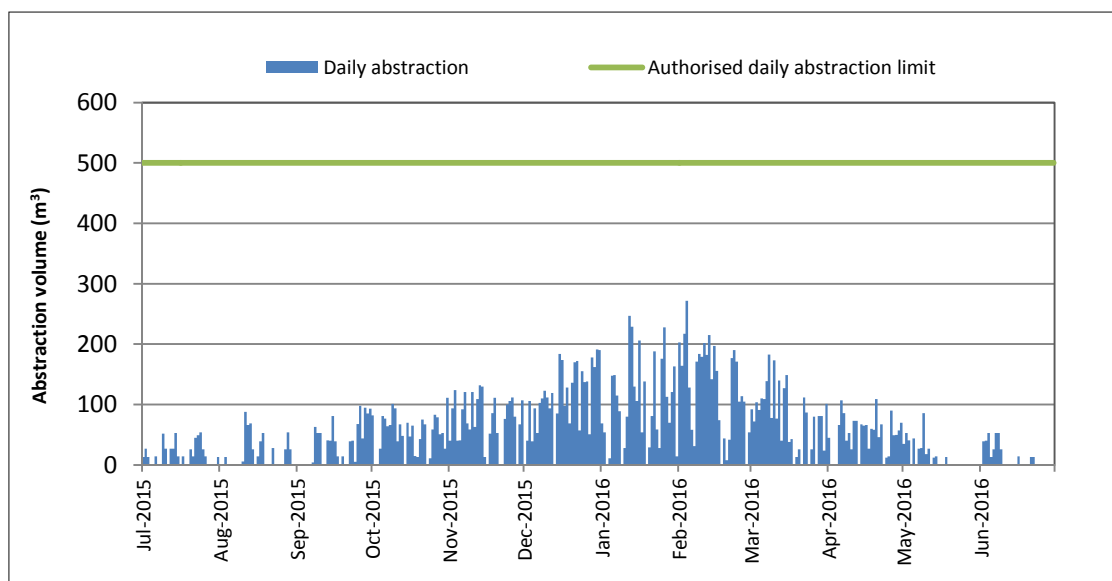
## 2.2 Results of abstraction monitoring

As a condition of TTR's consent 7470-1.1, they are required to record the daily volumes abstracted and the rate of abstraction. The abstraction data is captured electronically and sent by telemetry directly to the Council's computer system.

Consent 7470-1.1 stipulates an abstraction volume limit of 500 m<sup>3</sup>/day and a maximum abstraction rate of 10 L/s. The daily abstraction volume and maximum daily rate for the period under review are presented in Figure 2 and Figure 3. The daily abstraction volume and maximum daily rate for the period August 2009 to June 2016 are presented in Figure 4 and Figure 5.

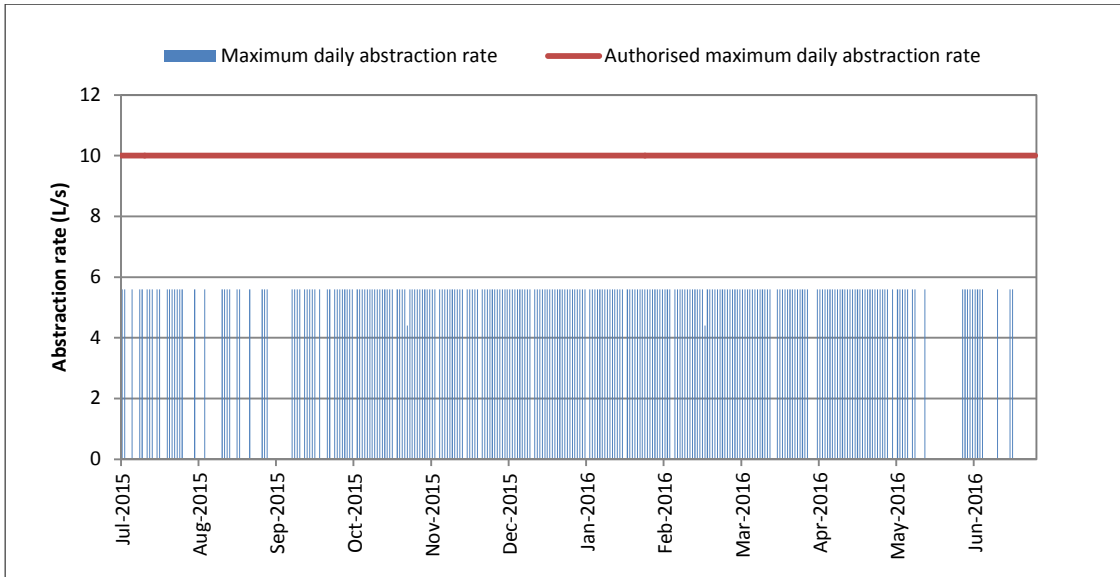
Figure 2 indicates that the authorised abstraction volume of 500 m<sup>3</sup>/day was not exceeded during the period under review. Figure 4 shows that some exceedances have occurred in the past but since the daily abstraction volume was increased, from 170 m<sup>3</sup>/day to 500 m<sup>3</sup>/day, no exceedances have occurred.

