

Taranaki Thoroughbred Racing
Monitoring Programme
Annual Report
2017-2018

Technical Report 2018-89

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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 7470-1.2 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 20 June 2017 and contains 9 special conditions which set out the requirements that TTR must satisfy. The consent has a maximum daily abstraction limit of 500 m³/day.

During the monitoring period TTR demonstrated an overall high level of environmental performance.

This report for the period July 2017 to June 2018 describes the monitoring programme carried out by the Council to assess TTR's environmental performance and level of compliance with consent 7470-1.2.

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

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

To monitor the exercising of consent 7470-1.2, 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 near real time. Three groundwater monitoring bores are also located within the vicinity of the abstraction bore and monitor potential effects of the abstraction on local groundwater levels. Groundwater levels within two of the site specific monitoring bores (GND2102 and GND2103) are monitored electronically by pressure transducers. Groundwater levels in the third bore (GND2119) in the grounds of Pukekura Park monitors for any effects down gradient of the race course. The pressure transducers installed in all three bores 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, the Company demonstrated a high level of environmental and administrative performance with the resource consent.

For reference, in the 2017-2018 year, consent holders were found to achieve a high level of environmental performance and compliance for 76% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 20% of the consents, a good level of environmental performance and compliance was achieved.

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

This report includes recommendations to be implemented during the 2018–2019 monitoring period.

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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 2017 to June 2018 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 7470-1.2 authorises the abstraction of up to 500 m³/day of groundwater from an abstraction 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 and also discusses the environmental effects of TTR's use of groundwater. This is the sixth 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 RMA and the Council's obligations;
- the Council's approach to monitoring sites through annual programmes;
- the resource consent held by TTR to take and use groundwater;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted by TTR.

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 2018-2019 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 *Resource Management Act 1991* (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 2017-2018 year, consent holders were found to achieve a high level of environmental performance and compliance for 76% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 20% of the consents, a good level of environmental performance and compliance was achieved.

1.2 Background

The abstraction bore (GND2010) operated by TTR was installed in March 2009 and 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 that volcanic sand and gravel layers interbedded with peat horizons occur to a depth of 86 m below the site. The bore was constructed using PVC casing to 62 m and completed using alternating 150 mm stainless steel spacers and 178 mm diameter stainless steel screen from 62 m to 83 m. The combined screen length totalled 12 m and the bore was designed to intercept three separate gravel aquifer intervals.

To enable a robust groundwater level monitoring programme to be undertaken, given the close proximity of the abstraction to Pukekura Park, three groundwater monitoring bores (GND2102 – GND2104) were also constructed using 50 mm PVC to monitor the site. More recently an additional monitoring bore GND2119, located within the Park boundary was added and GND2104 was removed from the programme. GND2119 was added to enable closer monitoring of the shallow groundwater table within the Park. GND2104 was removed following extensive searches undertaken by TTR, New Plymouth District Council (NPDC) and the Council failed to locate the bore. All parties agreed the bore was no longer accessible for monitoring and was likely buried during previous site works at the race course. Bore details for the abstraction bore and remaining monitoring bores are summarised in Table 1.

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
GND2119	MW5	1693784	5675148	25/09/2009	50	4.2	4.2	1.1-4.2

1.3 Resource consents

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 **7470-1.2** 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 7470-1.2 was granted on 20 June 2017 and replaced Consent 7470-1.1 which was issued on 10 June 2014. The original version of the consent (7470-1) was granted on 20 August 2009 under Section 87(d) of the RMA. The consent expires on 1 June 2020.

Consent 7470-1.2 includes nine 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 all records of water abstraction and groundwater level monitoring to be submitted to NPDC at stipulated intervals;
- Condition 7 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 8 is a lapse condition; and
- Condition 9 is a review condition.

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 (Appendix I).



Figure 1 Location of TTR abstraction bore and monitoring bores

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 consent reviews, renewals or new consent applications;
- advice on the Council's environmental management strategies and content of regional plans; and
- consultation on associated matters.

1.4.3 Site inspections

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

- obtaining static water level measurements from the abstraction bore and monitoring bores;
- taking instantaneous abstraction volume and rate readings from the abstraction 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 abstraction bore and monitoring 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 data logging unit and transferred to the Council via telemetry. In order to assess compliance with the special conditions of consent 7470-1.2, 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 7470-1.2 on the local groundwater system. Groundwater levels were measured manually in the monitoring bores during inspection visits. Pressure transducers are installed in monitoring bores GND2102,

GND2103 and GND2119. In addition, an atmospheric logger is also installed to measure and record barometric pressure. The electronic data was downloaded by Council Officers during inspection visits.

2 Results

2.1 Inspections

During the period under review two inspection visits were carried out in relation to the consent. Inspections were undertaken on 21 August 2017 and 2 March 2018. Site inspections included downloading of electronic data, collection of manual data and a visual inspection of the equipment and site. No issues were noted by the inspecting officer during either site visit.

2.2 Results of abstraction monitoring

As a condition of TTR's consent 7470-1.2, 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 7470-1.2 stipulates an abstraction volume limit of 500 m³/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 2018 are presented in Figure 4 and Figure 5.

Figure 2 indicates that the authorised abstraction volume of 500 m³/day was not exceeded during the period under review. Figure 4 shows that some exceedances in the daily volume have occurred in the past but since the abstraction volume was increased, from 170 m³/day to 500 m³/day, no further exceedances have occurred.

Figure 3 and Figure 5 indicate that the maximum authorised daily abstraction rate of 10 L/s has not been exceeded since monitoring began at the site.

Abstraction increased during the 2017-2018 year in comparison to the previous monitoring period, which saw the lowest annual abstraction since pumping began, likely linked to the higher than average rainfall experienced during the period, as abstraction is only generally required for race track irrigation and associated usage during drier periods (Table 2).

