BEFORE BAY OF PLENTY REGIONAL COUNCIL

IN THE MATTER	of the Resource Management Act 1991
AND	
IN THE MATTER	of Lake Rotorua Nutrient Management - Proposed Plan Change 10 to the Bay of Plenty Regional Water and Land Plan under clause 8B of Schedule 1 to the Act
BETWEEN	**ROTORUA LAKES COUNCIL**
	Submitter
AND	**BAY OF PLENTY REGIONAL COUNCIL**
	Plan Change 10 Proponent

STATEMENT OF EVIDENCE OF PHILIP MARK OSBORNE (Economic effects)

Date 22 February 2017

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TOMPKINS WAKE LAWYERS

INTRODUCTION

1. My name is Philip Mark Osborne. I am an Economic Consultant for the company Property Economics Ltd, based in Auckland. My qualifications include – Bachelor of Arts (History/Economics), Masters in Commerce, a Masters in Planning Practice, and have provisionally completed my doctoral thesis in developmental economics.

2. For the past thirteen years I have been an economic property consultant for Property Economics. Prior to this I have been a business analyst to several large firms both here and in Europe. I also taught economics at both the secondary and tertiary level.

3. I have recently advised, and currently advise, central government organisations such as the Ministry for the Environment and the Ministry for Business Innovation and Employment as well as local authorities including Christchurch City, Napier City, Auckland Council, Wellington City and Wellington Regional Councils, Waikato Regional Council, and Far North Councils in relation to forward planning and resource valuation issues. I also provide consultancy services to a number of large private sector clients in regard to a wide range of property issues, including economic impact assessments, forecasting market growth, determining future land demand for the residential and business sectors, and economic cost-benefit analysis.

4. My evidence is provided on behalf of Rotorua Lakes Council (RLC) and relates to the efficient, effective and appropriate management of nitrogen emission into Lake Rotorua in achieving the objectives set out in the Bay of Plenty Regional Policy Statement (RPS) based on the current environment and the potential economic costs and benefits associated with existing and potential land use activities.

5. In undertaking this evidence I have had regard to:

a) Both the sections 32 and 42A reports prepared by the Regional Council;

b) The economic evidence presented by the Bay of Plenty Regional Council (BOPRC) including;

- Sandra Alison Barns;
- Professor Graeme John Doole; and
- Nicola Jane Smith;

c) The economic reports relating to BOPRC's position including;

- Market Economics Limited (2015). Economic impacts of Rotorua nitrogen reduction: District, regional and national evaluation. Report prepared for the Bay of Plenty Regional Council. (**ME 2015**)
- Parsons O, Doole G, Romera A (2015)(1). On-farm effects of diverse allocation mechanisms in the Lake Rotorua catchment. Report prepared for the Lake Rotorua Stakeholder Advisory Group. (**Parsons et al**.)
- Perrin Ag Consultants Ltd (2014). Rotorua NDA impact analysis: Phase I Project, Rotorua. Report prepared for the Bay of Plenty Regional Council. (**Perrin 2014**)
- Telfer Young (2014). Land values in the Rotorua area and the Lake Rotorua catchment. Report prepared for the Bay of Plenty Regional Council. (**Telfer Young 2014)**

6. Although I am aware this is a hearing before BOPRC I confirm that I have read the Code of Conduct for Expert Witnesses contained

in the Environment Court Practice Note 2014 and that I agree to comply with it. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that this evidence is within my area of expertise, except where I state that I am relying on the evidence of another person.

ROTORUA ECONOMIC ENVIRONMENT

7. The Rotorua District economy has recently seen substantial relative growth. For the year ended 2016 the District economy saw 4.1% growth in GDP while the nation experienced 3.2%.

8. Over the past 10 years the District's resident population has grown by approximately 2,500 people, representing a proportional growth of 3.7%. Under the 'unrestrained' BERL projections this resident population is expected to increase by over 23% within the next 20 years (over 16,000 people).