Figure 3 indicates that the maximum authorised daily abstraction rate of 10 L/s was not exceeded during the monitoring period. Figure 5 shows that the rate has not been exceeded since monitoring began at the site.

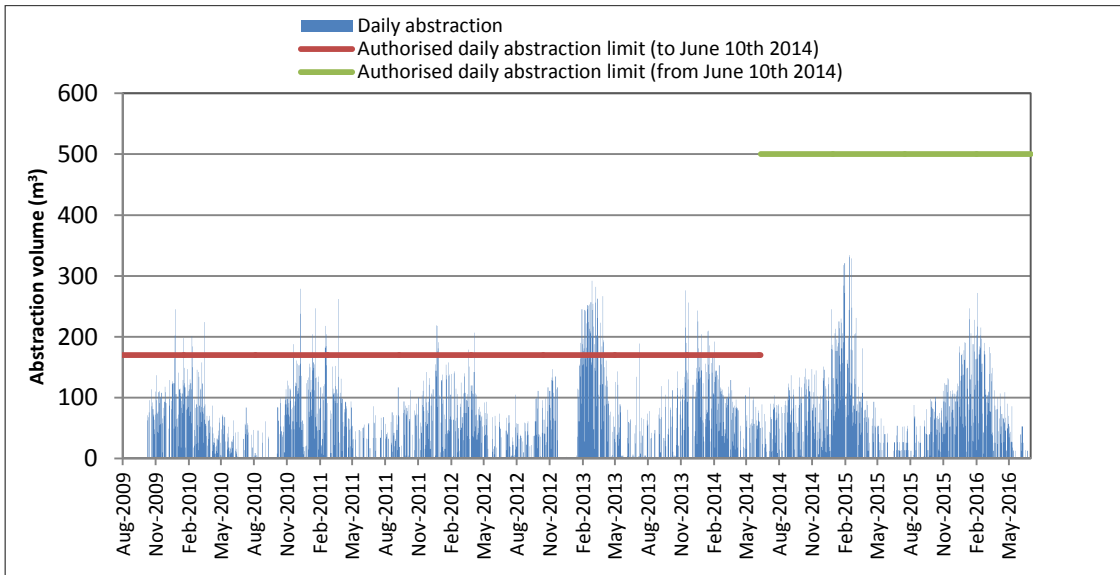


**Figure 2** Daily abstraction volumes under consent 7470-1.1 (July 2015-June 2016)

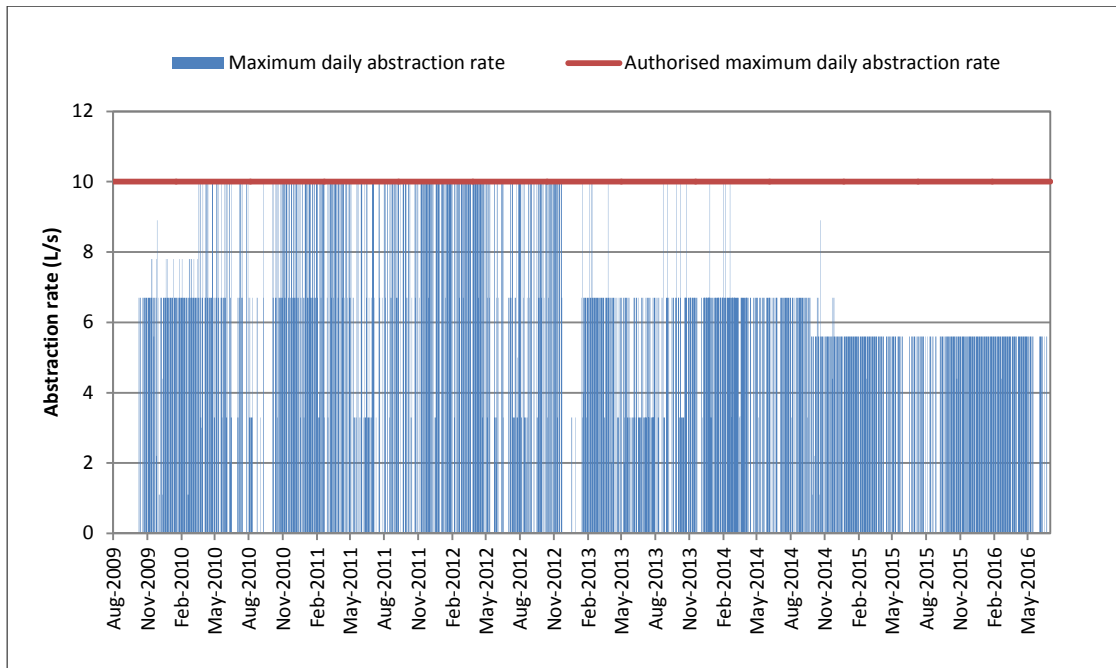




**Figure 3** Maximum daily abstraction rate under consent 7470-1.1 (2015-2016)



**Figure 4** Daily abstraction volumes under consent 7470-1.1 (2009-2016)



**Figure 5** Maximum daily abstraction rate under consent 7470-1.1 (2009-2016)

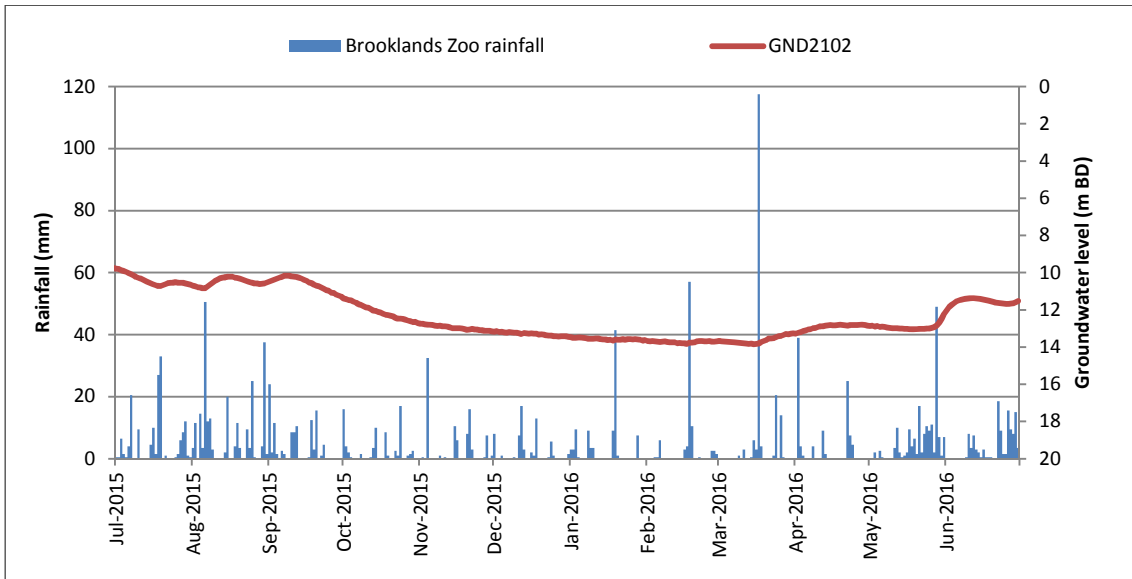
## 2.3 Results of groundwater level monitoring

The groundwater level data for the review period for GND2102 is presented alongside daily rainfall values taken from the Brooklands Zoo rainfall station, which is located approximately 350 m south west of the site, in Figure 6. The available historical