



STAFF REPORT

TO: Environment & Planning Subcommittee

FROM: Mr N Tyson - Consent Planner, Water
Mr G Stevens - Resource Scientist, Water and Land
Mr J Thomas - Resource Scientist, Water

REFERENCE: RM060861, RM071024, RM071025 and RM071026

SUBJECT: **A N AND M D BAIGENT – REPORT EP08/02/01** - Report prepared for the meeting of 7 April 2008

1. APPLICATION

The applicant (A N and M D Baigent) have applied for various consents as follows:

Land Use Consent (Application RM060861)

To undertake the following activities:

- Land disturbance, quarrying and land use relating to the excavation of up to 70,000 cubic metres (solid) of earth and gravel.
- Retrospective land use consent (bore permit) to construct, by deepening, a new lower intake to accommodate a new hole depth.

Land Use Consent (Application RM071141)

To undertake excavation works within a watercourse, and also the use of the bed of a watercourse by the presence of dam structures.

Water Permit (Application RM071024)

To dam up to 136,283 cubic metres of water behind two existing dam structures (Dam ID numbers 260 and 233) in the Reservoir Zone, Waimea Plains. If granted, this water permit would replace existing water permit NN000212.

Water Permit (Application RM071025)

To take in the order of 100 litres per second of water from an unnamed tributary of the Wairoa River (locally referred to as “Catchment A Stream”) during high flow conditions when the neighbouring downstream dam (Dam ID 232) is “overflowing”. The water that is taken under these conditions will be directed to the enlarged dams (Dam ID 260 and 233) described above (Application RM071024). If granted, this water permit would replace existing water permit NN000391.

Water Permit (Application RM071026)

To take water stored behind two dam structures (Dam ID numbers 260 and 233) and to use the water for irrigation of up to 38 hectares of land. If granted, this water permit would replace existing water permit NN000211.

Comment

The application location is River Terrace Road, Brightwater and relates to land described as Lot 3 DP 342068 (excavation, dam structures, taking of water, and damming of water), Lots 1, 2, and 3 DP 340268 and Lots 1 and 2 DP 301998 (Irrigation).

The application states they (Baigents) are applying for a change of conditions of existing water permits NN000391, NN000212 and NN000211. It is stated that the various water permits applied for, if granted, would replace the existing water permits. The applicant (A N and M D Baigent) are referred to as "Baigents" for the remainder of this report.

2. SUBMISSIONS

There are a total of 131 submissions to the Baigents applications with two in opposition, three neutral or in conditional support, and the remaining 126 are in support.

Two submissions were received one day late, from Stuart M Walters and Antoinette M Walters (ie submissions #130 and 131) and the Committee will need to decide whether to accept these and grant a waiver and extension of time limits under Section 37 of the Act. Neither submitter wishes to be heard and both are in support of the application being granted. Neither submitter raises reasons for their support that are not covered in other supporting submissions.

In Support

The bulk of the submissions are in support. Many of these have similar reasons for their support, which are summarised below:

- Support any form of water storage, storing water that would otherwise run to the sea and to utilise that water for summer irrigation; and
- harvesting during winter and high flow will have very little effect on the environment; and
- may/will help with localised flooding including around Brightwater, the saleyards and the school; and
- reduced flooding will reduce the health risks associated with contaminated flood water
- developing their land asset to be more productive, which will benefit both the local and national economy; and
- improved water availability for fire-fighting; and

- Council needs to be supportive of the farming community; and
- The benefits far outweigh any downfalls, and is sustainable; and
- Because it (the application) is all common sense; and
- Gravel extraction (as proposed) negates the need for extraction from local rivers.
- Waimea East Company Co chair Kit Maling considers the application similar to that proposed by Council for the Lee Valley.
- The right of the landowner to choose for themselves the best productive use of their land.

Submitter Tim Scott of Nelson is supportive because he states "...water is a valuable resource and needs to be stored in properly designed areas .." and, ".....as I see it this is a properly designed programme for the retention of water...".

A number of submitters state they purchase baleage that Baigents produce, and they support this application as it will assist increased production.

Fish and Game Nelson-Marlborough advise they are satisfied the proposed enlarged holes are unlikely to have any adverse effects on the summer low flow of the Wairoa/Waimea River or on groundwater and that they support the application.

Neutral or Conditional Support

The following submissions were neutral or stated conditional support:

- Waimea Water User Committee chair Murray King states he supports water storage provided there is no effect on summer groundwater levels of the Reservoir Zone; and
- Peter John Broadhead supports granting of consent subject to conditions to ensure no adverse effects upon the water supply existing at present to other landowners; and
- Maldon Trust C/- Malcolm Irvine is neutral as he believes the application will have no effect on the Upper Confined aquifer and their use of water.

In Opposition

A summary of the two submissions in opposition follows:

- (i) **Mt Heslington Downs Ltd** give the following reasons for their opposition:
1. Does not think these applications should be heard ahead of the Environment Court decision on the Review of Conditions undertaken by Council regarding the various consents held by the Baigents, Appletons and Seifrieds relating to the Mt Heslington water resource.
 2. This application should be dealt with in conjunction with the water sharing agreement between the three parties.

3. The submitter wishes to preserve its position and protect the water available to it.

(ii) **Weingut Seifrieds Ltd** gives the following reasons for their opposition

- (a) Neither hole 260 nor 233 is effectively sealed; and neither is proposed to be effectively sealed. Sustainable harvesting and storage of water requires that the holes be effectively sealed.
- (b) Water take is from Reservoir Zone (not from a dam) and therefore is a non-complying activity under TRMP Rule 31.1.6A

It is evident that a substantial portion of the water in the current holes (and the proposed deepened holes) will be derived from groundwater and this is from the Reservoir Zone.

- (c) The proposed deepening will probably have a detrimental effect on the storage capacity of Seifrieds 232

Cross-sections D and E of the Taylor's Plans in the supporting documentation shows excavations of 4 to 8 metres (rather than the 2 to 3 metres shown in Section 2 of the PDP Report) and, as the bottom of holes 260 and 233 will be approximately 5 metres deeper than the Seifrieds 232, there will at times be a much greater driving head (or hydraulic gradient) between the two holes: meaning that the pressure for leakage (from Seifrieds 232 to Baigents 233) will be much greater.

- (d) Baigents holes 233 and 260 would benefit unduly from freshes in Catchment B : at the expense of Seifrieds 262 and 232

If the present Application is consented to, a fresh will (theoretically) have to exceed 136,000 cubic metres before water overtops Dam 233 and starts filling Seifrieds 232.

- (e) Precedent

If consent be given to the present Application, the likely consequence is that others in not dissimilar physical situations will apply to dig holes so as to intercept groundwater but evading (or avoiding) the regulations relating to bores; and to the detriment of recharging of the relevant aquifers.

- (f) Dust, Noise, and Disturbance from Gravel Extraction

The removal of approximately 70,000 cubic metres is likely to be prolonged and (assuming 10 cubic metres per truck) will require 7,000 truck movements to and along River Terrace, and thence elsewhere over the local roading system to an unstipulated unloading site. The effect (of dust, noise and disturbance) on the Seifrieds, residents of River Terrace, and residents adjacent to the unloading site, will be substantial and negative.

If consent is granted, Seifrieds wish the Council to impose the following conditions:

(g) Replace Proposed Conditions thus:

5. If during the course of excavation and works authorised by this consent the consent holder becomes aware that the works were causing a lowering of water storage level in the downstream Dam 232, or if the owner on the land on which Dam 232 is situated considers that the works have caused (or is causing) a reduction of water storage in Dam 232 and shall have advised Tasman District Council of the same, then the consent holder shall cease works immediately and inform the Council's Consent Planner - Water.

For the remainder of this report, Weingut Seifrieds Ltd is referred to a "Seifrieds" and Mt Heslington Downs Ltd as "Appletons".

Written Approval

The Baigents have not provided any written approvals.

3. PROPOSAL

The Baigents proposal involves excavating 70,000 cubic metres of solid gravels and earth to increase the volume of their existing holes by 64,000 cubic metres to a proposed 136,000 cubic metres behind two existing dam structures (Dam ID numbers 260 and 233) in the Reservoir Zone, Waimea Plains. In this report, the various stated dam numbers refer to the dam and also to the pond or hole immediately upstream of that dam, which may or not be filled with water.

The Baigents expect to refill their two enlarged holes each year from groundwater recharge. The location of the holes mean they also dam any surface flow from Catchment B (see attached aerial photo). Baigents are also applying to take 100 litres per second of water to their holes from the Mt Heslington Stream "Catchment A". However, only during high flow conditions and only if Seifrieds's dam (Dam ID 232) immediately downstream of the Baigents, is "overflowing".

Baigents propose to irrigate up to 38 hectares of pasture and crops on land both owned and leased by them, from holes 260 and 233.

If the proposal is granted, Baigents state they agree to the replacement of their existing water permits including NN000391, which currently allocate them priority to the summer flow of Catchment A. Granting this proposal will largely remove Baigents from the current water sharing agreement involving both Seifrieds and Appletons regarding Catchment A (ie except for times above 100 litres per second and when Dam ID 232 is overflowing).

While it is not stated, if the Baigents proposal is approved, applications would be needed from both Seifrieds and Appletons to change their various consents and various dates and times etc that restrict their exercising. These consents are in Appendix 1. It is also not stated but assumed, that Baigents would no longer consider themselves an "affected party" regarding these follow-up consent changes by Seifrieds and Appletons with regards to Catchment A.