Table 2 Summary of historical abstraction activity

Period	Total volume abstracted (m ³)	Period	Total volume abstracted (m ³)
2017-2018	17,780	2012-2013	21,099
2016-2017	10,491	2011-2012	16,663
2015-2016	20,801	2010-2011	17,666
2014-2015	24,952	2009-2010	14,618
2013-2014	19,361	-	-

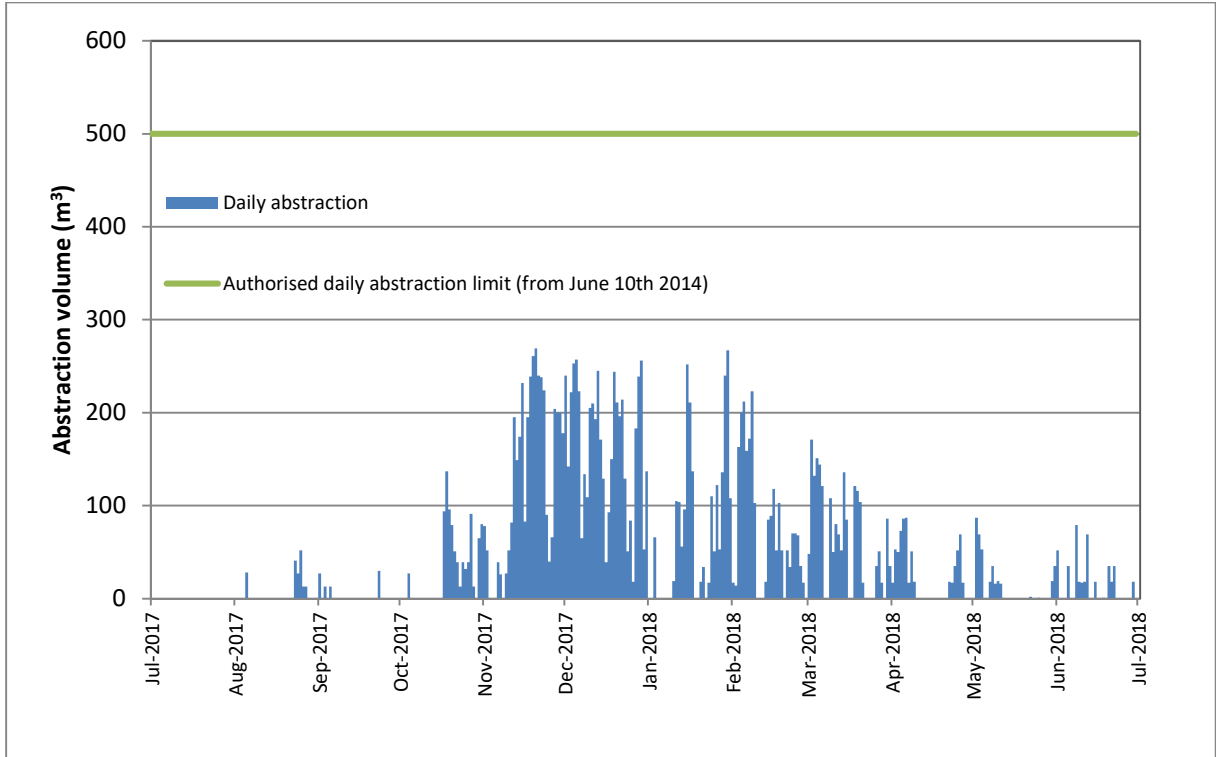


Figure 2 Daily abstraction volumes under consent 7470-1.2 (July 2017-June 2018)

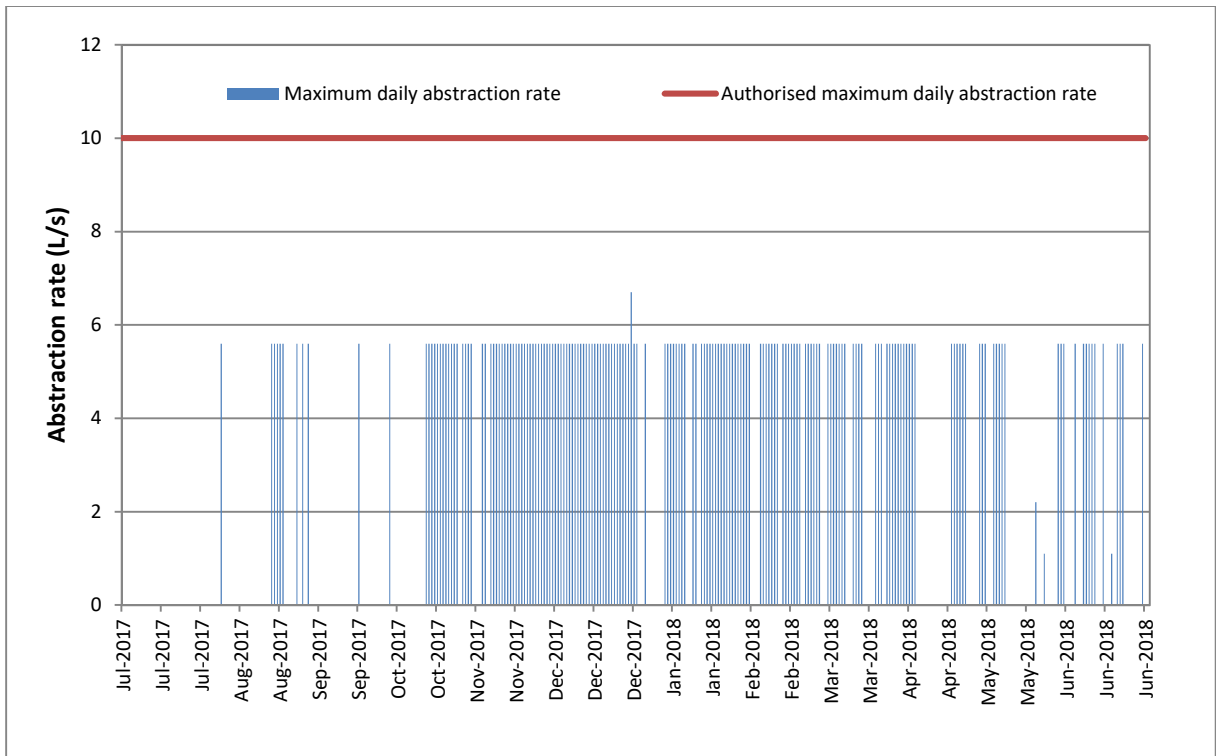


Figure 3 Maximum daily abstraction rate under consent 7470-1.2 (July 2017-June 2018)

