

Taranaki Racing Club
Groundwater Abstraction
Monitoring Programme Report
2009-2013

Technical Report 2013 - 71

ISSN: 0144-8184 (Print)
ISSN: 1178-1467 (Online)
Document: 1277802 (Word)
Document: 1288666 (Pdf)

Taranaki Regional Council
Private Bag 713
STRATFORD

February 2014

Executive summary

The Taranaki Racing Club 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.

The Taranaki Racing Club was granted resource consent 7470-1 in August 2009. The consent authorises the abstraction of up to 170 cubic metres per day of groundwater from an on-site production bore, at a rate not exceeding 10 litres per second. Groundwater abstracted under consent 7470-1 is primarily used for irrigation purposes. The consent includes a total of 10 special conditions setting out the requirements that the consent holder must satisfy.

This report for the period July 2009 – June 2013 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess the consent holder's environmental performance and level of compliance with consent 7470-1.

To monitor the exercising of consent 7470-1, abstraction volume and rate data is recorded electronically at the site by a datalogging system. Three groundwater observation bores were also installed within the vicinity of the production bore to monitor the effects of the abstraction on local groundwater levels. Water levels within two of the observation bores are monitored electronically by pressure transducers. The pressure transducers are programmed to record measurements at 30 minute intervals.

The Council's monitoring programme for the period under review included ten inspection visits to the site. Inspection visits typically comprised of a visual inspection of the production bore, abstraction pipework, monitoring equipment and associated infrastructure, obtaining manual measurements of groundwater levels in the production and observation bores, and retrieving electronic data.

The results of the monitoring carried during the period under review indicate that abstraction of groundwater authorised by consent 7470-1 is not resulting in any adverse effects on any existing groundwater takes in the site locality. The data also indicates that the abstraction is having no adverse effect on shallow groundwater levels, and is therefore having no impact on any local groundwater fed surface water systems.

During the period under review, the Council was required to record an Unauthorised Incident (UI) for non-compliance with the conditions of consent 7470-1. The non-compliance related to the exceedance of the authorised daily abstraction volume on several occasions over the period July 2012 to May 2013. The non-compliance resulted in an Abatement Notice being issued in September 2013.

Due to the non-compliance issues identified during the period under review, and the subsequent issuing of an Abatement Notice, improvement in the Taranaki Racing Club's compliance with consent 7470-1 is desirable.

For reference, in the 2012-2013 year, 35% 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 59% demonstrated a good level of environmental performance and compliance with their consents.

This report includes recommendation for the 2013-2014 monitoring year.

Table of contents

	Page
1. Introduction	1
1.1 Compliance monitoring programme reports and the Resource Management Act 1991	1
1.1.1 Introduction	1
1.1.2 Structure of this report	1
1.1.3 The Resource Management Act (1991) and monitoring	1
1.1.4 Evaluation of environmental and consent performance	2
1.2 Background	3
1.3 Resource consents	4
1.3.1 Water abstraction permit	4
1.4 Monitoring programme	5
1.4.1 Introduction	5
1.4.2 Programme liaison and management	5
1.4.3 Site inspections	6
1.4.4 Monitoring and review of abstraction data	6
1.4.5 Monitoring and review of groundwater level data	6
2. Results	7
2.1 Inspections	7
2.2 Results of abstraction monitoring	8
2.3 Results of groundwater level monitoring	11
2.4 Investigations, interventions, and incidents	11
3. Discussion	13
3.1 Environmental effects of exercise of consents	13
3.2 Evaluation of performance	14
3.3 Alterations to monitoring programmes for 2013-2014	15
3.4 Exercise of optional review of consent	15
4. Recommendations	16
Glossary of common terms and abbreviations	17
Bibliography and references	18
Appendix I Resource consent held by Taranaki Racing Club	

List of tables

Table 1	Taranaki Racing Club abstraction volumes (2009-2013)	9
Table 2	Summary of performance for Consent 7470-1 to take and use groundwater from a bore for watering of racing tracks and general purposes at the Taranaki Racing Club	14

List of figures

Figure 1	Location of the Taranaki Racing Club site, the production and observation bores	4
Figure 2	Daily abstraction volumes under consent 7470-1 (2009-2013)	10
Figure 3	Maximum daily abstraction rate under consent 7470-1 (2009-2013)	10
Figure 4	Observed water level in GND2102 (2009-2013)	11

1. Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

The following report by the Taranaki Regional Council (the Council) describes the monitoring programme associated with resource consent 7470-1, held by the Taranaki Racing Club. The Taranaki Racing Club operates a race track and associated facilities on Coronation Avenue, New Plymouth. The site is located within the Te Henui catchment. Consent 7470-1 authorises the abstraction of up to 170 cubic metres per day (m³/d) of groundwater from a production bore at the site, at a rate not exceeding 10 litres per second (l/s).