Baigents volunteer both restricting excavations and other conditions to avoid, remedy and or mitigate against potential adverse effects and various of these are summarised as:

- *The excavations shall not be extended west towards Seifrieds's hole 232 nor shall they be deepened except to the extent of the Taylor's plans ie hole 233 will be widened but (only) to the depth of the existing hole 233 at the Seifrieds end.*
- *If excavation and works by Baigents are causing a lowering of water storage level in the Seifrieds hole(s) then they shall cease works immediately and advise the Council.*
- *Water level monitoring will take place on hole 233, 232 and Bore A when excavation works are undertaken to deepen hole 233. Measurements should be made at least once a week during excavations and reported to the TDC at twice-monthly intervals. Should the monitoring demonstrate a loss of water from hole 232 as a result of the deepening of hole 233, then the consent holder shall supply the owner of hole 232 with an irrigation supply from water that is available in hole 233 to make up any shortfall that has been created.*

Note: The attached aerial photo (Appendix 4) shows the three monitoring bores drilled by the applicant to investigate the groundwater system. Because the numbering system in the PDP report is different therefore:

Bore A = WWD 1452.1 (is between the hole 233 and 232)
Bore B = WWD 1452.2 (is in the paddock beside hole 260)
Bore C = WWD 1452.3

Baigents advise they have spent approximately \$100,000 compacting adjacent to the existing holes including removal and re-laying of a strip varying between 12 and 30 metres wide on the down hill (northern) side of the holes to a depth of eight metres. Material has reportedly been returned in layers, each layer being compacted, and finally a bund has been created along the down hill side to ensure that even in flood, water is directed into Seifrieds's top hole. In the Baigents opinion, this work means both dams are now reasonably sealed so that any loss to ground is minimal. Baigents state they will continue to add bentonite slurry to assist in preventing leakage. To further enhance the limited permeability of the ground, and to ensure that there is no impact, various conditions are proposed.

- *First, all material to be removed from the holes will first be washed in the holes thus increasing the amount of silt in the material forming the base and walls and reducing still further the already low permeability of the ground;*
- *Secondly, compaction work will be undertaken in terms of the Taylors Contracting Co Limited plan relating to the same.*

The Baigents assessment is that their dams are reasonably sealed and that any loss to ground is minimal.

4. BACKGROUND

The applicant is one of three parties ie Baigents, Seifrieds and Appletons, involved in the "Mount Heslington North Catchment, Water Sharing Agreement (17 October 2000) a copy of which is Appendix 2. There is considerable history regarding the management and allocation of water use in the Mt Heslington area involving the three parties (and the previous landowners). At the time of the 2000 Agreement, there existed an informal water plan providing policy guidance regarding water allocation. This was the Waimea Catchment Water Management Plan (WCWMP) 1991.

In 2000, Council's understanding of the hydrological setting in the vicinity of both Baigents and Seifrieds's excavated holes (ie Dam ID 233, 232 and 262) was limited. Their various holes were located at the base of a terrace along which ran an ephemeral watercourse. This terrace continues to be the boundary between the Waititi Zone and the Reservoir Zone in the PTRMP. The two main tributaries (see aerial photo) draining the northern slopes of Mt Heslington (Catchment A and B), meet on the Road Reserve between the Baigents and Seifrieds properties. Both holes 233 and 232, were acknowledged in 2000 as receiving recharge from springs. These springs can be seen emerging from the terrace above both these holes and each spring ceased to flow in a typical dry summer.

The focus of the 2000 water sharing agreement is the (surface) flow of the main stream draining Catchment A, which itself goes dry most summers. Under the consents granted in 2000, Baigents are allocated priority access to Catchment A's surface flow during summer. The other focus of the 2000 agreement, is to encourage water harvesting and water storage at times of natural high flows.

As stated in both the 2000 Agreement and their (Baigents) consents, their new upstream hole 260 was required to be sealed before water from Catchment A could be taken to fill it. Baigents hole 233 was considered to be reasonable sealed. The 2000 Agreement expressed considerable doubt that sealing of the new holes was practically achievable but it also recorded that Aaron Baigent was convinced they could be. The 2000 Agreement stated in 3.3.4:

Given the conflict with the Reservoir Zone policies (i.e. WCWMP), the further extension of the Baigents excavated holes below the water table is not supported. However, storage is another matter entirely and the sealing of their existing holes is supported, as is their investigation of any other storage options. If storage options are impractical, Baigents may need to seriously consider diversifying their landuse and growing/irrigating crops more appropriate to their limited water supply.

At no stage have Council staff encouraged or supported the Baigents excavations below the water table.

The various consents granted in 2000 to the three parties were the subject in 2006 of a (Section 128, RMA) Review of Conditions process by the Council. The reason for the review was that various water allocation and compliance issues had arisen relating to both individual consents and between the three parties which could not be resolved around the table.

The Council's decision (February 2007) resolved to change the conditions of the consents and gave the following reasons:

The Committee was satisfied that a review of the conditions of the consents held by the three parties (Baigents, Seifrieds and Appletons) was appropriate and the process was lawful and valid. In the case of Baigents and Seifrieds, there have been various changes including the capacity of the dams and excavated holes and Dam 233 relative to the datum 33.4 metres AMSL. There is now acceptance that the excavated holes are not sealed which for Baigents is a fundamental change from that envisaged in 2000 agreement and the consents. These changes mean it is no longer appropriate or equitable to continue to allocate priority use of stream flow to the Baigents. The Committee considered that the review of consent conditions was a more appropriate action than the possibility of taking enforcement action.

The Committee considered that it was appropriate that conditions be reflective of the actual situation and thus provides certainty to the parties (and the Council) in terms of obligations and limitations.

It is acknowledged that new information has come to hand over time (storage volumes and pumping rates) which demonstrates that the consents do not reflect exactly "what is".

The Committee noted that Seifrieds and Appletons generally accepted the proposed conditions of consent and the revised water sharing arrangement and the Committee was satisfied that the viability of the Baigents farming operation under the reviewed consents would not be undermined.

The Committee noted that in the event of new information becoming available from the investigation of local groundwater systems, the review condition may be used to reduce the rates of take granted to those authorised prior to the January 2007 review.

The Council's decision in February 2007 has been appealed in its entirety to the Environment Court (EC) by the Baigents, and also (in part) by Seifrieds. At the time of writing, the Court's decision (relating to the initial matter of the vires of the review condition and process) has been released and confirms it was proper and valid, and the EC proposes to set down the appeal for a full hearing after the preliminary exchange of evidence. For a fuller background to the reasons for the review of conditions, the reader is referred to the Council's report EP06/11/19.

The applicant lodged the original application RM060861 relating to the current proposal in October 2006. Following a Section 357 Objection hearing, Council confirmed that Baigents were required to provide further information being a supporting report from a recognised groundwater consultant that:

- a) describes and assesses the localised hydro-geological setting and the hydraulic connection between the holes and the surrounding aquifers, with groundwater availability and groundwater flow being the main focus; and
- b) confirms the height of the various structures, water levels, etc are relative to a common *mean sea level datum*;

- c) assesses the interference effects and connection between the current (as-built) holes on the Baigents and Seifrieds properties; and
- d) assesses the likely interference effects between the proposed deepened Baigents holes under RM060861 and the downstream Seifrieds holes, particularly Seifrieds upper hole, and for the range of operating scenarios; and
- e) assesses the extent to which the holes are “sealed” (ie, as a result of compaction of the dam base and the strip of land on the downstream side of the holes); and
- f) assesses the interception/recharge rates and effect of the existing holes and the existing and proposed holes, on groundwater seepage and springs, and on water availability in the Reservoir Zone and the Appleby Gravel Unconfined Aquifer on (1) an annual basis and (2) on the summer months of November to April inclusive;
- g) recommend how any adverse effects may be avoided, remedied or mitigated.

On 2 October 2007, Council received a replacement application from the Baigents that included the requested report from their consultants. Council staff considered that this replacement application was complete (Section 88 of the Act) and it was determined that the effects on the environment of the proposed activity were more than minor and the applications were publicly notified. Submissions closed on 28 January 2008 and, as reported above, 131 submissions were received.

Appletons have submitted that the Council not hear these latest (Baigents) applications ahead of the Environment Court decision (on the Review of Conditions) and that these applications should be dealt with in conjunction with the water sharing agreement between the three parties ie Baigents, Appletons and Seifrieds. The legal issue raised is whether Baigents can apply and Council can hear applications that involve current consents that are themselves subject to decisions which are under appeal.

Council staff (and legal) opinion is that currently all three parties are operating under their existing consents and conditions, until such time as the appeals are resolved. It follows, that Baigents can apply and Council can consider this latest proposal, which involves the same current consents. If any party appeals this Council decision, it will then be for the EC to determine if deferment is appropriate.

Council’s legal advisor is also of the opinion that because the review of conditions relates to physical changes by the Baigents (such as deepening of their holes) then that will constitute the existing environment for the purposes of s 104(1)(a). The fact of the existence of a water sharing agreement and the inter-related water takes is also likely to be relevant under s 104(1)(c).

The existing environment is that the Baigents existing water permits do not authorise the current “as built” environment. Both dams 260 and 233 already exist but only dam 233 is consented under NN000212 along with a storage volume of 16,900 cubic metres, which is significantly different to the 72,500 cubic metres stated as being the as built volume in these two holes.

5. STATUTORY CONSIDERATIONS

5.1 Proposed Tasman Resource Management Plan - Area and Rules Affected

The applicant's site is zoned Rural 1 and is located in Land Disturbance Area 1 and the proposed holes lie within the Reservoir (water management) Zone as identified in the Proposed Tasman Resource Management Plan (PTRMP).