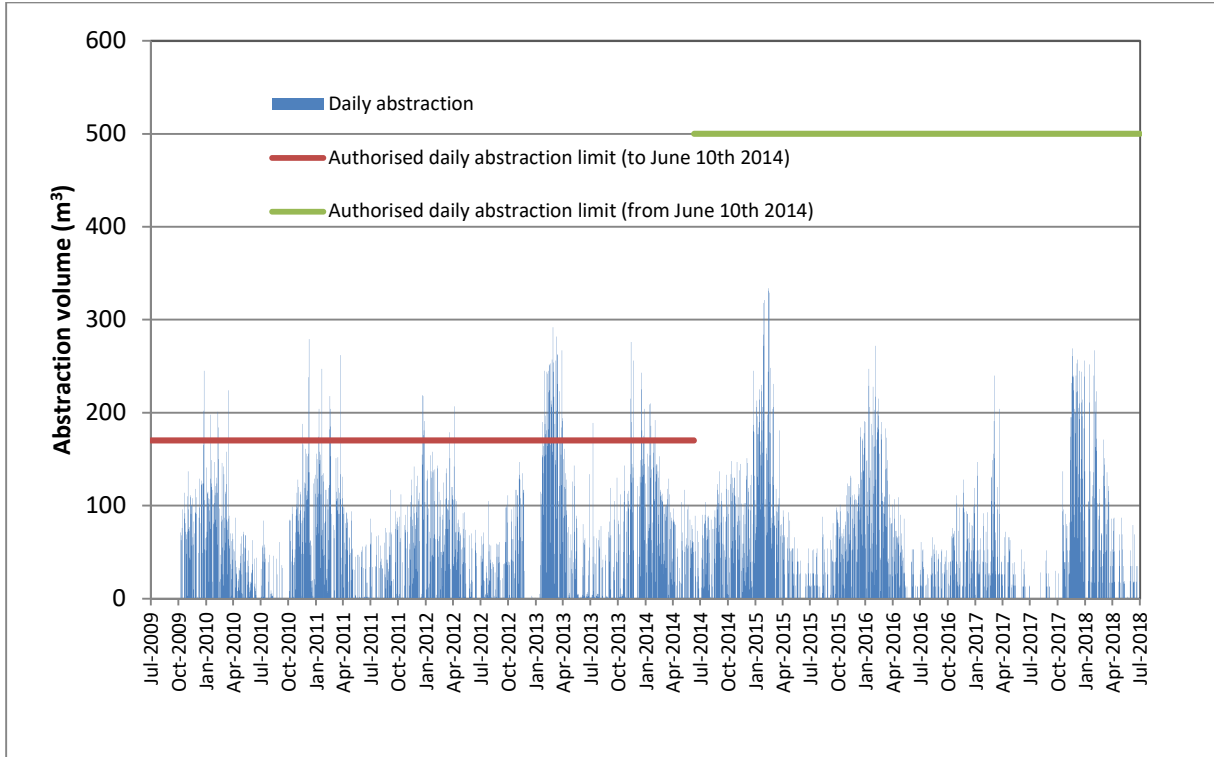


Figure 4 Daily abstraction volumes under consent 7470-1.2 (July 2009-June 2018)

