WASTEWATER CONSENT REVIEWS – ARE THEY REALLY ADDING VALUE ?

Rob Green, Water and Waste Services Manager, Palmerston North City Council
Phil Walker, Special Projects Manager, Palmerston North City Council

ABSTRACT

In 2003 Palmerston North City Council (PNCC) was granted consent to discharge treated wastewater to the Manawatū River for a period of 25 years. To meet consent standards a $16m plant upgrade was undertaken to reduce dissolved reactive phosphorus (DRP) in the discharge to limit the growth of periphyton and impact on macroinvertebrates in the river. A significant improvement to river water quality and ecology resulted.

Despite these improvements the regulatory agency initiated a consent review in 2013 on the basis of excessive periphyton growth having an impact on the river's life supporting capacity and sought to introduce in river conditions for periphyton and macroinvertebrates. This effectively shifts the risk of uncertainty around ecological outcomes onto the discharger.

The Review Panel has issued an interim decision with conditions that the Council is unable to achieve compliance even with major investment in nitrogen treatment but has yet to issue its final decision.

The review process has cost well in excess of $1m and has raised uncertainty for Council's financial and wastewater planning processes for over four years. This questions the value of the review process in such circumstances and how much reliance can be placed on consents for long term planning.

KEYWORDS

Consent review, in river standards, periphyton

1 INTRODUCTION

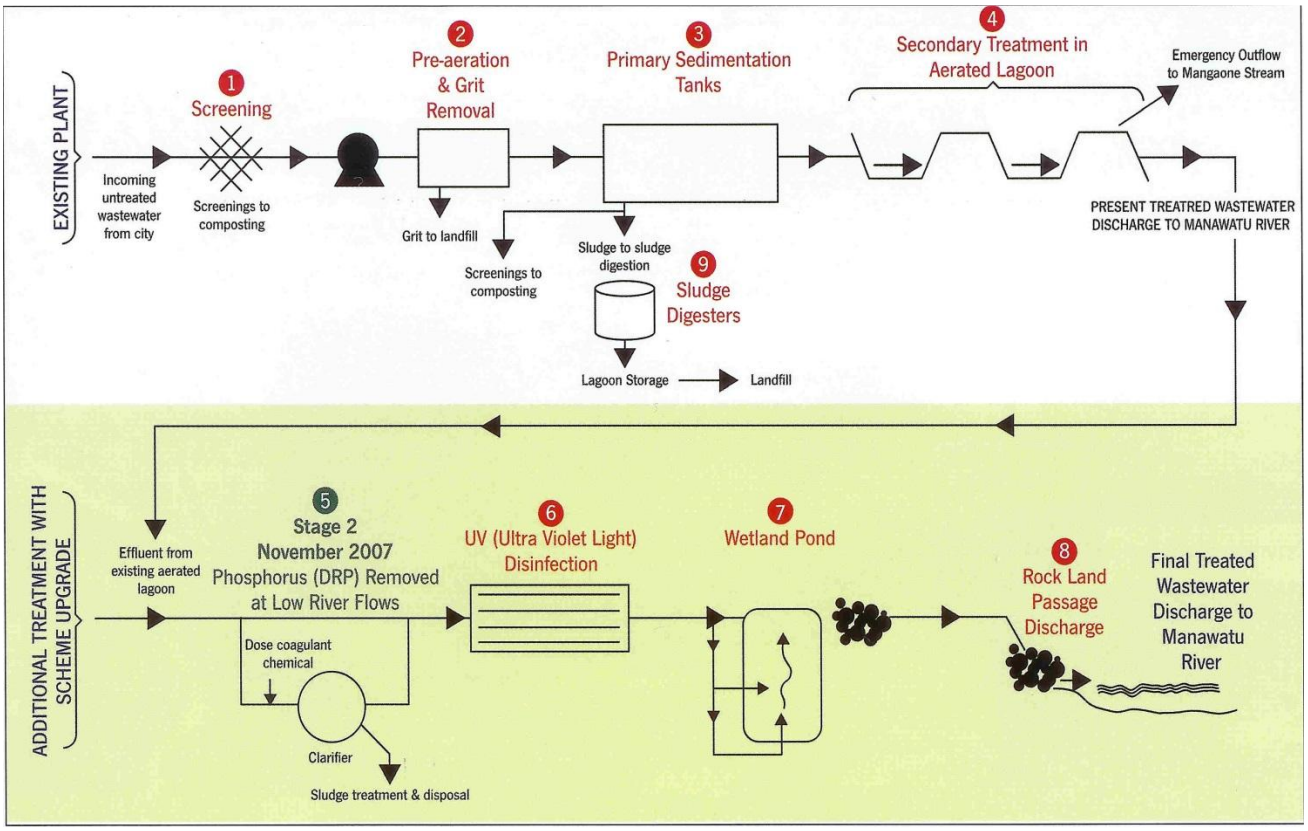
Palmerston North's wastewater treatment plant was built on its current site in Totara Road southeast of the city and adjacent to the Manawatū River in 1968. Effluent treated to a tertiary standard is discharged from the plant to the Manawatū River.