This report covers the results and findings of the monitoring programme implemented by the Council in respect of consent 7470-1. This is the first compliance monitoring report to be prepared by the Council in relation to this consent, and the potential effects of the abstraction. The report covers the monitoring period July 2009- June 2013.

1.1.2 Structure of this report

Section 1 of this report is a background section. It sets out general information about compliance monitoring under the Resource Management Act (the Act) and the Council's obligations and general approach to monitoring sites through annual programmes. It also provides details of the resource consent held by the Taranaki Racing Club for the abstraction of groundwater within the Te Henui catchment, and the nature of the monitoring programme in place for the period under review.

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 2013-2014 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 Act 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 a discharger, 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 (eg, recreational, cultural, or aesthetic):
- (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 discharge source. Monitoring programmes are not only based on existing permit conditions, but also on the obligations of the Act to assess the effects of the exercise of consents. In accordance with section 35 of the Act, the Council undertakes compliance monitoring for consents and rules in regional plans; and maintains an overview of performance of resource users against regional plans and consents. Compliance monitoring, (covering both activity and impact), also enables the Council to continuously assess its own performance in resource management as well as that of resource users particularly consent holders. It further enables the Council to continually re-evaluate its approach to resource management, and ultimately, through the refinement of methods and considered responsible resource utilisation, move closer to achieving sustainable development of the regions resources.

1.1.4 Evaluation of environmental and consent performance

Besides discussing the various details of the performance and extent of compliance by the consent holder(s) during the period under review, this report also assigns an overall rating. The categories used by the Council, and their interpretation, are as follows:

- a **high** level of environmental performance and compliance indicates that essentially there were no adverse environmental effects to be concerned about, and no, or inconsequential (such as data supplied after a deadline) non-compliance with conditions.
- a **good** level of environmental performance and compliance indicates that adverse environmental effects of activities during the monitoring period were negligible or minor at most, or, 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, or, there were perhaps some items noted on inspection notices for attention but these items were not urgent nor critical, and follow-up inspections showed they have been dealt with, and any inconsequential non-compliances with conditions were resolved positively, co-operatively, and quickly.
- **improvement desirable (environmental)** or **improvement desirable (administrative compliance)** (as appropriate) indicates that the Council may have been obliged to record a verified unauthorised incident involving measurable environmental impacts, and/or, there were measurable environmental effects arising from activities and intervention by Council staff was required and there were matters that required urgent intervention, took some time to resolve, or remained unresolved at the end of the period under review, and/or, there were on-going issues around meeting resource consent conditions even in the absence of environmental effects. Abatement notices may have been issued.

- **poor performance (environmental) or poor performance (administrative compliance)** indicates generally that the Council was obliged to record a verified unauthorised incident involving significant environmental impacts, or there were material failings to comply with resource consent conditions that required significant intervention by the Council even in the absence of environmental effects. Typically there were grounds for either a prosecution or an infringement notice.

For reference, in the 2012-2013 year, 35% 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 59% demonstrated a good level of environmental performance and compliance with their consents.

1.2 Background

The production bore operated by the Taranaki Racing Clubs was drilled and constructed by Borewell NZ Limited. The construction of the bore was completed on 27 March 2009, and it 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 encountered 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.

In order to assess the potential effects of the planned abstraction on local groundwater levels and flow regimes, a programme of pump testing was carried out on the production bore by BECA Ltd. on behalf of the consent holder. Three observation bores were installed so the effects of the abstraction on groundwater levels could be monitored during testing. Each observation bore was screened within a different water bearing zones as recorded in the bore log. GND2102, the shallowest observation bore, is screened from 24 metres below ground level (mbgl) to 27 mbgl, and is located approximately 14 m from the production bore. GND2104, an intermediate depth observation bore, is located 39 m from the production bore, and screened from 42 mbgl to 52 mbgl. GND2103 is located approximately 26 m from the production bore, and is screened within the same interval as the production bore from 66 mbgl to 76 mbgl. The location of the observation bores is illustrated in Figure 1. The pump testing programme was carried out between 12 May and 24 May 2009. The testing programme encompassed a stepped-rate test, a constant rate test, and recovery test. The data obtained during the testing programme allowed the hydraulic properties of the aquifer to be estimated, and the response of the aquifer to different abstraction scenarios to be assessed. The results of the pump testing indicated the following:

- Water bearing strata at the intermediate and deep depths are directly connected and can be considered one semi-confined aquifer; and
- There were no apparent drawdown effects on the unconfined aquifer, screened in the shallow observation bore.