groundwater level data obtained from GND2102 is plotted in Figure 7. Groundwater levels from March 2015 to July 2015 were not recorded as the data was over-ridden when the logger memory capacity was exceeded. The Brooklands Zoo rainfall station came into operation in July 2013. Prior to this the historical data (from August 2009 to July 2013) for GND2102 (Figure 7) is presented alongside daily rainfall values taken from the Mangorei rainfall station, which is located approximately 3.5 km south of the site. Rainfall events can differ slightly across the region by volume, intensity and duration however generally these two rainfall sites show very similar trends due to their proximity.

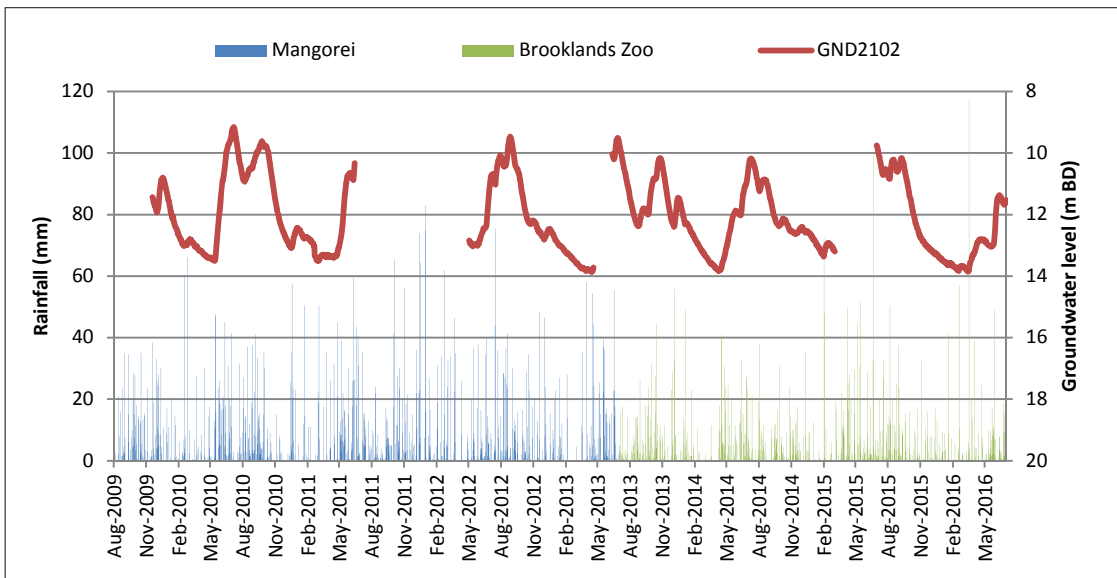
In order to determine whether changes in groundwater levels are due to the naturally occurring effects of rainfall recharge or a nearby abstracting bore a comparison can be made with a bore located outside the influence of pumping.