The plant has been upgraded with new processes added since its original construction. The most recent discharge consent was granted in 2003 for a 25 year term. The consent conditions required that treatment for reduction of dissolved reactive phosphorus (DRP) followed by UV treatment during low river flow conditions be implemented in the early years of the consent. The UV plant was commissioned in 2004. A new clarifier, designed to reduce DRP, was commissioned in 2008.

With completion of the upgrades there are now either eight or nine wastewater treatment steps prior to discharge to the river. In summer when river flows are below half- median (37.5 m^3/sec) the clarifier is brought into operation.

A diagrammatic of the various treatment processes is shown in Figure 1:

Figure 1 - Wastewater Treatment Plant Process Steps



The plant currently serves a connected population of approximately 75,000 persons.

To demonstrate its commitment to the Manawatu River Leaders Accord, discussed later, the PNCC has completed a programme to centralise all of the former river discharges within its jurisdiction to the main city plant. This programme has involved re-directing flows from small satellite towns including Longburn, Linton, Ashhurst, Aokautere and Bunnythorpe at a cost of approximately $10m. These former point source discharges now no longer exist and improvements in downstream river water quality have occurred as a result.

An additional positive outcome from the centralisation programme is that consents for each of the formerly individual discharges will no longer be required with a commensurate saving in costs.

2 EXISTING DISCHARGE CONSENT

Council's application for the consent, granted in 2003, had been preceded by a major study identifying various treatment options including partial or full land disposal as well as continued river

discharge. After extensive consultation with the community and with iwi, consent for an upgraded river discharge was sought.

The previous consent expired in 2006 so Council was proactive in making its new applications to the extent that a new consent was in place three years prior to expiry of the former consent.

The consent was granted under the then regional water plan known as the Manawatū Catchment Water Quality Regional Plan (MCWQRP) by a panel of independent commissioners appointed by Horizons Regional Council. The MCWQRP largely set policies, objectives and rules to upgrade surface water quality to a standard suitable for contact recreation. Periphyton or algae growth was a consideration for recreational activity and at the time phosphorus, but not soluble inorganic nitrogen, was thought by the Horizons to be the limiting nutrient for periphyton growth in the river. Thus, a standard for in river DRP levels was included in the MCWQRP to apply during low river flow periods. The standard was aimed at placing controls on the amount of DRP discharged during summer low river flow periods to limit the growth of periphyton downstream of the discharge point to an acceptable level for recreational use of the river. The controls were imposed by way of a condition in Council's discharge consent, on effluent quality rather than being an in river condition that needed to be met.

To meet the end of pipe DRP condition Council decided to use a chemical dosing process for the reduction of DRP in the effluent flow during periods of low flow in the river over approximately 25% of the year, rather than a more expensive biological process. A clarifier was then installed in 2008 and alum has been dosed to the effluent since that time during periods when the river flow is below 37 m^3/sec. Compliance with the end of pipe DRP standard has been consistently achieved since implementation of the clarifier in 2007.

It should be noted that river versus land disposal always has been and continues to be a contentious issue for the city.

2.1 CONDITION 3(F)

The Council's existing consent includes a condition 3(f) as follows:

"The discharge shall not cause significant adverse effects on aquatic life"

There was no advice note in the consent as to the manner in which condition 3(f) would be assessed for compliance purposes.

Also, condition 3(f) is simply a repetition of section 107(1)(g) of the Resource Management Act (RMA) which does not allow a consent to be granted in the first instance unless the consent authority is satisfied that the discharge, after reasonable mixing is not having any significant effects on aquatic life. The Panel issuing the consent was satisfied that section 107(1)(g) of the RMA was met and also decided to include condition 3(f) as above.