9. In terms of proportional representation and expected growth for the Rotorua economy, the tourism sector has accounted for 9.8% of GDP in the past 12 months (in comparison to 3.8% nationally). RLC's Council Controlled Organisation Rotorua Development Limited (operating as Destination Rotorua) suggests that visitor spending could exceed $1 billion by 2030. They further submit that a key restriction to this growth is the pressure on existing infrastructure, including water and wastewater.

10. The 2015/16 season saw the dairy industry in Rotorua collect a $205 million payout which is estimated to grow to $316 million in the 2016/17 season. This increases the economic significance of this income into the Rotorua District by over 50%.

11. There are currently 315 dairy herds in the District on 49,000ha of land. These farms operate above the North Island average with 1,055kg of milk solids per hectare and 382kg per cow (approximately 7% higher than the average).

12. In terms of the Rotorua catchment area of 50,000ha identified in Proposed Plan Change 10 (PC10) to the Bay of Plenty Regional Water and Land Plan (RWLP), approximately 5,000ha of this land operates as dairy farms accommodating some 16,000 head.

13. It is important to note that a key driver of the Rotorua economy is access to the water ways and lakes available to visitors and the resident population.

PROPOSED PLAN CHANGE 10 NITROGEN MANAGEMENT

14. PC10 seeks to reduce the level of nitrogen that terminates in Lake Rotorua that is generated through land use and other activities.

15. My understanding from the planning evidence presented by Mr Fuller and Mr Eccles is that the basis for this objective is that of sustainable community wellbeing through environmental management. To date the presence of large amounts of nitrogen in Lake Rotorua has resulted in undesirable environmental outcomes that have the potential to impact upon the economy through negative effects on tourism, recreational activities and public perception.

16. PC10 seeks to manage these effects, and others, through limiting the total amount of nitrogen discharged into Lake Rotorua to 435 tonnes per annum. The current comparable level through land use activities has been established at 755 tonnes of nitrogen per annum.

17. The proposed reduction of 320 tonnes per annum is anticipated to be achieved through the following land use changes and improvements:

- 50 tonnes through engineering improvements;
- 100 tonnes through the identified incentives scheme;
- 140 tonnes through land use changes; and

- 30 tonnes through gorse management.

18. This total reduction is staged to take place over the next 15 years with 70% of the reduction, or 220 tonnes, to be achieved by 2022 and the balance 30% to be achieved by 2032.

19. In order to manage the change in land use, PC10 proposes to implement a nitrogen trading scheme that allows the transfer of nitrogen loading to be traded between the original allocation to a market lead distribution based on a market price to be eventually determined by free market operations. This open trading is proposed to take place from 2022. Until the commencement of trading in 2022, the publicly funded incentives scheme (a publicly funded package of $40m) will be the only permitted purchaser.

20. The allocation of these nitrogen rights under PC10 is proposed to be based on a grandparenting approach with sector activity average ranges. This methodology allocates nitrogen rights based on the range of average nitrogen discharge by land use for the existing activity that was established under Rule 11 from 2001 to 2004 activity and nitrogen levels.

21. It is my understanding that the economic objective of the proposed nitrogen trading scheme (secondary to meeting the overall reduction of nitrogen discharge) is to achieve efficient land use and land use change with limited transactional and exchange costs.

ROTORUA LAKES COUNCIL SUBMISSION

22. The position submitted by RLC on PC10 highlights some fundamental concerns for the Rotorua Lakes community. My evidence pertains specifically to those issues advanced that are likely to result in impacts on the economic wellbeing of the Rotorua Lakes community. These include:

- The limitation of nitrogen discharge from the Waste Water Treatment Plant (WWTP) to 30 tonnes per annum with no identified opportunity for increase;

- Objectives and policies that do not preclude the reduction of allocations from urban loads;

- Concerns over the level of economic impacts presented with specific attention to the rural and rural supply communities;

- Concerns over the impacts on iwi land holdings;

- Concerns over the objectives of the Incentives Scheme in relation to economic impacts and the timing of this scheme.

23. The concerns raised in the RLC submission relate directly to the economic well-being of the entire community, its growth, and the distributional impact felt by specific and important sectors and participants within the community.

24. My evidence relates to the potential for the community to provide for its economic wellbeing in relation to PC10 as it is currently proposed.