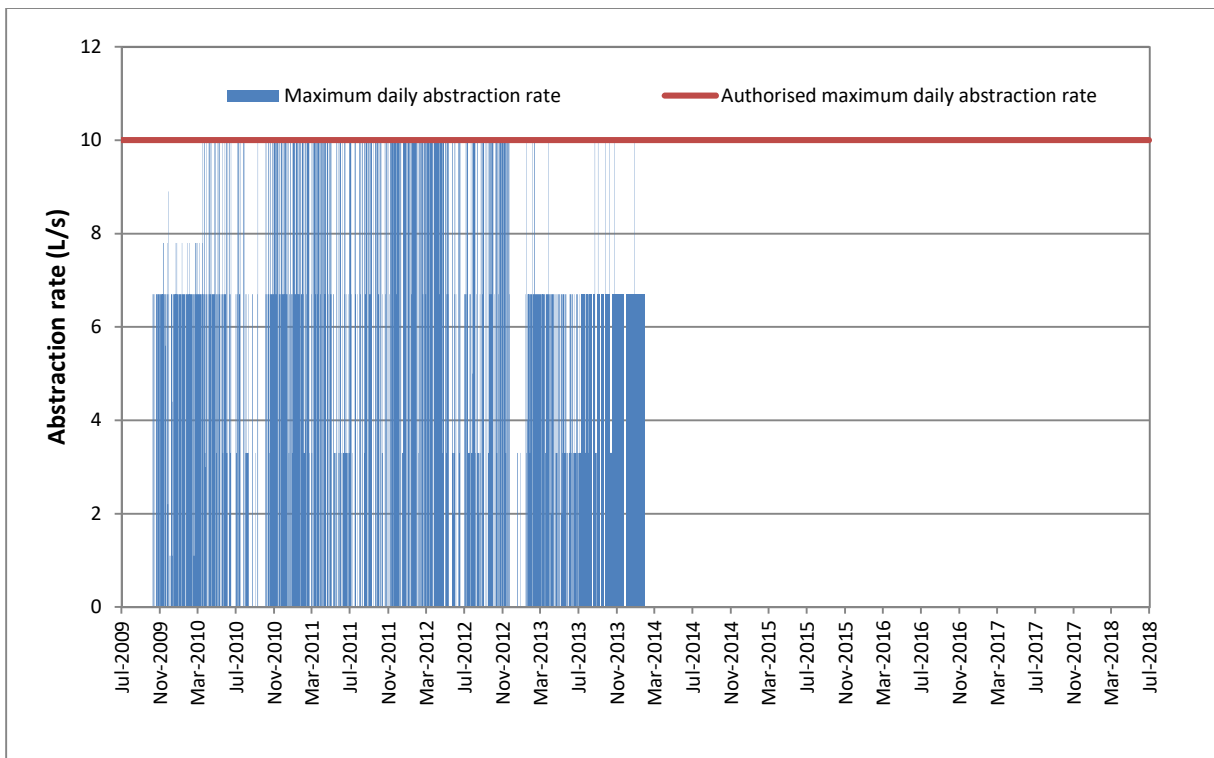


Figure 5 Maximum daily abstraction rate under consent 7470-1.2 (July 2009-June 2018)

2.3 Results of groundwater monitoring

The groundwater level data for GND2102 and the daily rainfall values from the Brooklands Zoo rainfall station are presented in Figure 6. The rainfall station is located approximately 350 m south west of the site and came into operation in July 2013. The groundwater level and daily abstraction data are plotted in Figure 7. Groundwater level data for the review period for GND2103 is presented alongside rainfall in Figure 8 and abstraction in Figure 9. The groundwater levels recorded at the Pukekura Park site GND2119, over the monitoring period, are presented alongside rainfall data in Figure 10 and abstraction in Figure 11.

Groundwater levels respond to rainfall in the shallower bores (GND2102 and GND2119) with a more pronounced response seen in GND2119, the shallower of the two bores. There does not appear to be a significant response to abstraction in either bore, however due to the masking effects of the strong seasonal response any subdued effects would be difficult to determine. In contrast a significant response to abstraction can be seen in GND2103 which is screened in the same aquifer interval as the abstraction bore GND2100. The long-term groundwater level and abstraction data is presented in Figure 12 and indicates that although groundwater levels in all three bores fluctuate during the monitoring year they have remained relatively steady since monitoring commenced.

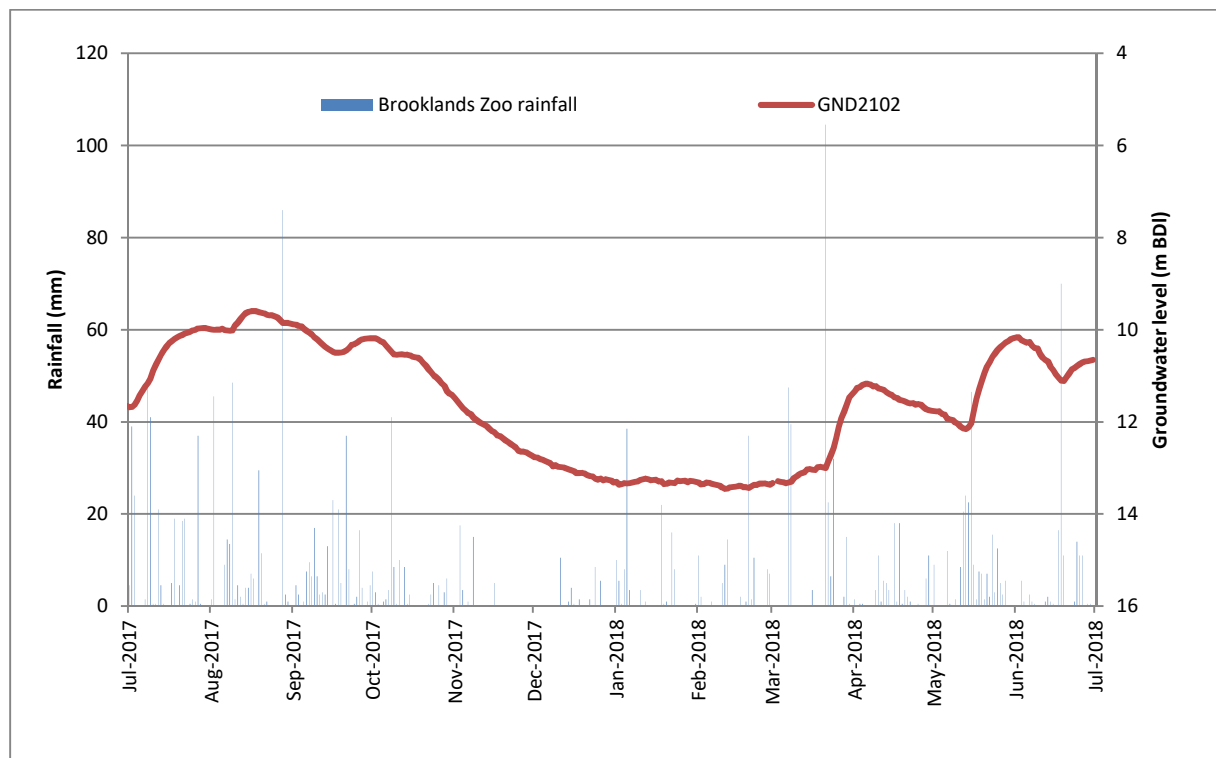


Figure 6 Observed groundwater levels GND2102 and rainfall (July 2017-June 2018)