A further requirement of the consent was that for each of the two years immediately prior to and following implementation of phosphorus treatment (the clarifier and alum dosing) the Council was required to undertake in river studies of macro invertebrates and periphyton growth both upstream and downstream of the discharge. The objective of the in river studies was to determine the effects of the discharge on the benthic biota in the reach of the river downstream of the outfall.

The investigations were duly completed and the consultant who prepared the report evaluating the results of the investigations concluded that:

"While some downstream impacts on benthic ecology were evident the upgrade to the wastewater treatment plant had delivered significant benefits in terms of both macro invertebrate health and periphyton biomass.

Despite this improvement periphyton cover and biomass can still reach very high levels, well above recommended guideline values, both upstream and downstream of the WWTP discharge"

The consultant's report was issued to Horizons as required by the consent. A short while later Council received an assessment that it had not complied with condition 3(f) on the basis of the findings of the consultant's report, namely that the difference in the Quantitative Macro-invertebrate Index (QMCI) between upstream and downstream was occasionally greater than 20%. At the time Horizons had introduced a proposed new regional water plan known as the Proposed One Plan that included a QMCI target of no more than 20% change between upstream and downstream sites as the measure of a significant change to macro-invertebrate communities.

Horizons then issued an abatement notice in October 2011 which effectively sought that the discharge cease completely by November 2011. Condition 3(f) had never previously been assessed as being non-compliant, even before the upgrade. Apart from a few minor technical issues during commissioning of the clarifier, PNCC had always complied with the end of pipe conditions of its consent.

Clearly the abatement notice could not be complied with and legal advice indicated it was unreasonable and defective. PNCC had no choice but to appeal to the Environment Court. Subsequently the abatement notice was withdrawn by Horizons, on the basis that both Councils' would contribute towards a joint study into the causes of higher than expected periphyton growth in the river downstream of the discharge and its effect on the macro-invertebrate community.

3 THE CONSENT REVIEW

After the joint study results confirmed that periphyton was growing more rapidly than initially anticipated Horizons initiated a review of Council's discharge consent in May 2013. The original Notice of Review indicated that the purpose of the review was, rather than focusing on condition 3f, to:

"... review the excessive periphyton growth downstream of the PNCC wastewater discharge and the impact this is having on the life supporting capacity in the river"

At that point the issue had moved from being concerned with significant adverse effects to impacts on life supporting capacity in the river.

The Notice of Review was initiated under section 129 of the RMA which essentially requires the consent authority to specify the information it took into account in making the decision to review the consent. All of the legal advice that PNCC received was that the consent authority needed to justify its reasons for the review. Although not explicitly stated in the Notice of Review the review was based on the results of the joint in river investigations which revealed two previously unknown facts:

- There was more periphyton growth occurring than could be explained simply by the amount of DRP in the city's discharge. This was subsequently found to be a result of a change in state of particulate phosphorus to DRP after discharge to the river.

- Nitrogen, as well as phosphorus could be the limiting nutrient on periphyton growth particularly at very low river flows when non-point source discharges of nitrogen to the river diminish.

In spite of the findings, the difference between expected and actual accrual times for periphyton to exceed guideline values was approximately three days. Whilst there is a measurable change between upstream and downstream macro-invertebrate communities there was no evidence that fish were being adversely affected.

Also, Horizons elected to make public notification of the consent review.

3.1 REGULATORY FRAMEWORK

The One Plan, which became operative in 2014, takes a different approach to the previous plan with the objective of maintaining or enhancing river water quality to meet a range of values including life supporting capacity and contact recreation. It includes a number of "targets" for in river parameters. Specifically, the One Plan includes targets for the QMCI, chlorophyll a, and periphyton cover. Targets are not intended to apply as limits in discharge consents, but rather are indicators of the water quality that Horizons considers acceptable over a particular stretch of a river.

PNCC opposes the imposition of in river limits in a discharge consent rather than end of pipe standards for those parameters over which the Council does not have full control. Horizons favours the inclusion of in river conditions in consents as a means to achieving the One Plan targets.

During the period leading into the review the Land and Water Forum had been doing its work. One of the Forum's recommendations led to the introduction of the National Freshwater Standards containing a series of "bottom lines" to be achieved or bettered. Regional Councils are required to give effect to the new standards in regional planning documents by 2025.