CONCERNS RAISED OVER THE PROPOSED PC10 APPRAOCH

25. PC10 is supported by a significant quantum of economic assessment and research undertaken over the better part of a decade. This material has traversed a number of potential allocative scenarios that, for the most part, have been focussed on the economic impact of changes considered likely to result from intervention into the rural sector of the identified catchment and the corresponding predicted land use changes.

26. While having regard to the extent of that research, my evidence addresses a number of these assessments specifically including:

- The PC10 section 32 evaluation;

- The PC10 section 42A report;

- The economic reports noted in paragraph 5(c) of my evidence; and

- The economic evidence presented on behalf of BOPRC by Sandra Alison Barns, Professor Graeme John Doole, and Nicola Jane Smith.

27. In my view it is important to note that the deterioration of water quality in Lake Rotorua is a significant economic concern to both the local and regional economy.

28. In my opinion both the actual and perceived quality of the environment are fundamental to the economic performance of the Rotorua economy and the community's current and future economic wellbeing and standard of living. From an economic viewpoint the quality of the water systems should be assessed in terms of its economic value (with social considerations addressed similarly) and the economic costs associated with maintaining and improving it. This approach essentially forms an economic cost benefit assessment that should then form part of the evaluation required under section 32 of the RMA.

29. It is within this context that I have reviewed the economic assessments undertaken by BOPRC and with regard to the wider economic well-being of the Rotorua community. I have, as a result of the review I have undertaken, specific and fundamental concerns with the approach adopted in PC10 and also with the specific economic assessment undertaken for the economic component of the section 32 evaluation. I record my concerns below.

The Allocation of Nitrogen Rights

30. This issue relates to a key concern expressed by both RLC and a significant number of submitters. The approach adopted by BOPRC for the allocation of nitrogen rights plays a pivotal role in the economics of both efficient resource allocation and equity. These issues are both directly related to the economic costs and

benefits assessment directed in section 32 of the RMA and the principles established by BOPRC in evaluating the PC10 options (and identified in the ME 2015 report[1] as guiding the assessment of economic impacts).

31. The principles guiding the allocation of nitrogen rights under Policy WL 5B of the Bay of Plenty Regional Policy Statement (RPS) include:

    a. *Equity/fairness, including intergenerational equity;*
    b. *Extent of the immediate impact;*
    c. *Public and private benefits and costs;*
    d. *Iwi land ownership and its status including any Crown obligation;*
    e. *Cultural values;*
    f. *Resource use efficiency;*
    g. *Existing land use;*
    h. *Existing on farm capital investment; and*
    i. *Ease of transfer of the allocation.*

    I understand that the following principles were also considered by the Stakeholder Advisory Group (StAG):

    - No major windfalls for any sector;
    - Preference will be given to the allocation approach that has the least overall economic impact;
    - Existing investment (including in infrastructure, land value, cash investment and in nutrient loss mitigation) will be recognised; and
    - Practices that cause high nitrogen loss, relative to sector norms, will not be rewarded.

32. The current PC10 adoption of grandparenting through sector averages (grandparenting approach) raises significant concerns, in my opinion, in terms of the fairness or equity of BOPRC's approach to the allocation of nitrogen rights. The issues identified here are not new and have been addressed in materials relating to

[1] See page 3 of ME 2015.

PC10 and at length in several other plan changes, including the changes to the Manawatu-Wanganui Regional Council Proposed One Plan (Horizon One Plan)[2] and the Hawkes Bay Tukituki plan change through the Environment Court, Board of Inquiry and the Court of Appeal. However, it is the extent of these economic inequities and impacts on efficiency that have, in my opinion, not been adequately evaluated for PC10.

33. While BOPRC's grandparenting approach to allocation was assessed separately in the Parsons et al and ME 2015 reports (in terms of direct impacts on viability and economic activity), and collectively in the Section 32 and 42A reports, I do not believe that adequate importance has been identified or conferred to the level of the potential economic costs associated with this allocative approach. Based on this, I do not believe that the grandparenting approach proposed in PC10 best meets the Rotorua community's economic interests which, in turn, has a consequence for the community's ability to provide for its social and economic wellbeing.