Land use consent (application RM060861) does not comply with the *permitted* activity rule (Rule 18.6.2) with regard to land disturbance and quarrying within Land Disturbance Area 1 in the PTRMP and can be considered as a *restricted discretionary* activity under Rules 18.6.6 PTRMP.

Retrospective land use consent (bore permit) is required to authorise construction, by deepening, of the Baigents intake well, which is to accommodate the proposed new hole depths. The bore intake extends to below the eight metre depth provided for as a *permitted* activity (see Rule 16.12.2) and is also within a floodway and this application can be considered as a *restricted discretionary* activity under Rule 16.12.4 PTRMP.

Water Permit (Application RM071024) is to dam up to 136,283 cubic metres of water behind the two existing dam structures (Dam ID numbers 260 and 233) and can be considered as a *restricted discretionary* activity under Rule 31.2.3 PTRMP.

Water permit applications RM071025 and RM071026 both exceed the permitted activity rates of taking under Rule 31.1.2 PTRMP. For RM071025, the taking of 100 litres per second during high flow conditions can be considered as a *restricted discretionary* activity under Rule 31.1.6 PTRMP provided the taking is outside the months November to April inclusive. During the other (summer) months, the activity must be considered as *non-complying* under Rule 31.1.6A PTRMP.

Regarding RM071026 and the proposed increased take and irrigation from the proposed enlarged holes, the writer's assessment is that it is a *non-complying* activity under Rule 31.1.6A PTRMP. The reasons for this assessment are discussed in detail later in this report. The main reason is that the holes are located in the Reservoir Zone and are unsealed and excavated below the water table. The holes receive groundwater recharge during the months November to April inclusive and cannot therefore be considered to be storage, rather it involves increased taking and use of groundwater.

Land use consent (application RM071141) relating to the proposed excavation works within a watercourse, and also the use of the bed of a watercourse by the presence of dam structures is a fully *discretionary* activity under Section 13 of the Act.

As a *non-complying* activity under s 104 B of the Act, the Committee can grant or refuse the applications. Under s 104 D, if granting the applications the Committee must be satisfied that either:

- (i) the adverse effects are minor; or
- (ii) the activity is not contrary to the objectives and policies in the PTRMP.

5.2 Relevant Statutory Provisions

In considering the applications, the Committee is required to have regard to the matters outlined in Section 104 of the Act. The Council shall therefore have regard to the relevant provisions of the following planning documents:

- (a) the Tasman Regional Policy Statement (TRPS); and
- (b) the proposed Tasman Resource Management Plan (PTRMP).

Most of the objectives and policies contained within the TRPS are mirrored in the PTRMP and the activity needs to be consistent with the relevant objectives and policies contained in Chapters 30 and 31 of the PTRMP. Insofar as Rural 1 zoning, the activity of quarrying also requires an assessment of the loss of productive land. The proposed activity largely involves deepening existing holes but it is considered that precedent issues requires an assessment of the loss of Rural 1.

5.3 Relevant Policy and Objectives

The Baigents proposal must be consistent with the following policies and objectives which are extracted from Chapter 30 of the PTRMP:

For groundwater, potential adverse effects which may limit the sustainable use of the aquifers include reduced water yields because of excessive watertable drawdowns, seawater intrusion, aquifer compression, excessive induced seepage from connected surface waters, and changes in groundwater recharge or quality because of land use practices. Investigations and continued monitoring into groundwater and associated hydrological systems are essential so that sustainable allocation limits can be established and refined. Council sets limits for groundwater by establishing minimum water levels and associated pumping regimes, maximum allocatable volumes or yield rates, and minimum bore spacings.

Previous experiences in water allocation in the District have indicated the difficulties facing communities and the Council when over-allocation has caused local resources to go dry or be reduced to unsustainable levels.

There are several activities that may reduce the amount of water or alter natural flow regimes and cause adverse effects on the uses and values of the water body. The activities are:

- *Taking water from water bodies.*
- *Changes in land use, particularly establishment of tall vegetation.*
- *Reductions in bed levels by gravel extraction from riverbeds.*
- *Dams for hydro-electric power generation or for water storage or water harvesting.*
- *Diversion of water from a water body,*

A revision of water resource data for the Waimea Plains shows that, as the river flows drop, the connection between river flows and groundwater is much more critical than previously modelled. There is significantly more water flowing from the river to groundwater during low flow conditions. It is now evident that there is much less water available to:

- *meet allocation limits to a desirable security of supply,*
- *maintain minimum flows to protect instream values of the Waimea River,*
- *prevent seawater intrusion,*
- *maintain coastal spring flows,*

in the Waimea Plains water management zones (excluding the Wai-iti and Wai-iti Dam Service zones) than previously understood.

Damming Water

Dams are valuable for augmenting water supplies in water short areas, and they frequently provide new or enhanced aquatic habitats. However, dams can alter the hydrological regime of a river by stopping flows during dry periods, preventing natural variations in flow and velocity

Gravel extraction

Gravel extraction may change the shape of a riverbed and affect water flow and quality, groundwater recharge, velocity, and the amount of aquatic habitat

The adverse effects of gravel extraction from the Wai-iti River on water availability from adjacent aquifers are well documented.

This part of the Plan deals with the effects of gravel extraction on the quantity of water in rivers and in adjacent aquifers. Part IV (yet to come) will consider the effects on river channels, instream habitats and other values, and may continue regulation of this activity

Competing Water Demands

The Council must balance the need for water by individual water users with the need to ensure that all water users have an acceptable security of supply and are not subject to an unreasonable level of rationing during low-flow periods. In achieving equitable water allocation between these competing water users, the Council seeks the efficient use of water. It also seeks to ensure equitable allocation of water between present and potential water users.

Water Body Management Policies include:

- 30.1.4 *To establish the sustainable yield of aquifers taking into account:*
- (a) *depletion of aquifer yields;*
 - (e) *potential for excessive drawdown of groundwater levels;*
 - (f) *presence and significance of living organisms naturally occurring in the aquifer;*

(g) effect of land use activities on recharge of the aquifer;

to avoid:

- (i) long term aquifer depletion;*
- (ii) drying up of surface waters;*
- (iii) compression of the aquifer;*
- (iv) irreversible seawater contamination of the aquifer;*
- (v) over-allocation of water from the aquifer.*

30.1.6 To ensure that the water allocation limits take into account effects of other activities and events on availability or yield of water, including:

- (a) potential water yield reduction effects arising from land cover changes such as changes to tall vegetation or urbanisation;*
- (b) climate change including changes to drought frequency*
- (c) effects of dams and other water augmentation or storage schemes;*
- (d) effects of gravel extraction*

Water Takes

30.1.7 To manage the allocation of water taken from water bodies so that the cumulative effect of water takes does not exceed;

- (a) the stated flow or water level regime*
- (b) any allocation limit for that water body;*
- (c) the sustainable yield of the aquifer;*

provided that harvesting water during times of high flow may be considered, if adverse effects can be avoided, remedied or mitigated.

30.1.15 In times of low flows, to use rationing regimes, including rostering, as mechanisms to avoid, remedy or mitigate the adverse effects of water takes

Gravel Extraction

30.1.16 To avoid, remedy or mitigate adverse effects on the uses and values of the water body from the extraction of gravel from riverbeds, taking into account adverse effects on:

- (a) groundwater levels and water yields in adjacent aquifers;*
- (b) the flow regime of the river;*

to avoid reducing the:

- (i) desirable security of supply of existing water users;*
- (ii) diversity and abundance of aquatic organisms*

- 30.1.17 *To avoid, remedy or mitigate the adverse effects of water damming either by itself or cumulatively with other dams, including adverse effects on:*
- (c) *other water users;*
 - (f) *groundwater recharge;*

30.1.30 *To avoid, remedy or mitigate the adverse effects of taking water in the Upper Catchment, Reservoir, Waimea West, Golden Hills, Delta and Upper Confined Aquifer zones by:*

(a) *declining any new resource consent application to take water, except where water is taken at times of high flow;*

- (b) *declining any application for site-to-site transfer of water permits or parts of water permits in circumstances that result in an increase in irrigated areas;*
- (c) *reducing allocations of water wherever possible;*
- (d) *co-ordinating and supporting development of a water augmentation scheme;*

and to review this management regime when an augmentation scheme is in operation or within 10 years of these provisions becoming operative.

- 30.1.31 *To mitigate adverse effects of droughts on instream values and water users by adopting a drought management regime for any takes of water from the Reservoir, Waimea West, Golden Hills, Delta and Upper Confined Aquifer zones that:*

- (a) *maintains flows in the Waimea River at times when river flows are declining to avoid risk of seawater intrusion and to maintain flows in Pearl Creek;*
- (b) *manages the decision to impose rationing and management of progressive rationing steps in consultation with the Dry Weather Task Force;*
- (c) *imposes rationing steps in these zones at the same time;*
- (d) *makes most efficient use of abstracted water according to established priority*

- 30.2.6 *In water management zones where there is no water available for allocation, to establish waiting lists to guide the re-allocation of any water that may become available in that zone.*

Security of Supply

- 30.2.15 *To encourage taking of water for storage during high flow and to acknowledge that some water users can improve their security of supply above the minimum level through the storage or augmentation of water.*

5.4 Definitions

The definition of “storage” contained in Chapter 2 PTRMP concerns the storage of hazardous substances and not water. The word “sealed”, in the context of “sealed storage” is also not defined. On Pg 5 of the 2000 Agreement, “stored” water with regards to excavated holes is when “..the water level in the hole will not rise (ie will not recover) once pumping stops.” and “holes that receive significant groundwater recharge, particularly in summer, are better described as “seepage” holes ..” or bores.