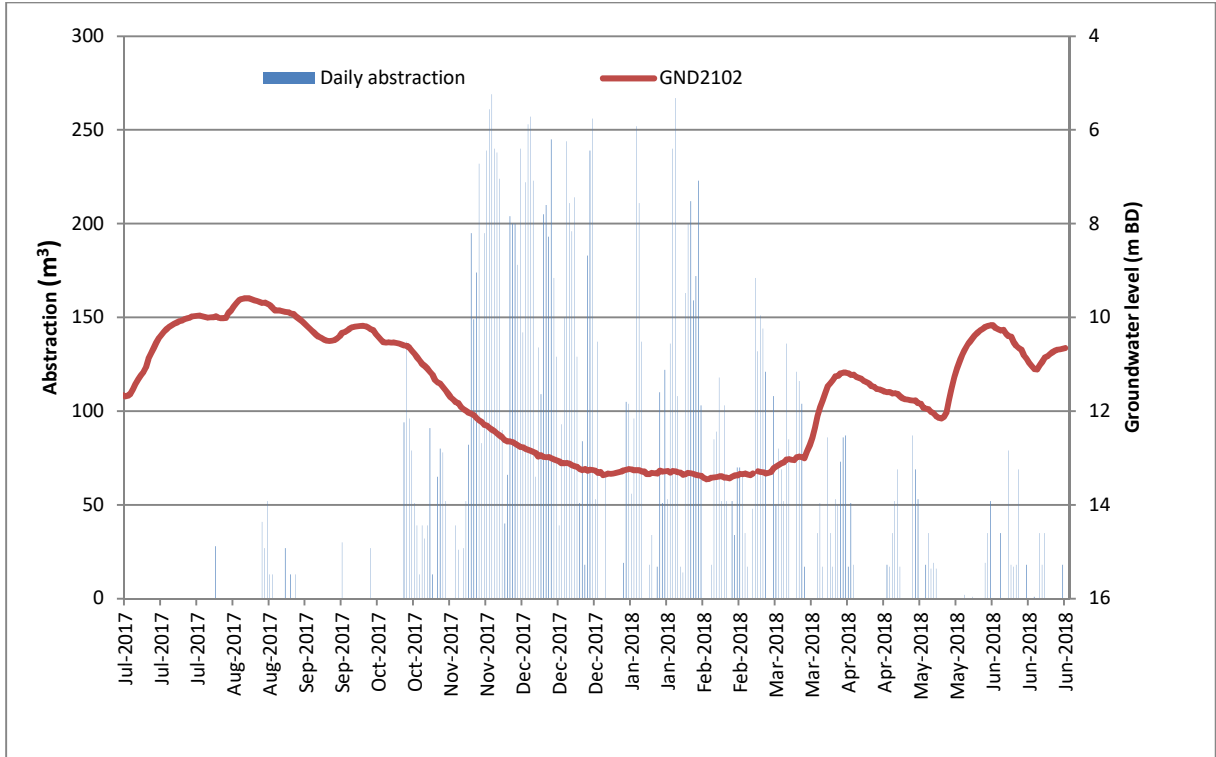


Figure 7 Observed groundwater levels GND2102 and abstraction (July 2017-June 2018)

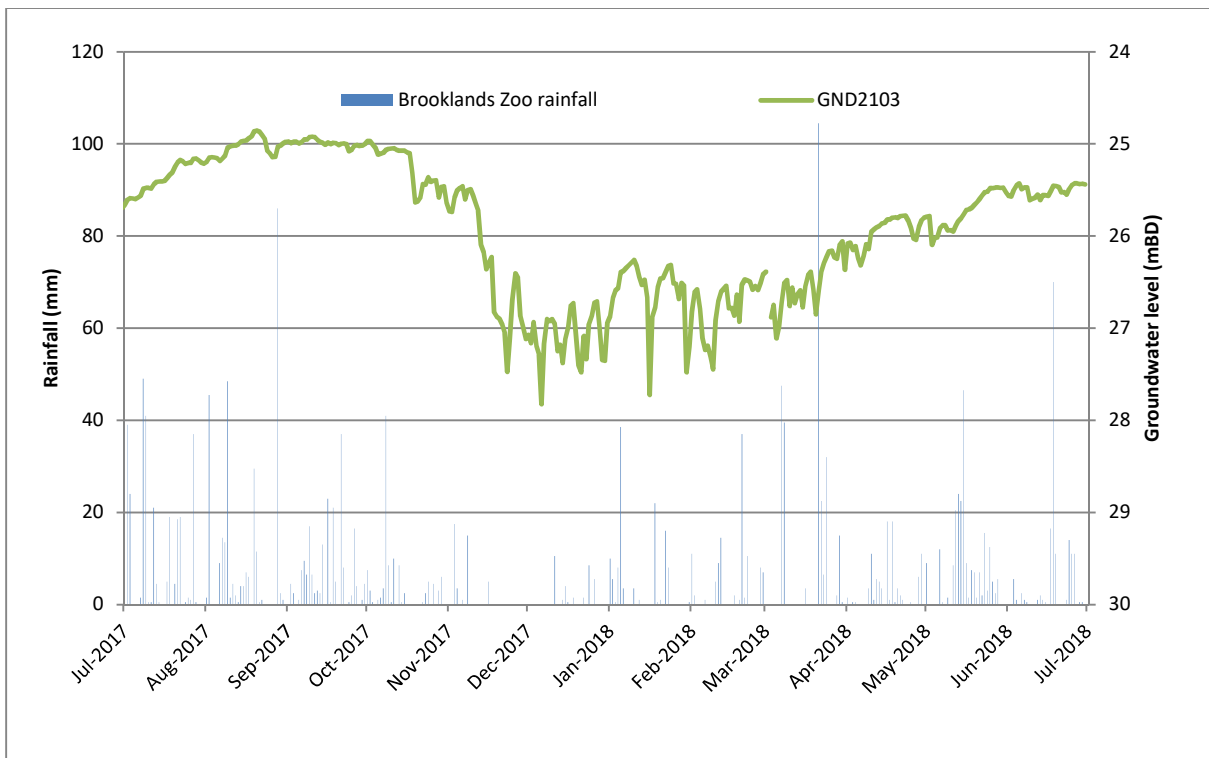


Figure 8 Observed groundwater levels GND2103 and rainfall (July 2017-June 2018)