Figure 1 Location of the Taranaki Racing Club site, the production and observation bores

1.3 Resource consents

1.3.1 Water abstraction permit

Section 14 of the Act stipulates that no person may take, use, dam or divert any water, unless the activity is expressly authorised by a resource consent or a rule in a regional plan, or it falls within a particular category set out in Section 14.

Taranaki Racing Club holds water permit 7470-1, authorising the taking of groundwater from a bore for the race track irrigation and general purposes. This permit was issued by the Council on 20 August 2009 under Section 87(d) of the Act. It is due to expire on 1 June 2020.

The consent 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 that the bore be labelled with the Council reference code;
- Condition 4 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 5 requires that an additional observation bore remain accessible for New Plymouth District Council (NPDC) to monitor water levels;
- Condition 6 requires all records of water abstraction and groundwater level monitoring to be submitted to NPDC at stipulated intervals;
- Condition 7 requires all electronic records of water abstraction and groundwater level monitoring to be made available to the Council;
- 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.

A copy of the permit is included in Appendix I.

1.4 Monitoring programme

1.4.1 Introduction

Section 35 of the Act sets out obligation upon the Council to gather information, conduct research, and monitor the effects arising with regard to the exercising of resource consents within the Taranaki region, and to report on the results.

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 associated with consent 7470-1 consisted of three 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 the consent holder over consent conditions, their interpretation and application, in discussion over monitoring requirements, preparation for any reviews, renewals, or new consents, advice on the Council's environmental management strategies, the content of regional plans, and consultation on associated matters.

1.4.3 Site inspections

The Taranaki Racing Club site was visited on 10 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 datalogger display for comparison with flow meter readings, downloading electronic abstraction and water level data, and carrying out a general visual inspection of the production bore headworks, pipework and water 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. In order to assess compliance with the special conditions of consent 7470-1, 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 electronic abstraction data was downloaded manually by Council Officers during inspection visits.

1.4.5 Monitoring and review of groundwater level data

In order to monitor the effects of the abstraction authorised under consent 7470-1 on local groundwater levels and flow regimes, groundwater levels were measured manually in both the production and observation bores during inspection visits. Pressure transducers were installed in observation 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. Manual measurements of water level are also obtained from the third bore during inspection visits. All data needs to be processed by Council Staff and checked for accuracy before any analysis can be carried out.

2. Results

2.1 Inspections

During the period under review, 10 inspection visits were carried out in relation to consent 7470-1. The following observations were recorded:

12 October 2009

No abstraction was occurring at the time of visit. The set-up of the bore pipework, metering equipment, and datalogger installation were inspected. Installation was deemed to be of a high standard. All electronic data was downloaded.

15 January 2010

No abstraction was occurring on arrival at the site, but commenced mid inspection. All electronic data was downloaded, including water level data from observation bores, flow meter and atmospheric logger data. Manual water level measurements were also taken from all observation bores. Vegetation was cleared from around GND2103 as it had become overgrown.

10 September 2010

No abstraction occurred during the inspection visit. All electronic data was downloaded, including data from observation bores, flow meter and atmospheric loggers. Manual water level measurements were also taken from all observation bores. The water level in the production bore could not be measured due to access issues. The cover for observation bore GND2102 was found to have water pooling around its surface cover as there was no grade on the concrete slab installed around it. This was resulting in water entering the subsurface cellar and pooling around the top of the bore standpipe. A recommendation was made in the inspection notice that this issue be addressed.

21 February 2011

No abstraction occurred during the inspection visit. It was found that the access cover to observation bore GND2104 had been sealed shut during road resealing works and could not be removed. Electronic data from all accessible observation bores and the atmospheric logger was downloaded. Manual water level measurements were also taken from the production bore and all accessible observation bores. Abstraction data could not be downloaded due to an issue with the datalogger. The datalogger was removed and sent back to the supplier for repair.

28 February 2011

The bore pump was running while on site as track was being watered. The repaired datalogger was reinstalled.

15 June 2011

No abstraction occurred during the inspection visit. Observation bore GND2104 was still inaccessible. All electronic data was downloaded, including data from observation bores, flow meter and atmospheric loggers. Manual water level measurements were also taken from the production bore and all accessible observation bores.