From Chapter 2 PTRMP:

Bore – means any pipe, cylinder, or hole inserted or drilled into the ground to access or investigate any natural resource, including water, oil or minerals, and including geological and geotechnical investigations; and includes a well or an infiltration gallery

The Baigents holes access the local groundwater and in some respects fit the definition of a “bore”. However, a typical bore e.g an 8 metre deep, 1000mm diameter well in the Wai-iti Zone, has a storage volume being that part which is below the water table. In contrast to a typical well or bore, Baigents have excavated a significant volume (approx 70,000 cubic metres) of solid gravel and earth below the water table. The Baigents have created “storage” to the extent that solid material has been removed below the water table.

5.5 Assessment of Policies and Objectives

Prior to the PTRMP Variation 52 (1/07), Council had a stated allocation limit of 826 litres per second for the Reservoir Zone. This allocation limit applied to both groundwater (ie Appleby Gravels Unconfined Aquifer (AGUA)) and the Wairoa River, within the Reservoir Zone boundary stated in the PTRMP. The available allocation has been fully-allocated since the early 1980’s under existing consents and no new allocations have been granted in this (Reservoir) zone since then. Furthermore, Council has established a waiting list to guide the re-allocation of any water and there are some 18 names on the Reservoir Zone list including nearby Waimea Saleyards and Seifrieds. Given this, it would be both inconsistent and contrary to Council policy and practise to grant any party new or increased access to the available water resource particularly during the summer months, with the Reservoir or Wai-iti Zones. Note: The “currency” of the 18 names has not been reviewed or confirmed in recent years.

Furthermore, 30.1.30 PTRMP states that Council shall decline new resource consent applications to take water in the Reservoir Zone during the months of November to April inclusive. The only possible exceptions are where water is taken at times of high flow or the take is from storage (see Fig 31.1E).

For the Baigents applications to be granted, they therefore need to demonstrate that the enlarged holes and the proposed increased water take will have no more than minor adverse effect on either groundwater or surface water availability in the Reservoir Zone particularly during the months of November to April.

6. ASSESSMENT

6.1 Principal Issues (Actual and Potential Effects on the Environment)

The principal issue(s) associated with the proposed activities involve:

- (a) whether the existing holes 260 and 233 are sealed and whether the proposed enlarged holes are likely to be sealed, and to what extent the holes store water; and
- (b) quantification of the rate(s) of groundwater recharge to both the existing and proposed enlarged holes during the summer months ie November to April inclusive and the source of this recharge; and
- (c) whether Baigents are entitled to take increased rates of groundwater during summer; and
- (d) assessment of the risks to other water user's security of supply including, but not limited to, any risk to Seifrieds 232 and avoiding, remedying or mitigating detrimental effects on the operation, use and storage capacity of Seifrieds 232; and
- (e) any precedent effect for others in similar physical situations to dig holes for both gravel extraction and intercepting groundwater within Rural A and in water short water management zones; and
- (f) any dust, noise, and disturbance from gravel extraction and term of consent.

The technical issues are assessed in the technical report from Glenn Stevens at Appendix 3.

6.2 Additional Technical information

6.2.1 Review of Catchment Hydrology

In the 2000 Agreement, Council Scientist - Water (Joseph Thomas), estimated the likely run-off from Catchments A and B that was available for storage. Baigents consultant *Envirolink Ltd* reviewed this data in their report dated 22 May 2007 (revised copy dated 16 June 2007) and a comparison of the two sets of data are in Table 6 below:

Table 6

Catchment	Dry Year (m ³ /year)		Average Year (m ³ /year)		Name	Proposed (m ³)
	TDC	Enviro	TDC	Enviro		
A	404,000	153,920	603,000	252,800	Appletons	60,500
B	278,000	105,820	415,000	173,672	Baigents	136,000
					Seifrieds	161,200
Total	682,000	259,740	1,018,000	426,472		357,700

From Table 6, the Council's 2000 data is significantly different to Envirolink. The Envirolink data shows a dry year scenario with a significant shortfall in available water to fill storage, but that the proposed storage is filled in an average year. The dry year deficit (357,700 – 259,740) is 98,000 cubic metres. However, Envirolink

conclude by stating that their own data may be incorrect with regards to small catchments such as Mt Heslington. In their opinion, surface runoff for dam filling is more closely related to short duration high intensity rain events. Ground conditions prior to the rain event is also a factor affecting runoff.

That there is less available runoff than estimated by Council in 2000 appears evident from the 2007 calendar year with an annual rainfall (ie Wairoa @ Irvines) of 700.5mm. The writer's understanding is that the Baigents holes 233 and 260 filled slowly through the 2007 winter almost entirely from groundwater recharge. Their early summer irrigation was also refilled from recharge. There was no overflow from Catchment B to Seifrieds.

For Seifrieds and Appletons during 2007, together they harvested all available flow from Catchment A and there was no overflow of the Seifrieds Dam 232. Seifrieds began pumping to storage on 5th June 2007, and meter records show they had harvested 41,900 cubic metres by 10th October 2007 and they finished on 29 October with a total of 62,597 cubic metres pumped to storage. During this same period, Appletons harvested an estimated 35-40,000 cubic metres. For Seifrieds and Appletons this is a combined total of 112,000 cubic metres for the winter months until approximately 29 October 2007.

It appears that 2007 was a dry year particularly for the Eastern Hills. It also appears that Catchment A runoff was less than even Envirolink's dry year runoff estimate of 153,920 cubic metres. As a consequence, Seifrieds entered summer with their Dam 239 significantly below its practical full level. Furthermore, the 62,597 cubic metres pumped to storage was only 60% of the amount they used the previous summer ie 2006/07.

The Baigents state (#25 in their AEE) they are satisfied from observations (and their investigations) over the last four years, that the very high water flows available from May to September inclusive through surface flooding, spring recharge and the Mount Heslington stream, are sufficient to allow all three parties to obtain sufficient water for storage. In the writer's opinion, the experience of the 2007 year does not support the Baigents conclusion and raises a new concern when coupled with the proposed demand for water.

6.2.2 Surface Flow and Losses

Various stream works that have lead the surface flows of both Catchment A and B to go underground. When Appletons bought at Mt Heslington they undertook various works in the streambed draining Catchment A where it runs adjacent to the road reserve, such as installing new culverts, cleaning it out etc. Unintentionally, an adverse effect of this work was to make the streambed leaky to the extent that the stream flow disappeared into the ground and it was dry at Baigents intake during the critical low flow period. Various repairs and treatment with bentonite now appear to have rectified this to the extent that the stream bed is again reasonably sealed.

Baigents state in their AEE (see #19) that there is no existing unnamed stream in Catchment B. Baigents state that the upstream neighbour created a ditch (because of flooding problems on his property) that connects to the Baigents property but no water has run in that ditch for three years. The writer's understanding and observation is that field tiles also laid on the upstream property mean that the

unnamed stream now mostly exists as underground flow, from where it enters the Hosie property. A photo is available of this unnamed stream entering the Hosie property on 10th October 2007. While surface flow from Catchment B may be rare, the location, configuration and depth of the Baigents holes mean that they are likely to be capturing this now underground flow.

It follows that if a neighbour upstream of Baigents construct a hole they would in turn intercept all or part of this water flow before it reached the Baigents as has already been done on the Eder property.

6.2.3 Water Demand

The following tables list the three party's current and future water demand for three years. The tables are to demonstrate how demand has changed over the years since the 2000 water sharing agreement shown in Table 1:

Table 1 – (2000) Current and Future Water Demand

Name	Current Storage (cubic metres)	Proposed Storage (cubic metres)
Seifrieds	6,000	136,000 (6,000 + 130,000)
Baigents	16,900	44,500
Appletons	50,500	86,500 (50,500 + 36,000)
TOTALS	73,400	280,500

Council's draft revised water sharing agreement (2 May 2005) updated the three party's current (ie 2005) and future water demand, and this is shown in Table 2:

Table 2- (2005) Current and Future Water Demand

Name	Current Storage (cubic metres)	Proposed Storage (cubic metres)
Seifrieds	136,000 (6,000 + 130,000)	176,000 (6,000 + 170,000)
Baigents	19,500	44,500
Appletons	50,500	60,500 (50,500 + 10,000)
TOTALS	206,000	281,000

The current Baigents proposal and an amended Seifrieds storage is included in Table 3 below:

Table 3 – (2008) Current and Future Water Demand

Name	Current Storage (cubic metres)	Proposed Storage (cubic metres)
Seifrieds	181,200 (11,200 + 170,000)	161,200 (11,200 + 150,000)
Baigents	72,500	136,000 (72,500 + 63,500)
Appletons	60,500 (50,500 + 10,000)	60,500
TOTALS	313,700	357,700

With regard to the above tables and for each party to the 2000 Agreement:

- (i) Seifrieds - the Seifrieds increase in storage involved construction of their gully dam ID 239 plus, in Table 3, the resurvey of the volume in their two holes ID 232 and 262. The 170,000 is less than the "as built" volume of dam 239 but is the practical maximum storage volume of this dam. The proposed 150,000 figure in Table 3 reflects the maximum allowable annual pumpage granted by the Council on 1st February 2007 under revised consent NN000037V (currently under appeal). Seifrieds is also granted consent to irrigate directly from holes ID 232 and 262 if and when water is available in these holes, which is additional to their storage in Dam 239.
- (ii) Baigents - their increase in storage involved excavation within holes 233 and 260 to the current reported 72,500 cubic metres and the current increase to 136,000 cubic metres. Baigents expect that recharge from groundwater and springs into their holes will be sufficient to fill them and to augment both existing and proposed storage.
- (iii) Appletons - their decrease in storage reflects dropping plans to raise their Dam 34 and instead recognises proposed dam crest levelling. Appletons are currently restricted in the operation of their take from Catchment A to augment their Dam 34 during summer months as Catchment A priority is currently allocated to Baigents.