Due to ongoing concerns about water quality in the Manawatū River specifically, a non-statutory Manawatū River Leaders Accord was established in 2010. Signatories to The Accord included representatives from iwi, environmental and recreational groups as well as all significant dischargers. The Accord has the objective of signatories working collaboratively to improve the river. A number of actions were agreed to by each signatory that, when implemented would lead to overall improvements to the river.

3.2 VALUE OF EXISTING CONSENT

Through the review process Horizons sought to introduce new consent conditions that reflect One Plan targets on the basis that these were required to safeguard the life supporting capacity of the river. In PNCC's view this was a significant shifting of the goalposts and brought into question the extent to which an existing consent is a valuable property right that can be relied upon to make significant investment decisions.

The RMA is quite clear that a consent review cannot render an existing consent inviable. In other words a review cannot reduce the consent term, and nor can it impose new conditions that might mean the consent holder cannot achieve compliance.

Since 1968, PNCC has made a number of significant investments in improving the city's wastewater treatment plant to its current state. Those investments were made relying on certainty about consent terms and it was obviously felt that the value of the investments could be received over the full term of each previous consent. Indeed, PNCC spent $16m in upgrading the plant to meet the higher standards in its 2003 consent and fully expected to have to make further investments around 2028

when the current consent expires. It did not, however, anticipate being forced into a position of making large investments earlier than otherwise anticipated.

It has become apparent, through the process of the review, that Horizons wanted PNCC to make major investment in nitrogen treatment well before the end of the consent period. However, major investment in this manner would cause significant disruption to the planning cycle for wastewater upgrades and presents a dilemma for PNCC and its community. An RMA based decision imposed on PNCC could pre-determine future disposal options – to land or the river – without full community consultation on options.

A consent review is a statutory process to review conditions where the expected environmental standards are not being met under an existing consent. A review is confined by its scope and is not a new consent application requiring a comprehensive best practicable option analysis. However a consent authority, in undertaking a review, is still bound to take all of the Part 2 matters in the RMA into account – the social, environmental and economic needs of the community.

3.3 REVIEW HEARING

The review hearing was considered by four Independent Commissioners, appointed by Horizons, over the course of one week in November 2014. Thirty-nine submissions had been received although many of those who made submissions were concerned about the continued discharge to the river rather than the actual scope of the review. Only a few submissions were made by residents within the PNCC area with the majority coming from downstream communities in the Horowhenua District Council. One submission was received from the company established by the former Regulatory Manager at Horizons who had initiated the process that led to the abatement notice being issued in 2011. Interestingly, and despite concerns expressed by the Panel and PNCC, the submitter was also allowed to undertake the role of expert witness, although the firm was not specifically engaged by any other party. Thus, it was able to act simultaneously in the role of submitter and expert witness.

The Panel formed a preliminary view that the discharge is having a "material" effect on life supporting capacity in the river and proposed a number of conditions aimed at addressing those effects. It based its findings on concerns about impacts on macro-invertebrates. Certainly there was little explicit evidence in its interim decision that the Panel had taken the economic aspects into account as required by Part 2 of the RMA.

In the interim decision the Panel proposed in river conditions that had been sought by neither PNCC, nor Horizons. Indeed the conditions proposed in the interim decision were much more stringent than proposed by either party during the hearing and were, in PNCC's view, disproportionate to the finding of a "material" effect on life supporting capacity. The new conditions effectively required a level of nitrogen treatment that cannot be economically provided by currently available technology, to be implemented by January 2022.

PNCC was invited to respond to the Panel's proposed conditions – but not the interim decision itself. In its response the PNCC indicated that it could not meet the proposed conditions with any degree of certainty. Thus PNCC considered the decision, if confirmed, would render the consent inviable which is not permitted by the RMA in a consent review and would leave it with no option but to appeal the decision. PNCC did however propose a milestone approach that would lead to a new consent application being submitted to provide an assurance to the Panel that it would address the discharge issue in due course during the current consent term.

During the period leading into and immediately following the hearing there had been a significant political change occur at PNCC. A new Mayor was elected in a by-election December 2014 (part way through the triennial term) and his approach was to try to resolve the issue with Horizons through a process of discussion, while recognising it was a quasi-legal situation. The offer to meet with

Horizons to discuss the milestone approach in more detail was included in the PNCC reply to the Panel.