2 May 2012

No abstraction occurred during inspection visit. Observation bore GND2104 was still inaccessible. All electronic data was downloaded, including data from observation

bores, flow meter and atmospheric loggers. Manual water level measurements were also taken from the production bore and all accessible observation bores. Water was found to be still pooling around the standpipe of GND2102. Vegetation was also becoming overgrown around observation bores making them difficult to locate.

17 May 2012

No abstraction occurred during the inspection visit. Access to observation bore GND2104 had been restored. All electronic data was downloaded, including data from observation bores, flow meter and atmospheric loggers. Manual water level measurements were also taken from the production bore and all observation bores. Water was found to be still pooling around the standpipe of GND2102.

12 December 2012

No abstraction occurred during inspection visit. It was discovered that the consent holder was having issues with the production bore fouling with fine sediment, resulting in significantly reduced yields (max 6 l/s). A drilling contractor was on-site to carry out development of the production bore. GND2104 could not be accessed as it had been tar sealed shut. GND2101 could not be accessed as it was also covered by equipment being used in the production bore remedial works. Electronic data was downloaded from the production bore and GND2103.

12 June 2013

No abstraction occurred during the inspection visit. Access to observation bore was GND2104 was still not possible. All electronic data was downloaded, including data from observation bores, flow meter and atmospheric loggers. Atmospheric logger was found to have reached capacity as it could not be accessed for download during the previous inspection visit. Manual water level measurements were taken from the production bore and all observation bores. It was found the pipework from GND2010 was leaking, and water was still pooling around the standpipe of GND2102. Recommendations were made in the inspection notice that these issues be addressed. It was also noted that two additional water storage tanks had been installed. The estimated total storage capacity was now 120 m³.

2.2 Results of abstraction monitoring

As a condition of consent 7470-1, the Taranaki Racing Club is required to record the daily volumes abstracted, and the rate of abstraction. The abstraction data is captured electronically, and downloaded by Council Officers during inspection visits.

A summary of groundwater abstraction volumes across the period under review is provided in Table 1.

Consent 7470-1 stipulates an abstraction volume limit of 170 m³/d, and a maximum abstraction rate of 10 l/s. The maximum daily abstraction volume and rate data for the period under review are presented in Figure 2 and Figure 3.

Figure 2 indicates that the maximum authorised abstraction rate of 170 m³/d was exceeded on numerous occasions during the period under review. Enforcement action has been undertaken by the Council in relation to this non-compliance (see Section 2.4).

Initial analysis of the abstraction rate data indicated that there had also been numerous exceedances of the maximum authorised rate during the period under review. However, further analysis of this data during preparation of this report found that rate values made have been inaccurate. In some cases, the rate value being recorded on the datalogger exceeded the capacity of the abstraction pipework. In addition the maximum potential yield of the production bore had reduced to below 10 l/s during the monitoring period. The cause of the error in some of the rate data is being investigated at the time of writing this report. The corrected abstraction rate data for the period under review is presented in Figure 3. Abstraction rate data will continue to be closely monitored during the forthcoming monitoring period. If further exceedances are identified, immediate investigations will be carried out.

Table 1 Taranaki Racing Club abstraction volumes (2009-2013)

Month	Abstraction volumes (m ³)			
	2009-2010	2010-2011	2011-2012	2012-2013
July	0	633	464	874
August	0	152	783	714
September	0	130	1,156	938
October	1,152	1,565	939	1,332
November	2,068	2,753	1,737	1,660
December	2,166	2,365	2,367	6
January	2,911	3,332	2,285	2,271
February	2,266	1,966	1,502	5,547
March	2,106	2,428	2,324	4,564
April	767	1,426	1,835	1,559
May	824	428	869	953
June	288	517	343	682
Total	14,548	17,725	16,604	21,100