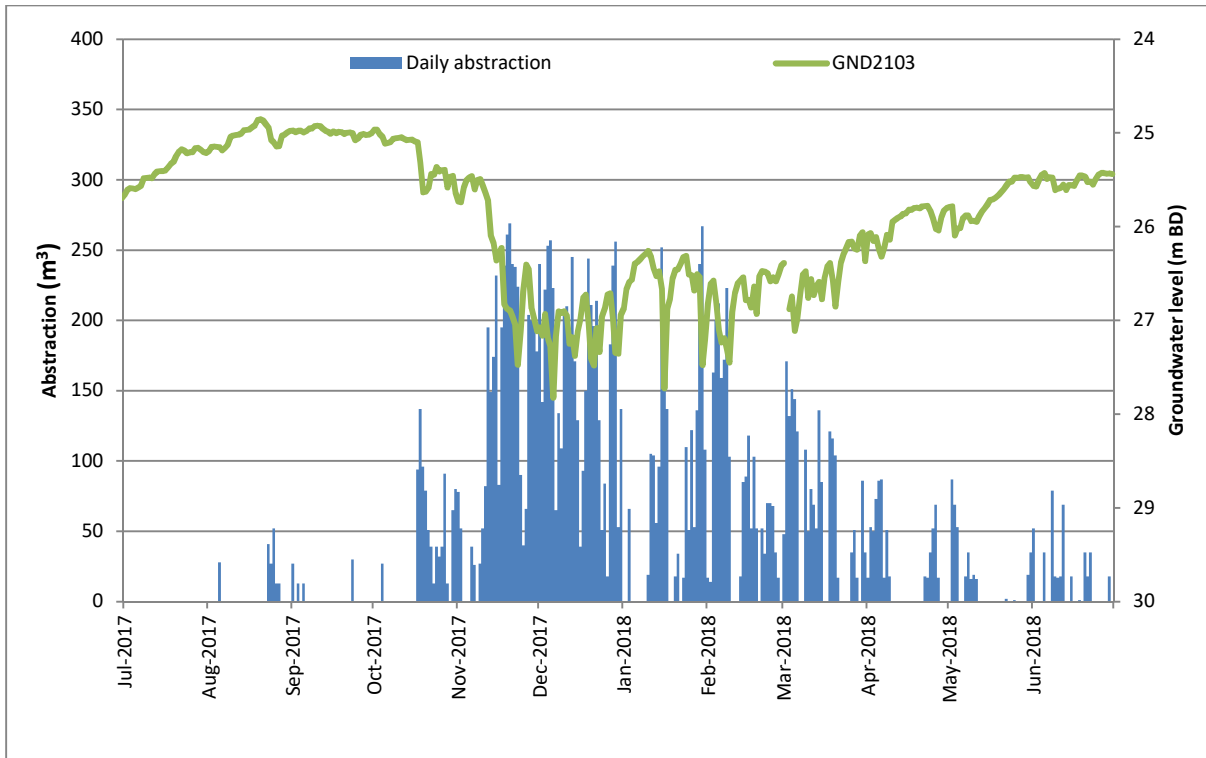


Figure 9 Observed groundwater levels GND2103 and abstraction (July 2017-June 2018)

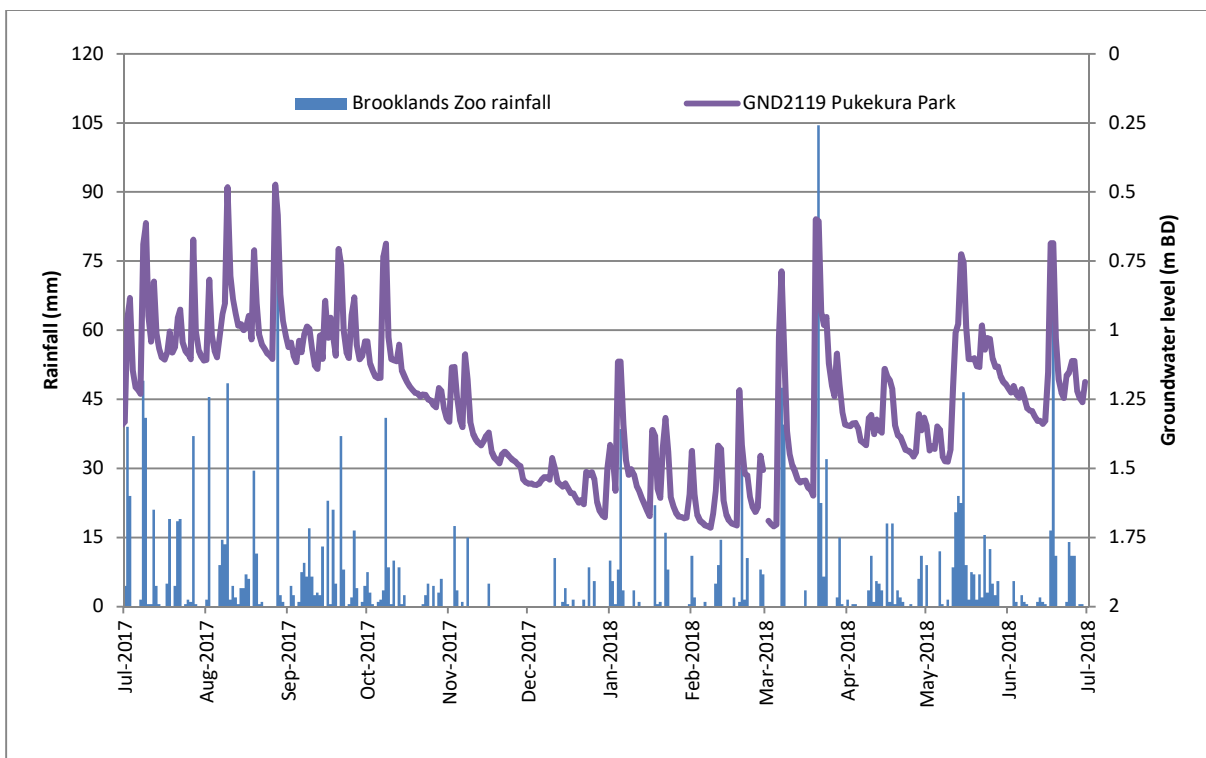


Figure 10 Observed groundwater levels GND2119 and rainfall (July 2017-June 2018)