Groundwater level data from the Carrington Road bore GND0508 (Figure 8) which is screened within the same shallow aquifer as the production bore has also been provided for the reporting period for comparison, as this bore is considered to be well outside the influence of pumping. GND508 data is presented alongside data collected from the Mangorei Rainfall Station. Both bores indicate a strong relationship exists between the shallow aquifer and rainfall in these locations. When groundwater levels are low in the bores the response is subdued due to infiltration being slower over the greater depths. When groundwater levels are high the response is more pronounced. The groundwater levels recorded at the Pukekura site GND2119, since February 2016, show a similar response to rainfall and are presented alongside Brooklands Zoo rainfall data in Figure 9.

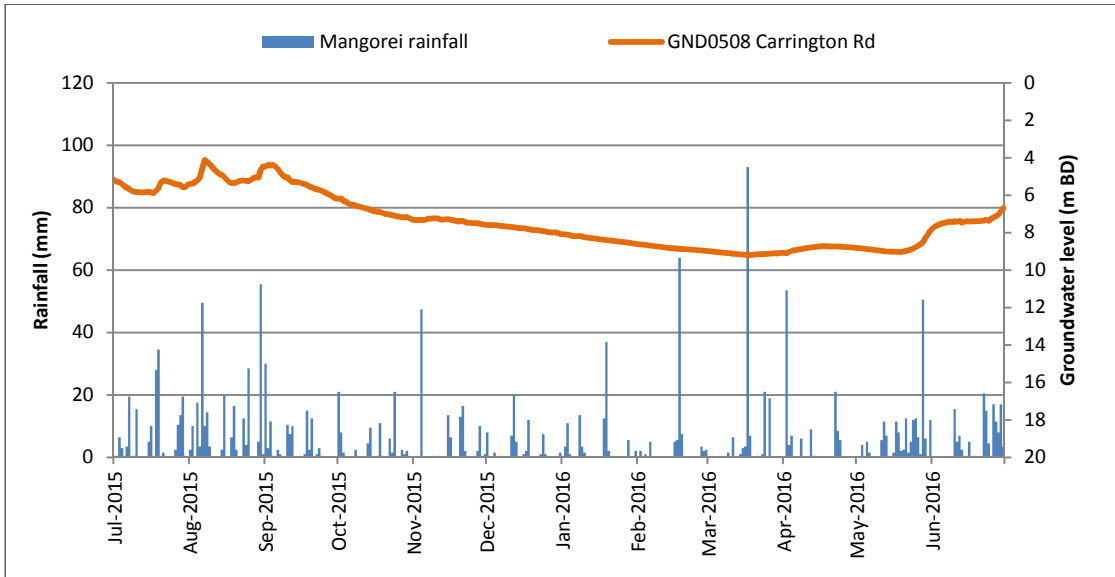
Groundwater level data for the review period for GND2103 is presented alongside abstraction in Figure 10. The historical groundwater level data available for GND2103 is presented in Figure 11. An issue with the data being obtained from GND2103 was discovered in mid 2013. Further investigations found that the logger had not been suspended at sufficient depth to capture the full range of water level fluctuations. On 24 October 2013 this was rectified. Therefore groundwater level data for GND2103 is only available from 24 October 2013 onwards. Groundwater levels in Pukekura Park (GND2119) since February 2016 have also been provided against abstraction in Figure 12.



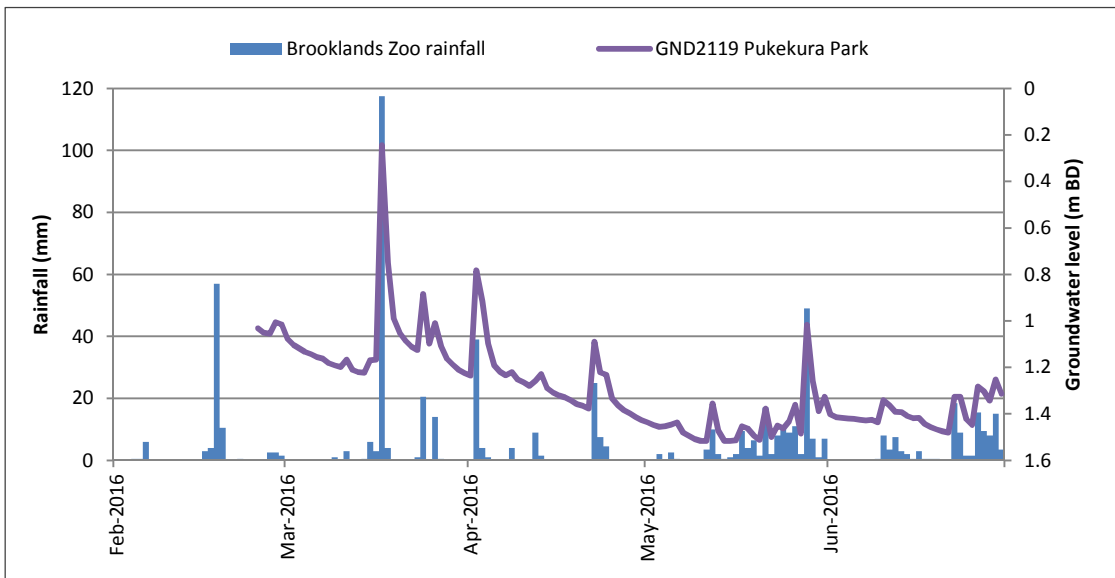
**Figure 6** Observed groundwater levels GND2102 and rainfall (2015-2016)