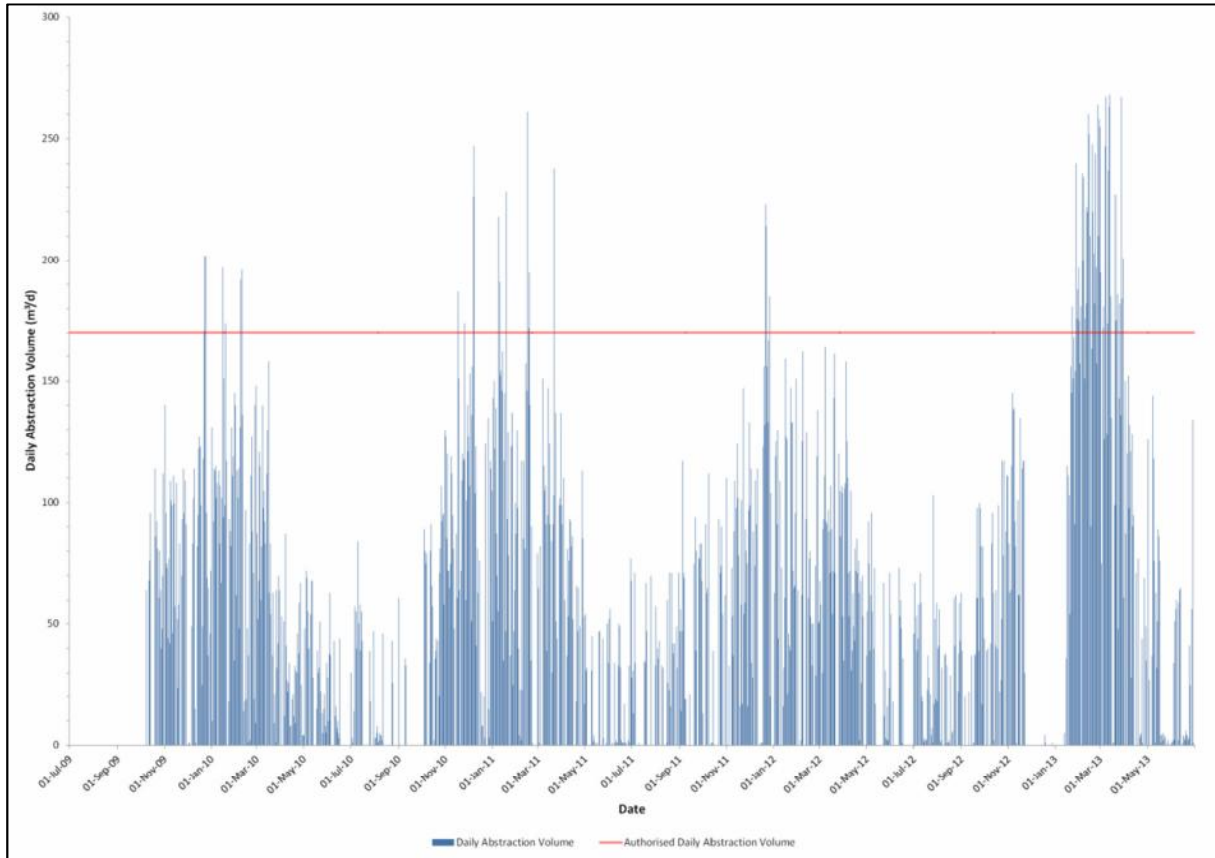


Figure 2 Daily abstraction volumes under consent 7470-1 (2009-2013)