This led to circumstances whereby the PNCC, as it could not meet the proposed conditions, offered a revised milestone approach including a full best practicable options study being undertaken and a new consent application being lodged by 2022 – six years prior to expiry of the current term. That would potentially result in new treatment processes being put in place by around 2025 or later if a land based solution is adopted. The approach was supported by Horizons. The final Panel decision is now awaited. However, there is still the risk that the Council could be faced with expensive nitrogen treatment at an earlier date than expected if the Panel persists with its original approach.

4 IMPACTS OF THE DISCHARGE

Although it has been a very costly process, the review has enabled two comprehensive studies of water quality in the river to be undertaken over two consecutive summers in the immediate vicinity of the discharge. As a result there is a much improved understanding of the actual effects of the discharge now that the in river studies have been completed.

The two key findings from the investigations were set out earlier but in essence the studies showed that during low river flow periods over summer and as a result of increased periphyton growth caused by the level of nutrients in the discharge, mayfly (a macro-invertebrate that grazes on periphyton and forms part of the trout diet) are being displaced downstream and replaced by more pollution tolerant species. The mayflies do not die off but rather float downstream to more acceptable water. There is no evidence of impact on fish life as specialists advise that fish can still swim through the area during low flow periods, but their diet, when feeding in the particular stretch of river immediately downstream of the discharge point, is reduced in quality. Importantly both of the effects on aquatic life occur over a relatively short reach of the river and only during those times when there is a prolonged period of low flow in the river. Macroinvertebrate composition is largely re-set once a flushing flow of approximately $100m^3$/sec is reached in the river. It is also worth noting that the existing consent anticipated there would be a certain level of periphyton growth, so it is only the effects of the higher than anticipated periphyton growth that is the subject of the review.

Based on its interpretation of the results from the studies PNCC felt that those additional impacts were not sufficient to warrant significant changes to the consent conditions. Moreover, Council felt that as there was little demonstrable impact from the discharge on life supporting capacity the expense of additional nitrogen treatment to reduce the effects still further (estimated to be $15m - $25m) could not be justified before the end of the consent term, based on the limited river water quality and ecological benefits that would accrue.

PNCC was also aware that any commitment to significant expenditure might compromise its ability to implement major changes to the discharge regime, if that is the community's preference when the consent expires in 2028.

5 IMPLICATIONS FOR PNCC

It is worth recording that all of this has arisen through an initial interpretation by a Compliance Officer at Horizons that PNCC was not meeting condition 3(f) of its discharge consent. The subsequent science has confirmed the effects are limited and localised in terms of space and time.

PNCC's compliance record has been exemplary and it has completed every one of the agreed actions in the Manawatū River Leaders Accord. In spite of those factors a consent review process has been allowed to play out in such a manner that the PNCC now finds itself in a position whereby it has been found, if the interim decision is confirmed, to be having a ("material") effect on life supporting capacity in the river, with the prospect of having to renew its discharge consent much earlier than anticipated. Rather than being in the position of being able to focus on the positive aspects of its high degree of wastewater treatment the PNCC now finds itself tarred by an image that it is having a negative impact on life supporting capacity in the river.

On a positive note the in river investigations have revealed previously unknown facts about the ecology of the Manawatū River in the vicinity of the discharge. The investigations also uncovered the extent to which natural processes in a dynamic and changing river environment over time can influence the manner in which a wastewater discharge can assimilate with the environment.

The process has taken almost four years from the date the original abatement notice was issued. PNCC has expended well in excess of $1m in participating in the review as it has met almost all of the investigative costs, and a large proportion of Horizons costs associated with the hearing. It is estimated that two senior PNCC Officers have spent approximately 25% of their time on the case in the last two years on top of their normal duties.

Council had made provision in its Asset Management Plans for extensive upgrades to the plant when the exiting consent expires in 2028. The projected $23m expenditure is allowed for at that time in Council's financial planning so that prudential borrowing limits would not be exceeded. The review has introduced considerable financial uncertainty and risk for Council, at a time when it was finalising the Long Term Plan, both with respect to timing and amount of expenditure required over the next ten years. As the review has taken a number of years the uncertainty and risk have both been existent for some considerable period. An adverse final decision from the Panel could lead to a further lengthy period of uncertainty while any potential appeals are completed and could ultimately require the Council to make a significant change to the LTP after it has been finalised.