**Figure 7** Observed groundwater levels GND2102 and abstraction (2009-2016)



**Figure 8** Observed groundwater levels and rainfall (2015-2016)



**Figure 9** Observed groundwater levels GND2119 and rainfall (2015-2016)

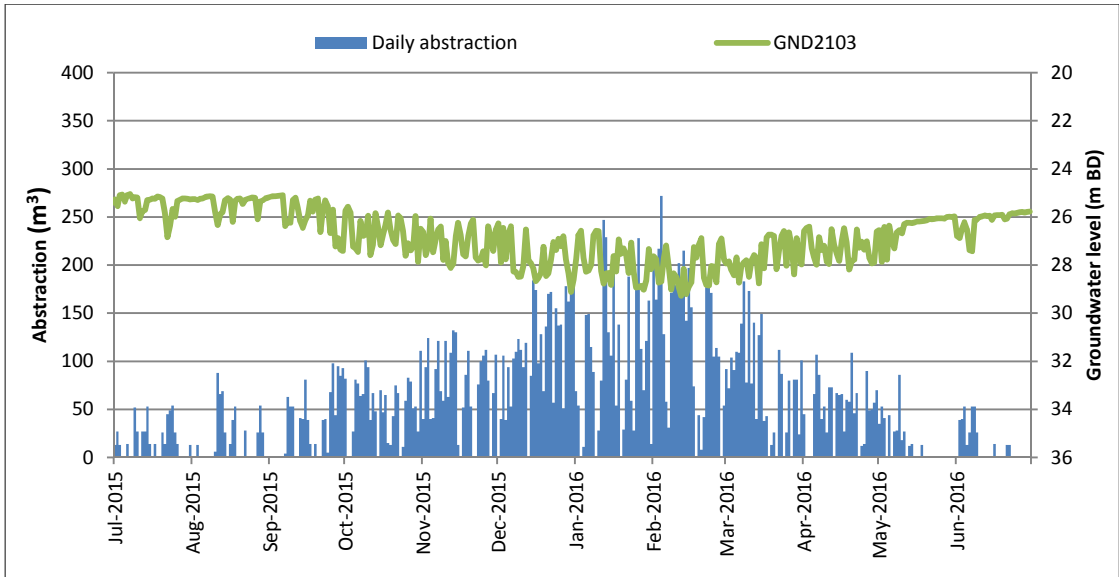


Figure 10 Observed groundwater levels GND2103 and abstraction (2015-2016)

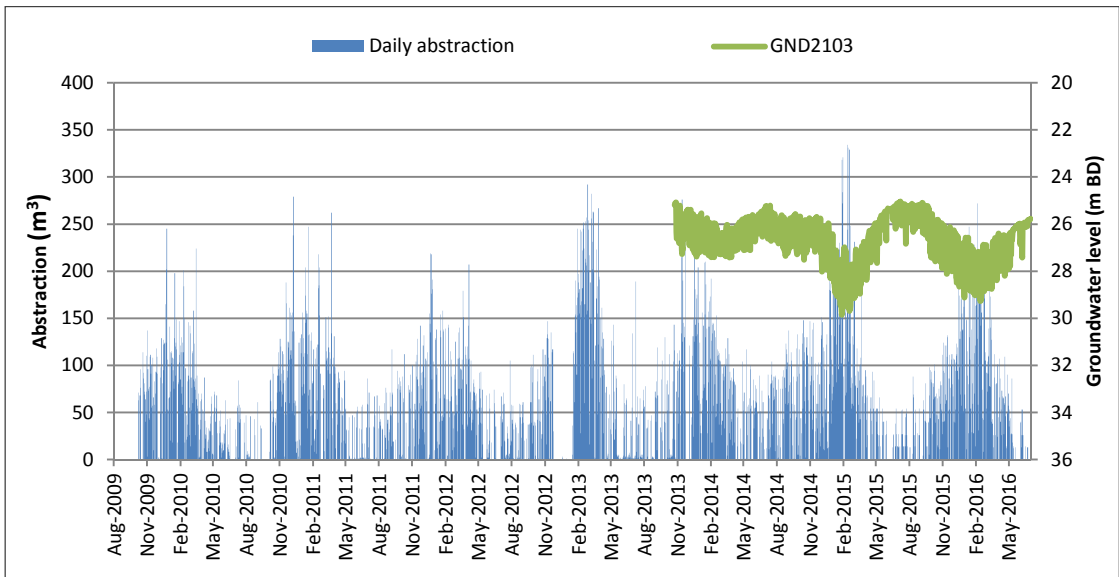


Figure 11 Observed groundwater levels GND2103 and abstraction (2009-2016)