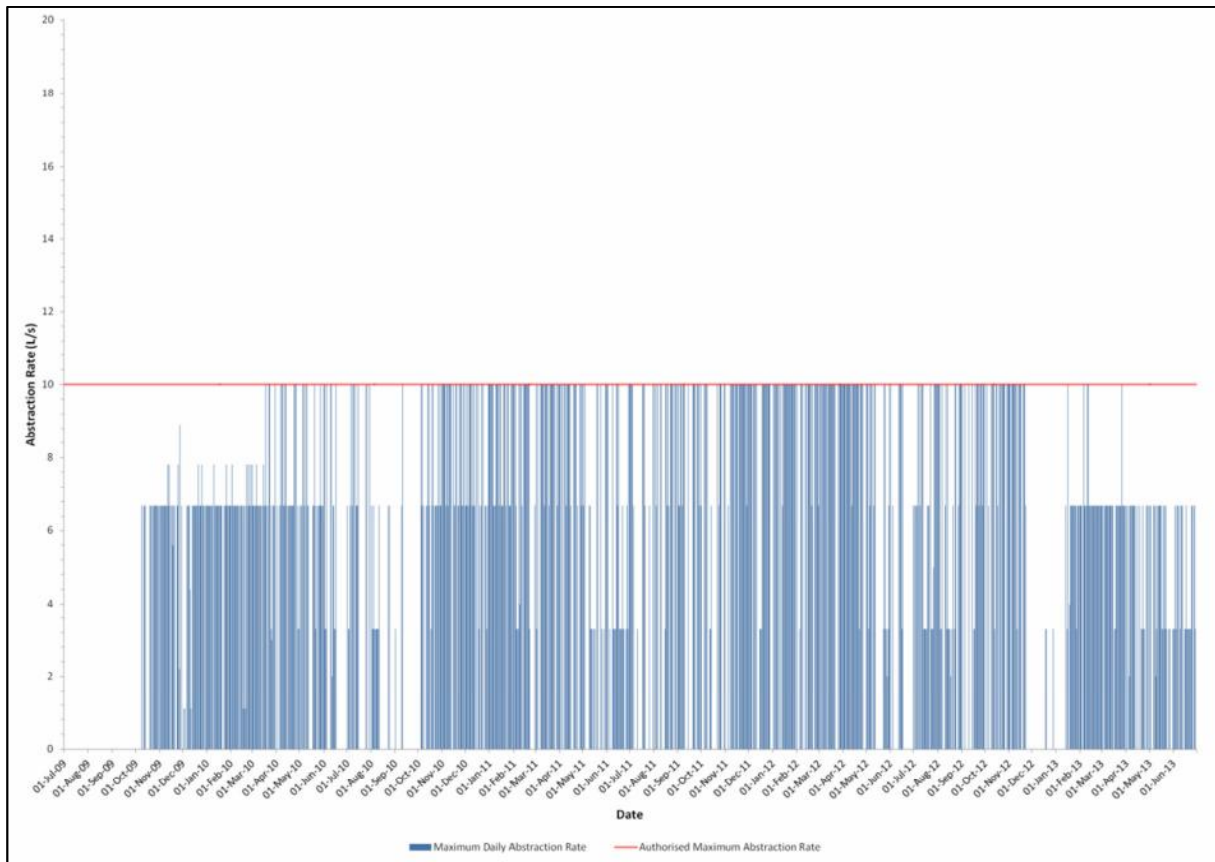


Figure 3 Maximum daily abstraction rate under consent 7470-1 (2009-2013)

2.3 Results of groundwater level monitoring

Electronic records of the water level in GND2102 are available for the period under review. There are some gaps in data record where logger memory capacity has been exceeded before being downloaded. The water level data obtained from GND2102 is plotted in Figure 4. The data is presented with the production bore abstraction data and daily rainfall values taken from the Council's Mangorei rainfall station, located approximately 3.5 km south of the site.

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 drawdown occurring within the bore as a result of the abstraction from the production bore.