Moving the proposed consent renewal forward by six years may mean that many important capital projects that have been supported by the community through the LTP process may need to be re-prioritised in future. This highlights the tension between decisions made by external parties through RMA processes with limited public input, and the Council planning processes as expressed through its Long Term Plan under the Local Government Act and made in consultation with the local community. In addition, the Council is charged with the provision of good quality infrastructure in a way that is most cost effective for households and businesses as a discrete purpose under the Local Government Act. In a sense Council's future wastewater direction is potentially being pre-determined through a separate RMA process that will affect the single largest expenditure decision likely to be made by PNCC in the foreseeable future so it is difficult to reconcile that outcome against Council's key purpose under the Local Government Act.

Despite considerable water quality improvements having been made resulting from the most recent plant upgrade, there remain those who still want the discharge taken out of the river altogether. The review has allowed what could be perceived as re-litigation of the previous consent decision, but against a backdrop of new regional planning rules and national standards. Horizons has been willing to seek significant treatment process improvements through the use of a review process but seems reluctant to acknowledge that in river standards create a dilemma for the discharger, who cannot foresee or control everything that might impact on the upstream water quality for the life of the consent.

In this particular instance every one of the Horizons Officers originally involved in the initiation of the review have now moved on to other roles or left Horizons completely. This has made it very difficult for PNCC as it has had to reconcile new views and approaches to matters such as compliance part way through the process.

This case also highlights the manner in which a few small voices can effectively sway political and media viewpoints by trading on prejudices and emotions. In this particular instance there was a political sea change that occurred at a critical juncture. The previous Mayor had been staunch in wanting to ensure that any response by PNCC to the review was proportionate to the actual effects in the river. The new Mayor, elected as a result of a by-election in December 2014, in seeking to obtain the best outcome for PNCC, added a fresh dimension by deciding that collaboration with Horizons was the best approach. This new approach has been pursued after release of the interim decision with a view to achieving an outcome that is acceptable to both parties and the submitters.

6 CONCLUSIONS

PNCC spent four years and a considerable sum in obtaining a 25 year discharge consent from 2003. Now it finds itself, by the time the process concludes, potentially having spent a further four years in effectively reducing the consent term by six years.

There was no other case law on which to rely as this is believed to be the first large scale water consent review ever conducted in New Zealand. Consequently the process was not well understood and a number of process shortcomings occurred.

The Hearing Panel itself held different perspectives than the Panel that heard the original consent. Indeed the Panel on several occasions interpreted the previous Panel's intentions when it made its original findings.

The process has resulted in a potential decision that has significant implications not only for PNCC, but for every other discharger in the country. Review conditions are now commonly being included in consents so other regulators may now potentially use the review process to try to update existing consents to meet new rules.

Part 2 of the RMA is intended to ensure that economic considerations are balanced with the environmental and social impacts in decision making. This case has highlighted the difficulty of cost/benefit considerations being properly applied as no such judgement was made by the Panel in its interim decision.

Moreover there is a natural tension between a decision imposed on local government through the RMA process, and, where significant expenditure is involved, a local authority's responsibilities to:

- consult with its community in producing a Long Term Plan and
- to meet the fundamental purpose of local government to provide good quality infrastructure in the most cost effective manner

Public notification of the review seemed to serve the interests of those who wanted the discharge removed from the river altogether by providing a platform for them to air their views. Although not given weight in the Panel's interim decision, it nevertheless added to wider public perception of the issue.

The PNCC has been exposed to inconsistency in terms of compliance assessments. Indeed, PNCC has always been compliant with its discharge consent and has a historical record of making early applications for consent renewals. It has now been the subject of a long process of having a review conducted half way through the consent term that arose out of an initial interpretation by a Horizons Compliance Officer as to what constitutes a significant adverse effect. In PNCC's view, the process has been comparable to that which would have occurred for a new consent application. Thus PNCC

believes that given the magnitude to which the review has grown the basis for its initiation by Horizons should have been more solid.

7 DID THE PROCESS ADD VALUE?

While there is now much improved information about the ecology in the river in the reach near the discharge point it is debatable that the process has added much value to the city community that has funded the review and will meet the costs of any decision therefrom.

The costs of the review have been high and the outcome, if confirmed by the Commissioners, will effectively reduce the value of Council's existing discharge consent, which could be considered an important property right. It is also debatable whether the consent review process that has exposed the city, with good prior plant performance, to:

- regional plan changes,
- improvements in scientific understanding,
- changes in political climate, and
- and has provided the opportunity for re-litigation of previous considerations;

all occurring part way through the term of a valid, lawfully obtained consent, has added much value.