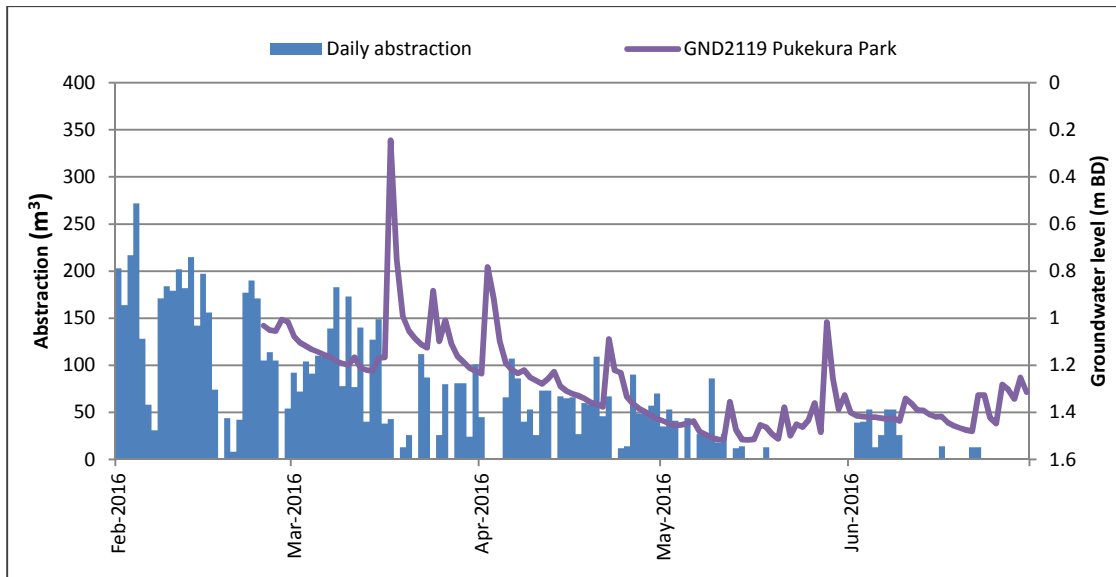


Figure 12 Observed groundwater levels GND2119 and abstraction (2015-2016)

## 2.4 Investigations, interventions, and incidents

The monitoring programme for the period was based on what was considered to be an appropriate level of monitoring, review of data, and liaison with the consent holder. During a monitoring period, 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).

During the 2015-2016 review period the Council was not required to undertake significant additional investigations and interventions, or record incidents in association with the TTR's consent to take groundwater or provisions in Regional Plans.

### **3. Discussion**

#### **3.1 Environmental effects of exercise of consents**

The main potential environmental effect of a groundwater abstraction is the reduction in groundwater levels in the vicinity of the production bore. Depending on the local hydrogeological characteristics the lowering of groundwater levels could reduce the volume of water available for abstraction by other existing groundwater users, or reduce baseflow to groundwater fed surface water systems.

The potential effects of the abstraction authorised by consent 7470-1.1 were assessed during the processing of the consent application. Analysis of the pump test data suggested that measureable drawdown (0.1 m) would occur 500 m to 1,000 m from the production bore when operating at the maximum authorised limit. Drawdown would only occur within the aquifer from which abstraction occurs. There are no other groundwater abstractions located within 3,000 m of the production bore and therefore no other groundwater users are deemed to have been affected by the abstraction.

The primary concern associated with a reduction in groundwater levels as a result of the abstraction from GND2010 is the reduction in groundwater flow to springs and surface water systems within Pukekura Park. The potential adverse effects of the abstraction on surface water flows within Pukekura Park were assessed during the resource consenting process. As part of the pump testing programme carried out prior to the lodging of the consent application, a constant rate test was carried out from the production bore. The constant rate test involved pumping the bore at flow rates ranging from 8 L/s to 10 L/s for eight days. During the constant rate test, no drawdown was recorded in shallow observation bore GND2102. In fact, the groundwater level within GND2102 increased 0.6 m from 13.5 m BGL to 12.9 m BGL as a result of rainfall recharge during the test period.

The results of the pump testing carried out and the monitoring of groundwater levels within the observation bores during testing indicated that the shallow unconfined aquifer, which is responsible for providing baseflow to surface water features in Pukekura Park, is not directly connected to the aquifer from which the abstraction occurs. However, monitoring results during the 2014-2015 period indicated there may be some connectivity between the shallow and deeper aquifers during times of heavy abstraction. Due to this the Pukekura Park monitoring bore GND2119 was added to the programme. To date, this bore shows a significant response to rainfall. The comparison against abstraction may indicate a reduction in groundwater levels during periods of abstraction and a corresponding increase when abstraction ceases, however due to the groundwater levels having a strong response to rainfall, and abstraction generally not being required when rainfall is available, the response is likely due to rainfall rather than abstraction. Therefore, groundwater logger will remain in GND2119 to monitor summer groundwater level responses and the data will be re-assessed in the next monitoring report.