7. DISCUSSION OF ISSUES

The Baigents with their consultants have added considerably to the understanding of the groundwater/surface system at Mt Heslington but that understanding is far from complete. The groundwater monitoring was for a limited period and for an incomplete groundwater level range.

The investigations have confirmed that the natural permeability of the gravels in the vicinity of the terrace and the holes 232 and 233 is low but that both the existing holes and the proposed deepened Baigents holes are not and are unlikely to be effectively sealed. In the case of the Seifrieds holes, natural silts and other material washed downstream into the holes has further assisted the "sealing" of these holes - but they are still excavated below the groundwater level. In Baigents case, they have undertaken earthworks in an attempt to reduce groundwater losses on the downstream (northern) side only. There has been no attempt to seal the upstream margins.

Holes excavated below the water table are not in the writer's opinion storage, particularly not where there are significant rates of groundwater recharge during the monitoring period.

In 2000, the rate of spring and groundwater recharge to hole 233 in summer was considered minor and not at conflict with the Council's policies applying in the either the Reservoir or Wai-iti Zones. Council experts now assess rates of recharge between 2-4 litres per second and this in the summer months in the Reservoir Zone. These rates are sufficient for the full irrigation of between 3.5 (ie 2 L/sec) and 7 hectares (ie 4 L/sec) at the highest (soil based) rate of 350 cubic metres (35mm) per hectare per week. A good number of 18 persons on the waiting list are seeking less

water than this. Furthermore, the likelihood from deepened holes is of increased rates of recharge.

Regarding hole 260, in 2000 this was above the summer water table where the monitoring now shows significant summer recharge.

If the information now available has been available for the previous hearing relating to the review of conditions, it is very likely that that decision would have been significantly less generous. Certainly, the writer's report and recommendation would have been significantly different in order to address the summer recharge that is now evident.

Regarding the direct effects on Seifrieds:

- The depth and volume of the Baigents holes mean both Council and Baigents are unable to control or regulate when water is taken and captured by the unsealed holes.
- The proposed deepening by Baigents poses an additional risk to the availability of water in both Seifrieds holes 232 and 262. That risk exists now as evidenced by the pumping (drawdown) effects in Bore A, located between the 232 and 233. It would presumably take as little as Seifrieds too vigorously cleaning out their holes of accumulated material for an interference effect to occur.
- The Baigents proposed holes would result in an increased risk as the head (or hydraulic gradient) between the respective holes increases.
- Baigents existing and proposed holes will increasingly capture all flow (except the very large flood flow) from Catchment B and also increasingly groundwater flow and seepage.
- Given the 2007 experience, Seifrieds cannot afford any loss of water to their hole 232. Furthermore, given the experience of 2007, Seifrieds are presumably looking seriously at deepening 232 and/or 262. In their case, to gain greater access to winter water to pump to storage dam 239. If consent is granted to the Baigents application, it is more than likely that others will apply.

If consent is granted, Seifrieds ask the Council to impose the following condition.

If during the course of excavation and works authorised by this consent the consent holder becomes aware that the works were causing a lowering of water storage level in the downstream Dam 232, or if the owner on the land on which Dam 232 is situated considers that the works have caused (or is causing) a reduction of water storage in Dam 232 and shall have advised Tasman District Council of the same, then the consent holder shall cease works immediately and inform the Council's Consent Planner - Water.

Like the volunteered Baigents conditions, it is not stated or clear what Council would be expected to do if the risk of interference effects between the holes became a reality. The only conceivable regulation would be to set, through a s 128 review process, a minimum water level at which pumping would cease, which would need to

be at or above the summer water table level. Neither Baigents or Seifrieds should benefit more than in a minor way from summer recharge in this zone.

Quarrying

The application is to excavate and remove approximately 70,000 cubic metres to increase storage by 63,719 from 72,564 to 136,283 cubic metres. Baigents advise excavation will only occur when the holes are largely dry. Material excavated but not being removed from the holes will be used either in the compacted strip or in the bund.

Baigents advise that all material being removed from the holes will first be washed within the holes and, as the gravel and material is sold in a dry condition, onsite stockpiling will occur until a buyer is found and trucking occurs offsite. Baigents advise that all practical measures to control dust will include a water sprinkler system with work restricted to weekdays between 7.00 am and 5pm.

Baigents advise that their works including bunding downstream of the holes ensures that flood water will continue to be directed to the Seifrieds dam 232. Furthermore, no redirection or diversion of floodwater has been applied for or has previously been authorised for the Baigents property, including as a result of onsite stockpiling.

Dust, Noise, and Disturbance from Gravel Extraction

Seifrieds submits that the removal of approximately 70,000 cubic metres (assuming 10 cubic metres per truck) will require 7,000 truck movements to and along River Terrace, and thence elsewhere over the local roading system to an unstipulated unloading site. They state the effect (of dust, noise and disturbance) on the Seifrieds, residents of River Terrace, and residents adjacent to the unloading site, will be substantial and negative. It is noted that no submissions were received from any other neighbours potentially affected by the gravel extraction and truck movements.

The application acknowledges both dust and noise generation but states that the effects are temporary and any adverse effects minor. They seek landuse consent for quarrying over a 35 year term.

In the writer's opinion, there will be adverse effects of the quarrying and the volunteered conditions would be the minimum necessary. Regarding the consent term, such a long term may be appropriate for a rezoned quarry activity but is inappropriate for an activity which has, as its purpose, the creation of water storage. As a guide, the landuse consent if granted should have a lesser term than the water permit.

Loss of Productive Land

The National Fundamental Soils Dataset indicates that the soil types present on Baigents the land is a Ranzau stony sandy loam. This soil is recognised as being a highly versatile soil suited to a wide range of productive uses. This is highlighted by its ranking in the "Classification System for Productive Land in the Tasman District" produced by Agriculture NZ for the Tasman District Council in 1994. This system classes the soils of the application area as "A". The classification system takes into

account the climate and topography and the intrinsic properties of the soil, including fertility, depth and structure.

Class A land is the most versatile land in the district. The potential uses for this class of land are nursery, floriculture, orchards, market garden, cropping, pastoral, production forestry. Approximately 2.3% of the land in the Tasman district is classed as class A land which is restricted to the main valleys and plains near the coast.

The proposed quarrying activity would normally require an assessment of any loss of productive land, which currently amounts to some 2.5-2.8 hectares of Rural 1 land. In this case, the proposed activity largely involves deepening of existing holes but this issue is relevant to possible applications.

Some submitters referred to the right of landowners to develop their properties and to maximise the productive potential of the land. This is noted but allowing quarrying in Rural 1 will permanently remove this land from productive use and these high quality soils require protection.

Council is currently undertaking a similar activity within the river stopbanks at Challies Island but loss of productive soil is not an issue there. Furthermore, water is not proposed to be taken from these holes (and granting a water permit would be contrary to the TRMP objectives and rules).

Council has approved the excavation of some holes under strict rules. Firstly, the purpose must be for summer irrigation and the hole must be in a location remote from known streams and groundwater aquifers ie where there is no summer recharge into the hole. An example, is the Ewer's hole in Upper Moutere. That hole fills over winter but once emptied by irrigation it remains empty for the rest of summer ie there is no summer recharge.

Proposed Monitoring Conditions

The Baigents suggest conditions to avoid remedy and or mitigate against potential adverse effects. In the writer's opinion, they fail to do so. The excavations proposed are below the water table and involve the taking of groundwater. The only possible mitigation would involve a water level trigger at which Baigents must cease taking and, as this would be at the summer water level, there is no benefit in the Baigents application being approved except to the extent of authorising the quarrying of gravel.

8. RECOMMENDATION

The writer recommends that the Baigents applications be declined as the applications fail to meet the tests under the Act for a non-complying activity.

Neil Tyson
Consent Planner, Water

In the matter of the Resource Management Act 1991
and

In the matter of the application lodged by

Weingut Seifrieds Ltd

For a resource consent required under Section 14 and a decision under the provisions of Sections 104 and 105 of the above mentioned Act

DECISION

Acting under authority delegated from the Tasman District Council (Council), the Consent Planner (Water) considered your resource consent application and it is resolved that the application ***to take from storage and shallow groundwater for irrigation and to storage*** be granted for a period expiring on ***31 May 2015*** and subject to the following conditions:

CONDITIONS OF WATER PERMIT NN000037

1. Site and Take Details:

Location: *River Terrace Rd, Brightwater*
Legal Description: *Pt Sec 17 Waimea Sth Dist Blk IX Waimea SD*
Category of Water Source: *Storage and Shallow Groundwater from two existing shallow holes*
Zone and Catchment: *Reservoir Zone, Waimea Catchment*
Area Irrigated: *10.00 hectares*
Maximum rates of take authorised: *55.00 cubic metres per hour*
470.00 cubic metres per day
3300.00 cubic metres per week
Map reference at or about point of take: *NZMS 260: N27:1939-8010*
Meter Required: *No*

2. Records to be Kept:

The permit holder shall keep such records as may be reasonably required by the Council and shall, if so requested, supply this information to the Council. If it is necessary to install measuring devices to enable satisfactory records to be kept, the permit holder shall, at his or her own expense, install, operate and maintain suitable devices.