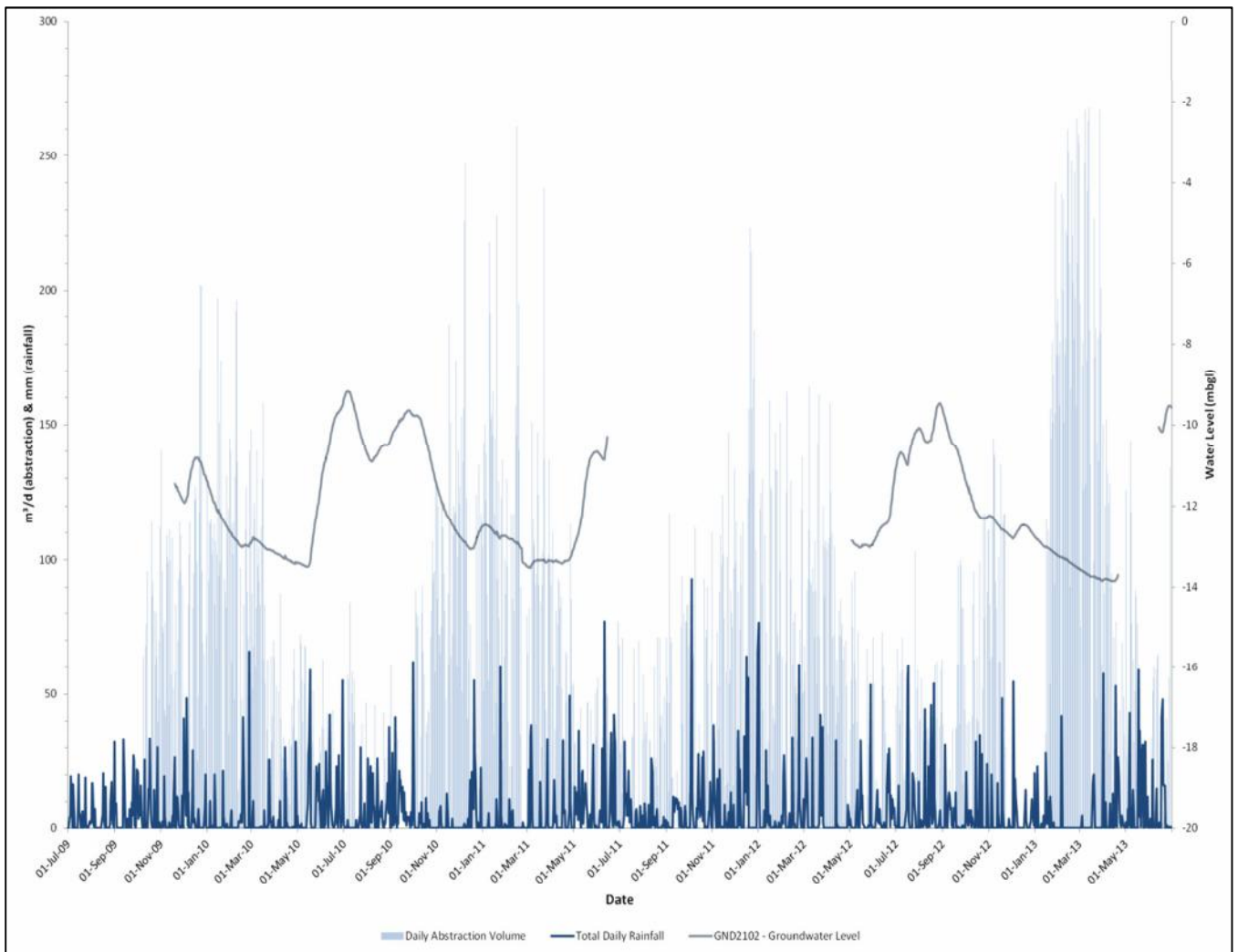


Figure 4 Observed water level in GND2102 (2009-2013)

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 e.g. 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 Unauthorised Incident Register (UIR) 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).

An incident was entered into the Council's UIR in August 2013 for consent non-compliances in relation to consent 7470-1. The non-compliances identified related to the exceedance of the maximum abstraction volume authorised by consent 7470-1.

During the analysis of abstraction data by Council Officers during June 2013, it was found that the authorised abstraction limit of 170 m³/d had been exceeded on numerous occasions between January and March 2013.

The Taranaki Racing Club was subsequently issued an Abatement Notice requesting them to take all steps necessary to comply with all conditions of consent 7470-1.

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 the volume of groundwater discharge into local surface water features.

The potential effects of the abstraction authorised by consent 7470-1 were thoroughly assessed during the processing of the consent application. Analysis of the pump test data suggests 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, as the aquifer is vertically confined from other water bearing formations. There are no other groundwater abstractions located within 3,000 m of the production bore, and 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 therefore 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 thoroughly 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 water level within GND2102 increased 0.6 m from 13.5 mbgl to 12.9 mbgl as a result of rainfall recharge during the test period. The results of the pump testing carried out, and monitoring of water 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.

The monitoring programme implemented by the Council in respect of consent 7470-1 included a groundwater level monitoring component, designed to allow for the ongoing assessment of the effects of the abstraction on local groundwater levels, and groundwater fed surface water systems.

During the period under review, groundwater levels measured within observation bore GND2102 varied between 9.17 mbgl and 13.13 mbgl. The main factor influencing groundwater level fluctuations in GND2102 is rainfall recharge volumes, with water levels displaying seasonal trends. The seasonal variation of 4.68m observed within GND2102 is typical of shallow bores screened within the Volcanics Formation. A long-term record of groundwater level is available for GND0508, located on Carrington Road, New Plymouth. GND0508 is 14 m in depth and is screened within the Volcanics Formation. Monitoring records for GND0508 indicate seasonal fluctuations in groundwater levels of up to 4.85 m at this location. The seasonal variation in water levels observed in GND2102 can therefore be considered typical of bores screened in the Volcanics Formation.

Prior to the start of the constant rate test in May 2009, the static water level in observation bore GND2102 was 12.9 mbgl. Groundwater level data gathered as part of the Council's monitoring programme indicates an average groundwater level of 13.0 mbgl during May 2010, 11.7 mbgl during May 2011, and 13.0 mbgl during May 2012. This data indicates that groundwater levels have remained relatively stable over the period under review, and there is no evidence of any long term reduction in shallow groundwater levels as a result of the authorised abstraction.

In summary, water level monitoring data gathered by the Council does not indicate any reduction in shallow groundwater levels as a result of the abstraction authorised by consent 7470-1. As such, the potential for adverse effects on downgradient surface water systems as a result of the abstraction is deemed negligible.