During the period under review groundwater levels measured within the monitoring bore GND2102 varied between 9.8 metres below measuring datum (m BD) and 13.8 m BD. The main factor influencing groundwater level fluctuations in GND2102 is rainfall recharge with groundwater levels displaying seasonal trends.

The seasonal variation of 4.0 m observed within GND2102 is typical of shallow bores screened within the volcanics formation, and it is consistent with the trend displayed during previous monitoring periods (Figure 7). Groundwater levels in this bore indicate there has been no long term impact to groundwater levels as a result of the authorised abstraction.

During the period under review, groundwater levels measured within monitoring bore GND2103 varied between 25.0 m BD and 29.3 m BD. The main factor influencing groundwater level fluctuations in GND2103 is abstraction from GND2010. This is to be expected, as GND2103 is screened in the same aquifer as GND2010. When abstraction volumes increase over the summer months the groundwater levels fall in response to the increased abstraction and during the winter months when abstraction decreases the groundwater levels recover.

In summary, groundwater level monitoring data gathered by the Council does not indicate any long-term reduction in shallow or deep groundwater levels as a result of the abstraction authorised by consent 7470-1.1. As such, the potential for adverse effects on downgradient surface water systems as a result of the abstraction is deemed negligible, but will continue to be monitored.

### 3.2 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Table 2.

**Table 2** Summary of performance for consent 7470-1.1

<b>Purpose: To take and use groundwater from a bore for watering of racing tracks and general purposes at the Taranaki Thoroughbred Racing Club, and filling of water tanks for watering of NPDC-owned gardens and other general purposes within Pukekura Park.</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
1. Limits of discharge rates and volumes	Monitoring of take and data review	Yes
2. Installation of water meter and datalogger	Inspection	Yes
3. Measurements made in accordance with condition 2 shall be transmitted to the Council's computer system in real time	Receipt of electronic data at required frequency and in correct format	Yes
4. Bore label to be attached	Inspection	Yes
5. Continuous record of water level to be maintained in observation bores GND2102 and GND2103	Inspection and assessment of monitoring data	Yes
6. Observation bore GND2104 to be accessible for NPDC staff	Inspection	No
7. Data collected accordance with special conditions 2 & 5 to be submitted to	Notification of data received from NPDC	Yes



<b>Purpose: To take and use groundwater from a bore for watering of racing tracks and general purposes at the Taranaki Thoroughbred Racing Club, and filling of water tanks for watering of NPDC-owned gardens and other general purposes within Pukekura Park.</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
NPDC		
8. Adopt best practicable option	Inspection and liaison with consent holder	Yes
9. Lapse clause	Consent exercised prior to 30 September 2014	Yes
10. Review provision	No longer applicable	N/A
Overall assessment of environmental performance and compliance in respect of this consent		<b>High</b>
Overall assessment of administrative performance and compliance in respect of this consent		<b>Good</b>

*N/A = not applicable*

During the year, TTR demonstrated a high level of environmental and a good level of administrative performance with the resource consents as defined in Section 1.1.4.

### **3.3 Recommendations from the 2014-2015 Annual Report**

In the 2014-2015 Annual Report, it was recommended:

1. THAT monitoring of consent 7470-1.1 in the 2015-2016 year continues at the same level as in the 2014-2015 period with the following changes:
  - automatic groundwater level intervals in monitoring bores GND2102 and GND2103 be increased from 15 minute intervals to 30 minute intervals; and
  - an additional groundwater level logger be placed in Pukekura Park to monitor shallow groundwater levels.
2. THAT the optional review of consent 7470-1.1 not be exercised on the grounds that current consent conditions are adequate to deal with any adverse effects on the environment arising from the exercise of the consent.
3. THAT the data required by condition 2 and condition 5 in consent 7470-1.1 is provided to NPDC by Taranaki Regional Council on behalf of TTR at intervals not exceeding three months, as per condition 7 in the consent.
4. GND2104 be rehabilitated to make the bore accessible for NPDC staff to enable compliance with condition 6 of the consent.

All recommendations were implemented with one exception. GND2104 was not rehabilitated. This bore has been covered over with tarmac and is therefore not accessible.

### **3.4 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.

It is proposed that the current level of monitoring be continued during the forthcoming 2016-2017 period.

A recommendation to this effect is attached to this report.

#### **4. Recommendations**

1. THAT monitoring of consent 7470-1.1 in the 2016-2017 year continues at the same level as in the 2015-2016 period.
2. GND2104 be rehabilitated to make the bore accessible for NPDC staff to enable compliance with condition 6 of the consent or the consent is updated to remove condition 6 of the consent.

## Glossary of common terms and abbreviations

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

Baseflow	The flow of water entering stream channels from groundwater sources.
Drawdown	A lowering of the water level in a reservoir or other body of water.
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.
Incident Register	A register that 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.
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.
L/s	Litres per second.
m <sup>3</sup> /d	Cubic metres per day.
M BGL	Metres below ground level.
M BD	Metres below measuring point or datum (ground level or top of casing).
Observation bore	A bore drilled in a selected location for the purpose of observing parameters such as fluid levels and pressure changes as production proceeds.
Production bore	A well used to retrieve groundwater from an aquifer for the purposes of water supply for consumptive or irrigation purposes.
Pump test	A pump test (or aquifer test) is conducted to evaluate an aquifer by stimulating the aquifer through constant pumping, and observing the aquifer's response (drawdown) in observation bores. Aquifer testing is a common tool that hydrogeologists use to characterise aquifer systems and determine aquifer properties.
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	Resource Management Act 1991 and including all subsequent amendments.