3. Access for Council Staff and Agents:

Access by the Council or its officers or agents to the land subject to this water permit is reserved pursuant to Section 332 of the Resource Management Act 1991.

4. Works and Maintenance Programme:

As and when required by the Council, the permit holder shall provide sufficiently detailed plans, specifications and maintenance programmes of works relating to the operation of this permit. Plans, specifications and maintenance programmes submitted shall be of a standard adequate to meet all conditions of the permit.

5. Review of Conditions:

Council may at any time during the term of this consent commencing on the 1st day of January in each year and expiring on the 31st day of December in each year, review the conditions of this consent to deal with any adverse effect on downstream water use or instream life or to deal with any adverse effect on any of the parties to the water sharing agreement which becomes apparent as a result of the exercise of this consent including (but without limiting) the change to any date, level, pipe size or other specified trigger which exercise of the consent shows are appropriate or necessary to achieve the objectives of the water sharing agreement, a copy of which is annexed hereto and marked with the letter "A".

6. Cancellation if Unexercised:

This permit may be cancelled upon not less than three months notice in writing by the Council to the permit holder if the permit remains unexercised without good reason for any continuous period exceeding two years, but without prejudice to the right of the permit holder to apply for a further permit in respect of the same matter.

7. Monitoring:

The permit holder shall pay the reasonable costs associated with the monitoring of this permit.

8. Irrigation Application Rate:

The application of water to any land shall not exceed the rate of 350 cubic metres per hectare per week.

9. Winter Pumping to Storage:

In addition to taking for summer irrigation, this permit hereby authorises the taking of up to 120,000 cubic metres per annum from either of the holder's two existing holes provided that this taking from storage and shallow groundwater is within the period of 1 May and 31 August inclusive in the case of the upper sealed hole and within the period of 1 May and 31 October inclusive in the case of the leaky lower hole, and provided that the water is taken to (fill) storage.

Water Permit NN000222
1939030303

In the matter of the Resource Management Act 1991

and

In the matter of the application lodged by

Mt Heslington Downs Ltd

For a resource consent required under Section 14 and a decision under the provisions of Sections 104 and 105 of the above mentioned Act

DECISION

Acting under authority delegated from the Tasman District Council (Council), the Consent Planner (Water) considered your resource consent application and it is resolved that the application ***to dam, divert and take water for storage*** be granted for a period expiring on ***31 May 2015*** and subject to the following conditions:

CONDITIONS OF WATER PERMIT – NN000222

1. Site, Dam, Divert and Take Details:

Location: *Mt Heslington Rd, Brightwater*

Legal Description: *Lot 1 DP16296 Lot 2 DP15493 Pt Secs 13 and 23 Waimea South Dist Blk IX Waimea SD*

Water being Dammed: *Mount Heslington Stream*

Catchment: *Waimea Catchment*

Zone: *Wai-iti*

Maximum rates of take authorised: *200 litres per second*

720 cubic metres per hour

17280 cubic metres per day

Dam Height (m): *1*

Crest length (m): *8*

Storage (m³): *30*

Map reference: *NZMS 260:N28:1924-7923*

2. Records to be Kept:

The permit holder shall keep such records as may be reasonably required by the Council and shall, if so requested, supply this information to the Council. If it is necessary to install measuring devices to enable satisfactory records to be kept, the permit holder shall, at his or her own expense, install, operate and maintain suitable devices.

3. Access for Council Staff and Agents:

Access by the Council or its officers or agents to the land subject to this water permit is reserved pursuant to Section 332 of the Resource Management Act 1991.

4. Works and Maintenance Programme:

As and when required by the Council, the permit holder shall provide sufficiently detailed plans, specifications and maintenance programmes of works relating to the operation of this permit. Plans, specifications and maintenance programmes submitted shall be of a standard adequate to meet all conditions of the permit.

5. Review of Conditions:

Council may at any time during the term of this consent commencing on the 1st day of January in each year and expiring on the 31st day of December in each year, review the conditions of this consent to deal with any adverse effect on downstream water use or instream life or to deal with any adverse effect on any of the parties to the water sharing agreement which becomes apparent as a result of the exercise of this consent including (but without limiting) the change to any date, level, pipe size or other specified trigger which exercise of the consent shows are appropriate or necessary to achieve the objectives of the water sharing agreement, a copy of which is annexed hereto and marked with the letter "A".

6. Adverse Effects on Aquatic Life or Downstream Users:

This permit may not be exercised to the extent that there is any significant adverse effect on aquatic life including fish passage past the dam.

7. Dam Maintenance:

Until such time as the dam is removed, the permit holder and/or the dam owner is required to maintain the dam, any valves or pipes or any other associated structure in a good state of repair.

8. Monitoring:

The permit holder shall meet the reasonable costs associated with the monitoring of this permit.

9. Bypass Pipe Required:

At all times when water is being diverted to storage pursuant to this permit, a 75 millimetre diameter pipe set a minimum of 75 millimetres below the invert level of the diversion, shall discharge to the watercourse downstream of the dam/diversion structure.

10. Winter Diversion:

The diversion of stream flow to storage pursuant to this permit is restricted to 1 May to 15 September inclusive each year and the (storage) intake shall be blocked outside these months.

11. Dam/Diversion/Intake Structure:

The dam/diversion/intake structure shall be designed and constructed to allow the uninterrupted passage of the summer low flow to the downstream water user (who has priority use under the water sharing agreement) and shall be to the satisfaction of the Council's Environment & Planning Manager.

12. Share of Summer Fresh:

The exception to the prohibited diversion of water during the period 16 September to 30 April is in the event of a summer fresh when, once the Baigents lower sealed hole is full to water level 33.4 metres AMSL, then the permit holder is entitled to take to storage an equal (i.e. one third) share of the available summer fresh **provided** such diversion and taking shall cease when stream flow again falls to summer low flow rates.

Water Permit NN000391
1939030502

In the matter of the Resource Management Act 1991

and

In the matter of the application lodged by

A N and M D Baigents

For a resource consent required under Section 14 and a decision under the provisions of Sections 104 and 105 of the above mentioned Act

DECISION

Acting under authority delegated from the Tasman District Council (Council), the Consent Planner (Water) considered your resource consent application and it is resolved that the application ***to take water to storage*** be granted for a period expiring on ***31 May 2015*** and subject to the following conditions:

CONDITIONS OF WATER PERMIT NN000391

1. Site and Take Details:

Location: *91 River Terrace Rd, Brightwater*

Legal Description: *Lot 1 2 3 DP 16648 Pt Sec 14 Blk IV Waimea SD*

Category of Water Source: *Surface*

Zone and Catchment: *Wai-iti, Waimea Catchment*

Name of Stream: *Mount Heslington Stream*

Maximum rates of take authorised: *100 litres/second*

8640.00 cubic metres per day

Map reference at or about point of take: *NZMS 260: N27:1940-7985*

Water Meter Required: *No*

2. Restricted Winter Use (Pre-sealing of Upstream holes):

Until such time as the permit holder's upstream holes are sealed to a standard acceptable to Council's Environment & Planning Manager, then the taking of water pursuant to this permit shall be for the sole purpose of filling the permit holder's lower (sealed) hole.

3. Restricted Winter Use (Post-sealing of Upstream holes):

Once the permit holder's upstream holes are sealed to a standard acceptable to Council's Environment & Planning Manager, then Condition 2 of this permit is obsolete and the taking of water pursuant to this permit during the period 1 May to 31 August each year shall be no greater than 50% of the stream flow at the permit holder's stream intake with the remaining flow passing to the downstream user **provided** first that the water level of the permit holder's lower sealed hole has reached 33.4 metres AMSL, or such other lower level that allows water to flow into the holder's upstream (sealed) holes.

4. Priority Use of Stream in Summer:

The permit holder is granted priority use of the summer low flow and, to exercise this priority, the holder is authorised to dam the stream at their intake point.

5. Sharing of Summer Freshes:

In the event of a summer fresh, the permit holder is hereby authorised to fill their lower sealed hole to water level 33.4 metres AMSL, at which level equal (ie one-third) sharing of the available catchment flow is required between the three parties to the water sharing agreement.

6. Damming of Stream During Summer Fresh:

In the event of a summer fresh the permit holder shall, as soon as reasonably possible, dam the stream and take such other associated action, to expedite the filling of their lower hole to water level 33.4 metres AMSL.

7. Water Permit NN910073 Replaced:

The granting of this consent replaces NN910073.

8. Records to be Kept:

The permit holder shall keep such records as may be reasonably required by the Council and shall, if so requested, supply this information to the Council. If it is necessary to install measuring devices to enable satisfactory records to be kept, the permit holder shall, at his or her own expense, install, operate and maintain suitable devices.

9. Access for Council Staff and Agents:

Access by the Council or its officers or agents to the land subject to this water permit is reserved pursuant to Section 332 of the Resource Management Act 1991.

10. Works and Maintenance Programme:

As and when required by the Council, the permit holder shall provide sufficiently detailed plans, specifications and maintenance programmes of works relating to the operation of this permit. Plans, specifications and maintenance programmes submitted shall be of a standard adequate to meet all conditions of the permit.

11. Review of Conditions:

Council may at any time during the term of this consent commencing on the 1st day of January in each year and expiring on the 31st day of December in each year, review the conditions of this consent to deal with any adverse effect on downstream water use or instream life or to deal with any adverse effect on any of the parties to the water sharing agreement which becomes apparent as a result of the exercise of this consent including (but without limiting) the change to any date, level, pipe size or other specified trigger which exercise of the consent shows are appropriate or necessary to achieve the objectives of the water sharing agreement, a copy of which is annexed hereto and marked with the letter "A".