3.2 Evaluation of performance

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

Table 2 Summary of performance for Consent 7470-1 to take and use groundwater from a bore for watering of racing tracks and general purposes at the Taranaki Racing Club

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Limits of discharge rates and volumes	Monitoring of take and data review	No
2. Installation of water meter and datalogger	Inspection	Yes
3. Bore label to be attached	Inspection	Yes
4. Continuous record of water level to be maintained in observation bores GND2102 and GND2103	Inspection and assessment of monitoring data	Yes
5. Observation bore GND2104 to be accessible for NPDC staff	Inspection	Yes
6. Data collected accordance with special conditions 2 & 4 to be submitted to NPDC	Notification of data received from NPDC	No*
7. All electronic records to be made available to the Chief Executive, Taranaki Regional Council	Receipt of electronic data at required frequency and in correct format	Yes
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	Next option to review in June 2014	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		Improvement desirable

* Data available on request

An improvement in the Company's environmental performance is desirable.

Taranaki Racing Club's environmental performance had been downgraded due to the issuing of an Abatement Notice in relation to consent non-compliance during the period under review. The non-compliance related to the exceedance of the maximum abstraction volume authorised by consent 7470-1 on numerous occasions between January and March 2013.

3.3 Alterations to monitoring programmes for 2013-2014

In designing and implementing the monitoring programmes for air/water discharges in the region, the Taranaki Regional Council has taken into account the extent of information made available by previous authorities, its relevance under the Resource Management Act, the obligations of the Act in terms of monitoring emissions/discharges and effects, and subsequently 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 emitting to the atmosphere/discharging to the environment.

It is proposed that the current level of monitoring be continued during the forthcoming 2013-2014 period. A recommendation to this effect is attached to this report.

3.4 Exercise of optional review of consent

Resource consent 7470-1 provides for an optional review of the consent in June 2014.

Based on the results of monitoring in the period under review, it is considered that there are no grounds that require a review to be pursued or grounds to exercise the review option.

A recommendation to this effect is presented in Section 4 of this report.

4. Recommendations

1. THAT monitoring of consent 7470-1 in the 2013-2014 year continues at the same level as in the 2009-2013 period.
2. THAT the consent holder ensures that they limit their daily abstraction volume to that authorised by consent 7470-1 (170 m³/d).
3. THAT the telemetry system being trialled at the site is installed permanently during the forthcoming monitoring period. This will enable abstraction data to be monitored in real-time by both the Council and the consent holder, allowing potential non-compliance issues to be identified and avoided.
4. THAT the optional review of consent 7470-1 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.

Glossary of common terms and abbreviations

The following abbreviations and terms are used within this report:

Drawdown Incident	A lowering of the water level in a reservoir or other body of water 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
l/s	litres per second
m ³ /d	cubic metres per day
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	An pump test (or a 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
UI	Unauthorised Incident
UIR	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

Bibliography and references

- BECA (2009): Taranaki Racing Club Groundwater Well. Technical Report. TRC doc.621284
- 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 (2009): Officers Report – Consent Application 7470-1. TRC doc. 621297

Appendix I

Resource consent held by Taranaki Racing Club



CHIEF EXECUTIVE
PRIVATE BAG 713
47 CLOTEN ROAD
STRATFORD
NEW ZEALAND
PHONE: 06-765 7127
FAX: 06-765 5097
www.trc.govt.nz

Please quote our file number
on all correspondence

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 Racing Club
P O Box 453
NEW PLYMOUTH 4340

Consent 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 Racing
Club at or about (NZTM) 1693946E-5675085N

Expiry Date: 1 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, New Plymouth

Legal Description: Pt Lot 1 DP 9521

Catchment: Te Henui

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

General conditions

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

Special conditions


1. The volume of groundwater taken shall not exceed 170 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. The water meter and a datalogger shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of $\pm 5\%$.
3. 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.
4. 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 kept for the first year of the exercise of the consent. 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.
5. Observation borehole GND2104 [the Council-PMB3] shall be kept accessible for New Plymouth District Council to monitor for the first year that this consent is exercised.
6. Water level data collected in accordance with condition 4 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.
7. The consent holder shall make available electronic records of water taken to the Council at a frequency and in a format to be advised by the Chief Executive, Taranaki Regional Council.

- Consent 7470-1
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 20 August 2009

For and on behalf of
Taranaki Regional Council



Director-Resource Management