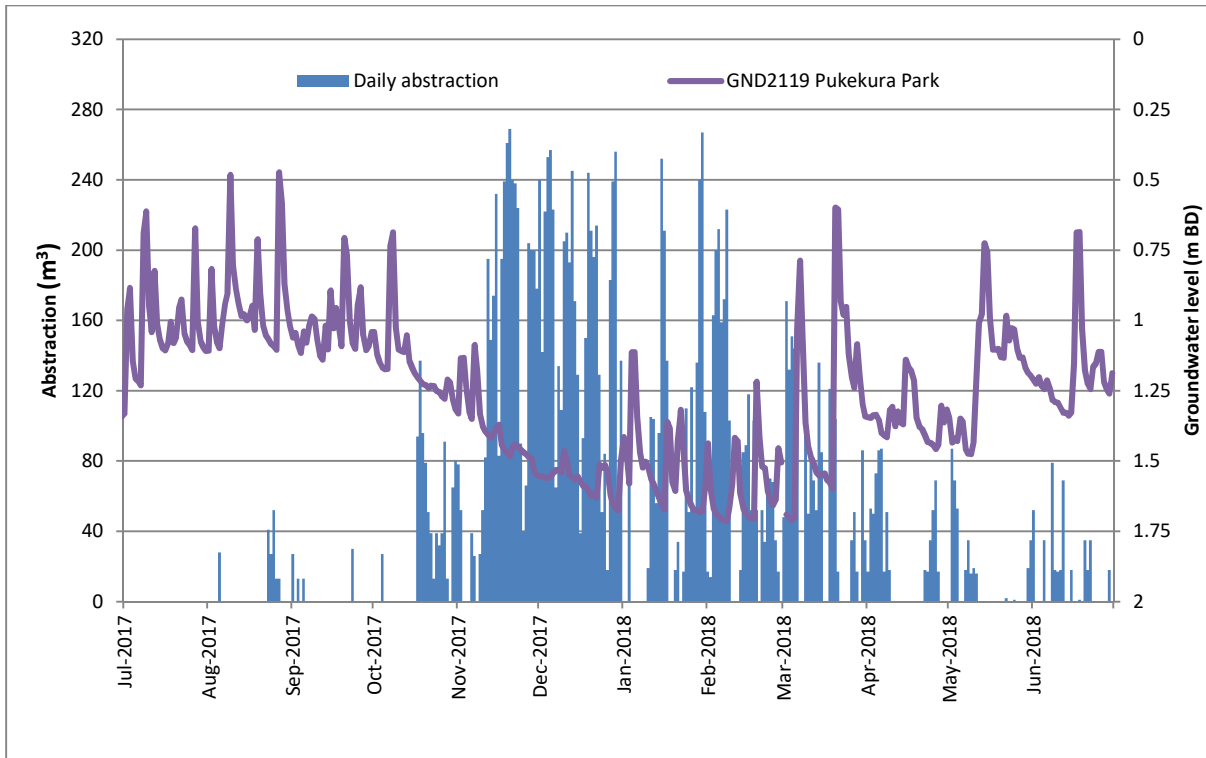


Figure 11 Observed groundwater levels GND2119 and abstraction (July 2017-June 2018)

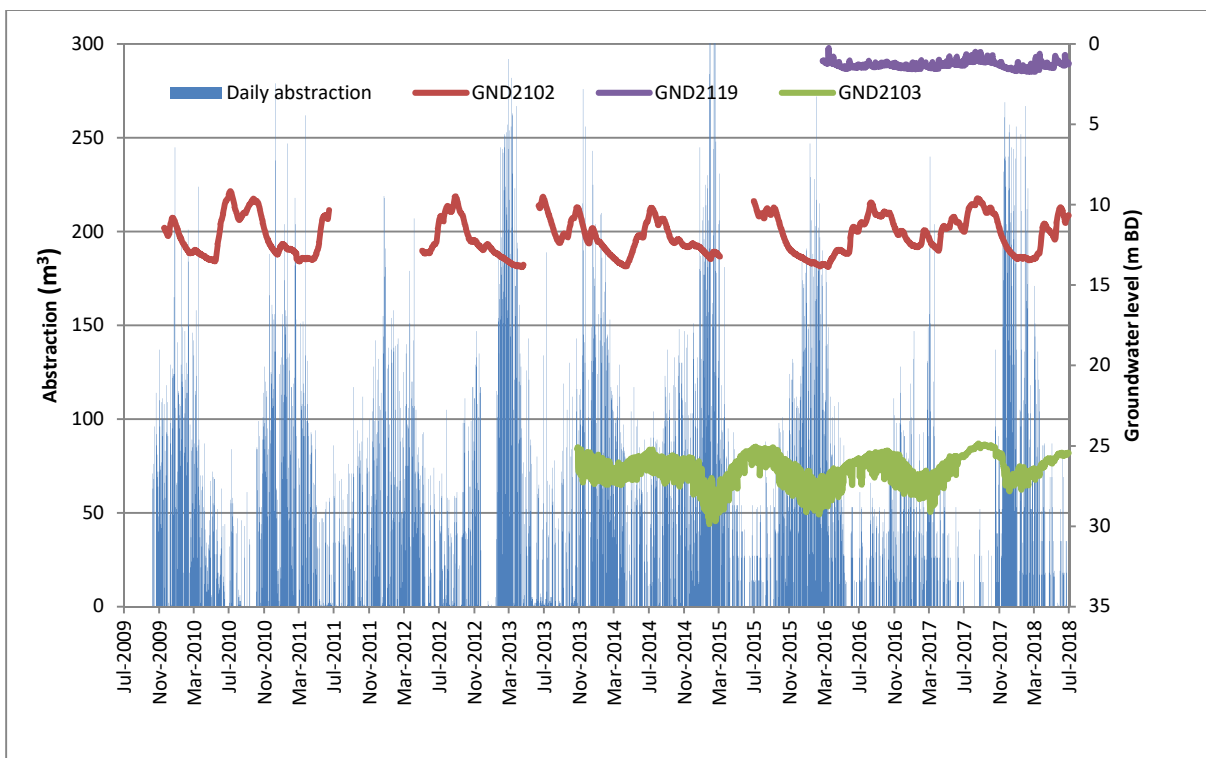


Figure 12 Historical groundwater level response and abstraction (2009-2018)