12. Cancellation if Unexercised:

This permit may be cancelled upon not less than three months notice in writing by the Council to the permit holder if the permit remains unexercised without good reason for any continuous period exceeding two years, but without prejudice to the right of the permit holder to apply for a further permit in respect of the same matter.

13. Monitoring:

The permit holder shall pay the reasonable costs associated with the monitoring of this permit.

Water Permit NN000211
1939030502

In the matter of the Resource Management Act 1991

and

In the matter of the application lodged by

A N and M D Baigents

For a resource consent required under Section 14 and a decision under the provisions of Sections 104 and 105 of the above mentioned Act

DECISION

Acting under authority delegated from the Tasman District Council (Council), the Consent Planner (Water) considered your resource consent application and it is resolved that the application ***to take water for irrigation*** be granted for a period expiring on ***31 May 2015*** and subject to the following conditions:

CONDITIONS OF WATER PERMIT – NN000211

1. Site and Take Details:

Location: *91 River Terrace Rd, Brightwater*

Legal Description: *1, 2 and 3 DP 16648 Pt Sec 14 Blk IV Waimea SD*

Category of Water Source: *Springs and Storage*

Zone and Catchment: *Reservoir Zone, Waimea Catchment*

Area Irrigated: *15.00 hectares*

Maximum rates of take authorised: *68.00 cubic metres per hour*
750.00 cubic metres per day

5250.00 cubic metres per week

Map reference at or about

point of take: *NZMS 260: N27:1940-7985*

Meter Required: *No*

2. Records to be Kept:

The permit holder shall keep such records as may be reasonably required by the Council and shall, if so requested, supply this information to the Council. If it is necessary to install measuring devices to enable satisfactory records to be kept, the permit holder shall, at his or her own expense, install, operate and maintain suitable devices.

3. Access for Council Staff and Agents:

Access by the Council or its officers or agents to the land subject to this water permit is reserved pursuant to Section 332 of the Resource Management Act 1991.

4. Works and Maintenance Programme:

As and when required by the Council, the permit holder shall provide sufficiently detailed plans, specifications and maintenance programmes of works relating to the operation of this permit. Plans, specifications and maintenance programmes submitted shall be of a standard adequate to meet all conditions of the permit.

5. Review of Conditions:

Council may at any time during the term of this consent commencing on the 1st day of January in each year and expiring on the 31st day of December in each year, review the conditions of this consent to deal with any adverse effect on downstream water use or instream life or to deal with any adverse effect on any of the parties to the water sharing agreement which becomes apparent as a result of the exercise of this consent including (but without limiting) the change to any date, level, pipe size or other specified trigger which exercise of the consent shows are appropriate or necessary to achieve the objectives of the water sharing agreement, a copy of which is annexed hereto and marked with the letter "A".

6. Adverse Effects on Aquatic Life or Downstream Users:

This permit may not be exercised to the extent that there is any significant adverse effect on aquatic life including fish passage.

7. Monitoring:

The permit holder shall pay the reasonable costs associated with the monitoring of this permit.

8. Irrigation Application Rate:

The application of water to any land shall not exceed the rate of 350 cubic metres per hectare per week.

Water Permit NN000212
1939030502

In the matter of the Resource Management Act 1991

and

In the matter of the application lodged by

A N and M D Baigents

For a resource consent required under Section 14 and a decision under the provisions of Sections 104 and 105 of the aforesaid Act

DECISION

Acting under authority delegated from the Tasman District Council (Council), the Consent Planner (Water) considered your application and it is resolved that the ***damming of water*** be granted for a period expiring on ***31 May 2015*** and subject to the following conditions:

CONDITIONS OF WATER PERMIT TO DAM – NN000212

1. Site and Dam Details:

Location: *91 River Terrace Rd, Brightwater*
Legal Description: *Lots 1, 2 and 3 DP16648 Pt Sec 14 Block V Waimea SD*
River or Stream being dammed: *Unnamed stream*
Zone: *Reservoir Zone*
Catchment: *Waimea Catchment*
Dam Height (m): *1.50*
Crest length (m): *100.00*
Storage (m³): *16,900.00*
Map reference: *NZMS 260:N27:1940-7985*

2. Records to be Kept:

The permit holder shall keep such records as may be reasonably required by the Council and shall, if so requested, supply this information to the Council. If it is necessary to install measuring devices to enable satisfactory records to be kept, the permit holder shall, at his or her own expense, install, operate and maintain suitable devices.

3. Access for Council Staff and Agents:

Access by the Council or its officers or agents to the land subject to this water permit is reserved pursuant to Section 332 of the Resource Management Act.

4. Works and Maintenance Programme:

As and when required by the Council, the permit holder shall provide sufficiently detailed plans, specifications and maintenance programmes of works relating to the operation of this permit. Plans, specifications and maintenance programmes submitted shall be of a standard adequate to meet all conditions of the permit.

5. Review of Conditions:

Council may at any time during the term of this consent commencing on the 1st day of January in each year and expiring on the 31st day of December in each year, review the conditions of this consent to deal with any adverse effect on downstream water use or instream life or to deal with any adverse effect on any of the parties to the water sharing agreement which becomes apparent as a result of the exercise of this consent including (but without limiting) the change to any date, level, pipe size or other specified trigger which exercise of the consent shows are appropriate or necessary to achieve the objectives of the water sharing agreement, a copy of which is annexed hereto and marked with the letter "A".

6. Adverse Effects on Aquatic Life or Downstream Users:

This permit may not be exercised to the extent that there is any significant adverse effect on aquatic life including fish passage.

7. Dam Maintenance:

Until such time as the dam is removed, the permit holder and/or the dam owner is required to maintain the dam, its spillway and any associated structure in a good state of repair.

8. Monitoring:

The permit holder shall meet the reasonable costs associated with the monitoring of this permit.

9. Installation of Measuring Devices:

The consent holder shall install and maintain a metric staff gauge in their dam reservoir, which shall record the full water level fluctuation of the reservoir

Environment & Planning Department

To: Neil Tyson – Consent Planner, Water

From: Glenn Stevens – Resource Scientist – Water & Land

Date: 25 March 2008

File/Ref: RM060861, RM071024, RM071025 & RM071026

Subject: **Comments on applicant's groundwater assessment**

Introduction

A N and M D Baigent (the applicant) currently obtain irrigation water from two constructed ponds. These ponds are not fully or adequately consented under the Resource Management Act, but this matter is not assessed here. These ponds or holes are excavated below the winter ground water table. Depending on the year, the holes can fill from the capture of surface water flows or, in low rainfall years such as 2007, they filled largely because of groundwater seepage.

The proposal under these applications is to enlarge these ponds and to amend an existing (surface) water sharing agreement with Seifried and Appletons. The revised sharing agreement will include that the enlarged ponds, whilst still able to capture water from surface flows when available, will rely on the capture of groundwater seepage. Please refer to the report of Council's Consent Planner – Water (Neil Tyson) for a more detailed description of the ponds and the proposed changes.

Accompanying the resource consent application is a technical assessment on the groundwater conditions and the potential impacts of the proposal prepared on the applicant's behalf by Pattle Delamore Partners Limited (PDP). This report reviews and comments on these findings, in particular, potential interference effects on the neighbouring ponds used by Herman Seifried and the effects the interception of the groundwater from the surrounding aquifer systems. Also included in the application is some data on storage and irrigation prepared by John Hewson of Bay Irrigation Ltd (South Island).

Potential Hydrogeological Effects

Water storage at this locality in 2000 (by both Baigent and Seifried) involved shallow ponds at the base of the terrace. Pond 233 and Seifried's Pond 232 appeared to be largely independent of the summer groundwater levels. In contrast, Pond 260 was shallower than 233 and 232 and did not appear to penetrate the summer water table. Seifried's Pond 262 appeared to reflect the local groundwater levels and went dry in summer regardless of water being taken from it or not. Recharge of Pond 233 and Pond 232 from terrace springs was observed to occur largely during the winter months and early summer and any recharge during the irrigation season was considered minor. As such, the interception of spring discharge by 233 and 232 in 2000 was not considered problematic with respect to potential effects to the local groundwater system and the fully allocated status of the respective groundwater management zones.

The proposal at hand is to substantially deepen two existing ponds (Pond 260 and Pond 233), primarily to increase their storage capacity. It is anticipated that this increased storage capacity will be filled through the greater capture of groundwater seepage. Importantly, this will also happen over the summer irrigation period.

In terms of the hydrogeology, the primary potential affects to consider are:

- Impacts of both the existing and enlarged ponds on the immediate groundwater system. This includes the potential for interference effects on other nearby ponds and bores.
- Impacts on the wider hydrological system. This is essentially, the effect of the interception of groundwater that would otherwise contribute to downstream aquifers and/or surface flows in the Waimea River.

Impacts on the immediate groundwater system

The PDP report describes the local geology as alluvial deposits that form a series of terraces that step down towards the present location of the Wairoa River. As a result of erosion and re-working of these deposits, permeabilities tend to decrease with terrace age. The highest permeability gravels are typically found in more recent terraces closer to the river with lower permeabilities in the higher terraces.

The PDP report includes the results of three slug tests on monitoring bores that indicated that the strata around the ponds is relatively silty with relatively low hydraulic conductivities. Nevertheless, areas or zones of higher permeabilities do occur as evidenced by the existing springs observed discharging into Baigents Pond 233 and, to a lesser extent, Seifried's Pond 232.