## Bibliography and references

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- Geosearch Limited (2014): Assessment of effect for application to change the conditions of consent 7470
- Stevens G.( 2001): Taranaki *In: Groundwaters of New Zealand*, M.R, Rosen and P.A. White (eds). New Zealand Hydrological Society Inc., Wellington. P381-386
- Taranaki Regional Council (2013): Officers Report – Consent Application 7470-1.1. TRC doc. 1352092
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- Taranaki Regional Council (2016): Taranaki Thoroughbred Racing Groundwater Abstraction Monitoring Programme Report 2014-2015. Technical Report 2015-87
- Taranaki Regional Council (2015): Taranaki Thoroughbred Racing Groundwater Abstraction Monitoring Programme Report 2013-2014. Technical Report 2014-119
- Taranaki Regional Council (2014): Taranaki Racing Club Groundwater Abstraction Monitoring Programme Report 2009-2013. Technical Report 2013-71



## **Appendix I**

**Resource consents held by  
Taranaki Thoroughbred Racing**  
(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: Taranaki Thoroughbred Racing  
PO Box 453  
New Plymouth 4340

Decision Date (Change): 10 June 2014

Commencement Date (Change): 10 June 2014 (Granted date: 20 August 2009)

**Conditions of Consent**

Consent Granted: To take and use groundwater from a bore for watering of racing tracks and general purposes at the Taranaki Thoroughbred Racing Club, and filling of water tanks for watering of Council-owned gardens within New Plymouth District, and other general purposes within Pukekura Park

Expiry Date: 01 June 2020

Review Date(s): June 2014 and/or within two months of receiving one year of water level monitoring data

Site Location: 130 Coronation Ave, Welbourn, New Plymouth

Legal Description: Pt Lot 1 DP 9521 (Site of take)

Grid Reference (NZTM) 1693946E-5675085N

Catchment: Te Henui

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

### General condition

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

### Special conditions

1. The volume of groundwater taken shall not exceed 500 cubic metres per day at a rate not exceeding 10 litres per second.
2. Before exercising this consent the consent holder shall install, and thereafter maintain a water meter and a datalogger at the site of taking (or a nearby site in accordance with Regulation 10 of the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010*. The water meter and datalogger shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of  $\pm 5\%$ . Records of the date, the time (in New Zealand Standard Time) and the rate and volume of water taken at intervals not exceeding 15 minutes, shall be made available to the Chief Executive, Taranaki Regional Council at all reasonable times.

*Note: Water meters and dataloggers must be installed, and regularly maintained, in accordance with manufacturer's specifications in order to ensure that they meet the required accuracy. Even with proper maintenance water meters and dataloggers have a limited lifespan.*

3. The measurements made in accordance with condition 2 of this consent, shall be transmitted to the Taranaki Regional Council's computer system, in a format to be advised by the Chief Executive, Taranaki Regional Council, to maintain a 'real time' record of the water taken. The records of water taken:
  - (a) be in a format that, in the opinion of the Chief Executive, Taranaki Regional Council, is suitable for auditing; and
  - (b) specifically record the water taken as 'zero' when no water is taken.
4. The bore shall be easily identifiable by a permanent label, which may be welded or engraved on the casing, or on the equivalent fixed part of the well construction or associated building. The numbering on the label shall be the bore number assigned by Taranaki Regional Council, which is GND2010.
5. The consent holder shall ensure that a continuous record of the groundwater level in a shallow and deep groundwater observation wells GND2102 (the Council-PMB1) and GND2103 (the Council-PMB2) is maintained. This shall be achieved by installing an automatic water level recording device on each well that records the water level at intervals not exceeding 30 minutes to an accuracy of  $\pm 5$  mm and is tamper-proof. The cost of establishing and operating the recorder shall be met by the consent holder.
6. Observation borehole GND2104 (the Council-PMB3) shall be kept accessible for New Plymouth District Council to monitor groundwater levels in the bore.

## Consent 7470-1.1

7. Water level data collected in accordance with condition 5 above, and records of water taken collected in accordance with condition 2, shall be provided to New Plymouth District Council at intervals not exceeding three months.
8. At all times the consent holder shall adopt the best practicable option to prevent or minimise any actual or likely adverse effect on the environment associated with the abstraction of groundwater, including, but not limited to, the efficient and conservative use of water.
9. This consent shall lapse on 30 September 2014, 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.
10. 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) Within two months of the Council receiving one year of water level monitoring data; and/or
  - (b) during the month June 2014

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 which it was not appropriate to deal with at the time.

Signed at Stratford on 10 June 2014

For and on behalf of  
Taranaki Regional Council

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A D McLay  
**Director - Resource Management**