2.4 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 TTR. During the year matters may arise which require additional activity by the Council, for example provision of advice and information, or investigation of potential or actual causes of non-compliance or failure to maintain good practices. A pro-active approach that in the first instance avoids issues occurring is favoured.

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 2017-2018 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with the Company's conditions in resource consents or provisions in Regional Plans.

3 Discussion

3.1 Discussion of site performance

During the period under review, the Company exercised one consent for the abstraction of groundwater from a bore for watering of race tracks and general purposes, at the Taranaki Thoroughbred Racing Club, as well as watering gardens and other general purposes at Pukekura Park. Inspections of the site conducted during the period under review found the site to be in good condition and being well managed.

3.2 Environmental effects of exercise of consent

The main potential environmental effect of a groundwater abstraction is the reduction in groundwater levels in the vicinity of the abstraction 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 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.

Monitoring results during the 2014-2015 period, indicated there may be some connectivity between the shallow and deeper aquifers during times of heavy abstraction and as a result the Pukekura Park monitoring bore GND2119 was added to the programme. This bore exhibits a significant response to rainfall and due to abstraction only being required during dry periods any potential impacts on this bore from abstraction would be difficult to separate out from seasonal trends. The bore will continue to be monitored for any long-term changes.

The main factor influencing groundwater level fluctuations in GND2102 is rainfall recharge with groundwater levels displaying seasonal trends typical of shallow bores screened within the volcanics formation. The trend is consistent with historical trends in this bore and indicates 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 in response to abstraction from GND2010. When abstraction volumes increase over the summer months the groundwater levels in GND2103 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 7470-1.2. As such, the potential for adverse effects on down gradient surface water systems as a result of the abstraction is deemed negligible, but will continue to be monitored.

Compliance with the conditions of the Company's consent during the 2017-2018 monitoring period is summarised below in Section 3.3.

3.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Table 3.

Table 3 Summary of performance for consent 7470-1.2

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.		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
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. Data collected accordance with special conditions 2 & 5 to be submitted to NPDC	Notification of data received from NPDC	Yes
7. Adopt best practicable option	Inspection and liaison with consent holder	Yes
8. Lapse clause	Consent exercised prior to 30 September 2014	Yes
9. Review provision	No longer applicable	Yes
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

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

Table 4 Evaluation of environmental performance over time

Year	Consent number	High	Good	Improvement required	Poor
2016-2017	7470	1			
2015-2016		1			
2014-2015		1			
2013-2014		1			
2009-2013					1

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

3.4 Recommendations from the 2016-2017 Annual Report

In the 2015-2016 Annual Report, it was recommended:

1. THAT in the first instance, monitoring of consented activities in the 2017-2018 year continue at the same level as in 2016-2017.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

The recommendations above were implemented during the period under review.

3.5 Alterations to monitoring programmes for 2018-2019

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

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

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

It is proposed the range of monitoring carried out during the 2017-2018 period be continued during the 2018-2019 monitoring period. Recommendations to this effect are included in Section 4 of this report.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2018-2019.

4 Recommendations

1. THAT in the first instance, monitoring of consented activities in the 2018-2019 year continue at the same level as in 2017-2018.
2. THAT should there be issues with environmental or administrative performance in 2018-2019, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Glossary of common terms and abbreviations

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

Aquifer (freshwater)	A formation, or group or part of a formation that contains sufficient saturated permeable media to yield exploitable quantities of fresh water.
Conductivity	A measure of the level of dissolved salts in a sample. Usually measured at 20°C and expressed as millisiemens per metre (mS/m) or as Total Dissolved Solids (g/m ³).
Confining layer	A geological layer or rock unit that is impermeable to fluids.
g/m ³	Grams per cubic metre. A measure of concentration which is equivalent to milligrams per litre (mg/L), or parts per million (ppm).
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.
IR	Unauthorised 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.
Observation bore	A bore drilled in a selected location for the purpose of observing parameters such as fluid levels and pressure changes as abstraction proceeds.
Abstraction 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.
L/s	Litres per second.
m BGL	Metres below ground level.
mS/m	Millisiemens per metre.
m TVD	Metres true vertical depth
m ³	Cubic metre.
pH	Numerical system for measuring acidity in solutions, with 7 as neutral. Values lower than 7 are acidic and higher than 7 are alkaline. The scale is logarithmic i.e. a change of 1 represents a ten-fold change in strength. For example, a pH of 4 is ten times more acidic than a pH of 5.
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.
UI	Unauthorised Incident.

Bibliography and references

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- Taranaki Regional Council (2015): Taranaki Thoroughbred Racing Groundwater Abstraction Monitoring Programme Report 2013-2014. Technical Report 2014-119. Doc. id. 1516927
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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): 20 June 2017

Commencement Date
(Change): 20 June 2017 (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: 1 June 2020

Review Date(s): In accordance with special condition 9

Site Location: 130 Coronation Ave, Welbourn, New Plymouth

Grid Reference (NZTM) 1693950E-5675090N

Catchment: Huatoki

*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 ± 5 mm and is tamper-proof. The cost of establishing and operating the recorder shall be met by the consent holder.
6. 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 biannually.

Consent 7470-1.2

7. 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.
8. 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.
9. 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 20 June 2017

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