The PDP report presented water level data from both of the Baigent ponds and both of the Seifried ponds as well as surrounding groundwater measured in three monitoring bores (PDP Figures 8, 9 and 10). This includes periods where water was pumped between ponds and abstracted from ponds for irrigation. The period of data spans 36 days for the ponds and 21 days for the monitoring bores.

The verbal description for the locations of Bore A and Bore B on the bore logs contained in PDP Appendix B differ from the locations shown in PDP Figures 5 and 7. However, Envirolink Ltd, whom actually collected the water level data, have advised that the water level data presented in the PDP report is correctly prescribed to the respective bores in PDP Figures 5 and 7 (*pers. com C. Kemp*).

The four ponds clearly display differing water levels and none appear to directly influence any other during the monitoring period. The Seifried ponds (Ponds 232 and 262) appear independent of the surrounding groundwater as measured in the three monitoring bores. That is, despite changing groundwater levels the water level in these ponds remained constant. The rise in water level in Pond 262 on 6 April is unexplained, but it seems unlikely this was groundwater recharge or interference effects

For the Baigent Ponds 233 and 260 the opposite is the case. The data for Pond 233 displays a steady rise in water levels over the study period. For example, the following water level rises in Pond 233 were identified from PDP Figures 8 and 10:

- 0.33 metre rise during the 8 day period from 13/3/07
- 0.53 metre rise during the 8 day period from 29/3/07
- 0.20 metre rise during the 4 day period from 12/4/07

Averaging these water level rises gives a daily rise of 0.05 metres per day.

Similar changes in water level to those observed in Pond 233 are reflected, though subdued, in Monitoring Bore A which reflects groundwater levels within insitu gravels between Pond 233 and Pond 232. Pond 260 typically shows a much more subdued rise for much of the time. The significant exception being 27/3/07 where water levels in Pond 260 rose approximately 0.70 metres over a three day period following a period of pumping. In the absence of other inputs, these observed rises in pond water levels are interpreted as being a result of groundwater infiltration into the ponds.

At the same time, both of the Seifried ponds (Ponds 232 and 262) do not display this behaviour and remain static except when water is pumped for irrigation when they lower. This suggests that both of the Seifried ponds are sealed and are not directly influenced by the surrounding groundwater levels but this is not true of Pond 262 at all times. N Tyson (pers comm.) has observed water levels in Pond 262 decreasing with no pumping occurring in a manner that appears to reflect the local groundwater table during dry summers.

Sealing of ponds

Firstly, there has been no attempt by the Baigents to seal the upstream of either of their ponds 232 and 260 and presumably these ponds are unsealed on this upstream (terrace) side.

The PDP report concludes that the four ponds are not affecting each other and represent a well sealed system. However, the PDP report is silent with respect to the steady rise in water levels observed primarily in Pond 233 and to a lesser extent in Pond 260. This would indicate that whilst not interfering with the other ponds, Pond 260 is in hydraulic connection with the surrounding groundwater. In contrast, it would appear that Ponds 232 and 262, and to a lesser extent Ponds 260, are well sealed as evidenced by their water levels being independent of surrounding groundwater level fluctuations.

That Baigent's Pond 233 does not affect Seifried's Pond 232 appears to be due to the sealing of the Seifried pond and its subsequent disconnection from the surrounding groundwater system rather than any specific measures undertaken by the Baigents. It is of some concern that water level changes in Monitoring Bore A (located between Ponds 233 and 232) demonstrated such a similar pattern as Pond 233.

In terms of the application at hand, the effects of enlarged and deepened Baigent ponds on the Seifried ponds is unlikely to change this situation, particularly if current pond depths are maintained (as proposed) at the western (downstream) end of Pond 233. Again, this is only because the Seifried ponds appear to be reasonably well sealed and not because the enlarged Baigent ponds will be having no affect on the surrounding groundwater system. It follows that Seifried would be unwise to undertake works within Pond 232 that could rupture this seal otherwise, as demonstrated by Bore A, interference may well occur between the Seifried and Baigent ponds.

PDP argue that the enlarged Baigent ponds will not directly affect other water users. However, as the effects cannot be readily observed until the works are actually undertaken, there remains a degree of uncertainty. Whilst in the normal course of events when considering, say a groundwater take from a bore, such uncertainty can be resolved by conditions and ultimately stopping the take. This is on the basis that the ongoing presence of the un-pumped bore will have no adverse effects (which is generally the case). This is not the situation here, as once the ponds are excavated and should they subsequently be shown to affect other water resource users it could be very difficult if not impossible to rectify or even limit such affects given the scale of the excavation and works involved. Because of this a more precautionary approach should be taken when assessing the merits of the application than for other more conventional groundwater takes.

A further implication of the ponds not being effectively sealed is that this will severely compromise their ability to store water. Rather than reflecting the amount of water held in storage, the pond will simply reflect the current groundwater level. Pumping from such a pond will essentially be pumping from groundwater.

Impacts on the wider hydrological system

Whilst the application acknowledges that they will rely on groundwater seepage into the ponds there is only a limited attempt in the application to directly quantify the amount of groundwater that will be intercepted to storage in the enlarged ponds.

The application includes detail on storage and irrigation assessed by John Hewson of Bay Irrigation Ltd (South Island). This assessment details several periods of irrigation in late 2006 and the respective volumes of water derived from storage. The implication being that the difference in volume irrigated and the change in storage in the ponds is made up from spring flow. No explanation of the data is provided in the application.

It is not clear exactly how these numbers were derived by Mr Hewson and it would appear to assume that both ponds 233 and 260 are at the same level. Although pertaining to a different period of time, this is in conflict with the water level data in the PDP report which clearly shows water levels in ponds 233 and 260 at different elevations. Nevertheless, Mr Hewson seems to clearly state that a significant volume (40% to 60%) of water in the ponds is derived from "springs" recharge. The Hewson data for the seven day period from 11/12/06 suggests inflow rates as high as 5 L/s, though the average was 1.1 L/s.

An estimate on the likely scale of the inflows based on the rise in water levels observed in Ponds 233 and 260 in the PDP report can be made by comparing the observed increases in water level with the decreases in water levels following the pumping of a known amount of irrigation water.

PDP Figure 8 shows a decrease of 0.77 m following the abstraction of 1,372 m³ over the three day period from 21/3/07. This equates to a volume of 176 m³ for every 100 mm change in water level. Whilst this is only an approximation as it ignores the effects of the pond's sloping sides, it does provide a reasonable estimate over the observed water level ranges. For the three periods of rising water levels previously identified in Pond 233 the estimated inflow rates are in Table 1.

Table 1: Estimated inflow rates

	Period starting	Number of days	Change in water level (m)	Approx change in volume* (m ³)	Equivalent daily rate (m ³ /day)	Equivalent instantaneous rate (L/s)
Pond 233	13/3/07	8	0.33	581	72.6	0.8
	29/3/07	8	0.53	933	116.6	1.3
	12/4/07	4	0.20	352	88.0	1.0
Pond 260	27/3/07	3	0.7	826	275.3	3.2

* on the basis of 176 m³ for every 100 mm change in water level for Pond 233 and 118 m³ for every 100 mm change in water level for Pond 260.

Inflows will vary depending of the relative difference in pond water level to groundwater level. This is observed in Pond 260 where water levels rose rapidly before settling down to a more gradual rise flowing pumping from the pond. Also the Hewson data would suggest such variations are likely. Therefore, a conservative estimate based on the data currently available is that infiltration rates of at least 1 to 2 L/s are occurring to each pond following pumping, i.e. a combined total of 2-4 litres per second for both Baigent ponds.

The above derived estimate is the current situation, that is, the infiltration to the ponds as they are presently constructed and for the monitored period (i.e. April 2007). The rate of inflow to the ponds is expected to increase with the proposed deepening of the ponds. There is no attempt in the application to quantify the additional amount of groundwater that will be intercepted to storage in the enlarged ponds except (presumably) to the extent that the applicant expects the additional 60,000 cubic metres they are creating will fill.

The groundwater flows from the terraces where the ponds are located are small compared to the volumes in the Wairoa River and the Appleby Gravels adjacent to the river. Nevertheless, they are a part of that hydrological system and contribute to downstream ground and surface water flows. Whilst the actual inflow rates to the ponds themselves may have no significant direct impacts, the cumulative effect of such takes is much more significant. Particularly, given the existing intensive authorised use of the water resource and the fully allocated nature of the respective groundwater management zones.

The reader is referred to the evidence of Council's Consent Planner – Water (Neil Tyson) for discussion of the application with respect to water allocation on the Waimea Plains.

Summary

Based on the data presented in the application, Baigent's Pond 233 is in hydraulic connection with the surrounding groundwater. Pond 233, and to a lesser extent Pond 260, show a steady rise in water levels which are attributed to groundwater seepage into the ponds. This is in summer months and within the Reservoir Zone of the Waimea Catchment.

It is estimated that Pond 233 and Pond 260 currently receive in the order of 2 - 4 L/s (172.8 – 345.6 m³/day) of groundwater inflows flowing pumping from the ponds.

Pumping of water from the existing Baigent ponds does not affect the Seifried ponds. This is largely because the Seifried ponds appear to be well sealed. Whilst the proposed enlargement of the Baigent ponds is unlikely to change this situation, the proposal still presents a risk to the Seifried ponds, particularly if anything occurred to compromise the sealing of the Seifried ponds.

An unsealed pond will have a limited ability to store water over the summer irrigation period. Pumping from a poorly sealed pond will essentially be a groundwater take over the summer period. Groundwater in the vicinity of the ponds ultimately contributes to the heavily utilised (and fully allocated) downstream ground and surface water resource.

Glenn Stevens
Resource Scientist – Water & Land