34. I acknowledge that a key economic benefit of the proposed BOPRC grandparenting approach is that it recognises the level of current investment (in terms of operations, not land) into rural activities. The grandparenting approach typically results in a lower transition cost as existing activities are supported through the allocation of additional capital (that is, the value of the nitrogen rights). The grandparenting approach is also more likely to retain the current distribution of land use activities as the impact of the cost of nitrogen discharge is already mitigated through the allocation of the nitrogen rights.

35. The converse of BOPRC's grandparenting approach is that there is an increased potential for the retention of economically inefficient land uses. This, in my opinion, is a key issue with the

[2] Day v Manawatu-Wanganui Regional Council [2012] NZEnvC 182

grandparenting approach's long term impacts on economic efficiency and community well-being.

36. In assessing the difference between a grandparenting approach to nitrogen allocation and an approach that followed one along the lines of natural capital, the Environment Court held that:

'*We accept the evidence of Dr Mackay when he states: The major' strength of this approach is that in calculating the N leaching loss limit, it considers the whole catchment and is not prescriptive. It is not linked to current land use, but rather linked to the underlying land resource in the catchment. The approach does not target the land use or intensity of use and it does not place limits on outputs; rather it allocated N leaching·loss limits to each LUC unit based on the biophysical potential of the natural capital of the soil. It treats farms with the same resources in the same manner, regardless of current use. lt disadvantages high input, highly productive farms on soils with little inherent natural capital (eg sand country, gravels and steep land soil) to limit N leaching, even when BMPs have been followed. He goes on to say that to achieve the most efficient use of resources with the least environmental impact, N leaching loss limits should be weighted towards those soils with the greatest natural capital, and continues:* ***The LUC natural capital approach is also portable beyond the priority catchments and sends important messages (it does not reward the biggest polluters, does not penalise conservative behaviour and does not disadvantage owners of undeveloped land) and timely signals (eg establishes a target for mitigation practice and to find a threshold above which the capital investment in 'increasing production must be extended to mitigation technologies, including significant modifications to farm design)****.*'[3]

[My emphasis added.]

[3] Ibid at page 38.

37. Seeking to implement the concept of natural capital into a market is a growing concern to policy makers internationally:

"Green growth means fostering economic growth and development while ensuring that the natural assets continue to provide the resources and environmental services on which our well-being relies. To do this, it must catalyse investment and innovation which will underpin sustained growth and give rise to new economic opportunities." [4]

38. The impacts, identified above, on underutilised land have been identified in both the section 32 and 42a reports but have not been quantified or addressed, in my opinion, in terms of the potential level of their economic impacts in either report.

39. Additionally, the grandparenting approach proposed in PC10 has raised several concerns with regard to equity. While the ME 2015 report addresses the potential sector equities it does not address nor assess the level of impact on underdeveloped land. This pertains directly to the principles by which the allocation approach was assessed as well as the further considerations of windfalls and existing investment in terms of land value.

40. The grandparenting approach adopted by BOPRC significantly disadvantages property owners of underdeveloped land. This not only impacts upon issues of equity but also on the viability for development of potentially highly productive land.

41. With nitrogen expected to trade at between $300[5] and $400/kg/pa, the additional cost of developing previous unutilised land for dairy activities ranges from $10,000 to $14,800 per hectare (over the past 3 years diary land has sold for $20,000 per hectare[6]), while converting dry stock activities to dairy would require up to $8,000 per hectare more. This additional cost essentially excludes land that could be of higher productivity than is currently in operation.

[4] OECD. "Towards Green Growth: A summary for policy makers", May 2011.
[5] Dohun, McDonald and Kerr. Motu Working Paper 15-07. Nitrogen Trading in Lake Taupo. 2015
[6] Telfer Young (2014). Land values in the Rotorua area and the Lake Rotorua catchment.

42. The addition of further existing capital, in the form of tradeable nitrogen rights, forms an additional barrier to entry for land that is of greater productivity than is currently operated in the market. As I have outlined above, the additional costs of operation are likely to render many of these sites unviable. This in turn is less likely to result in an economically efficient outcome with this margin of cost representing the potential difference in efficiency.

43. In terms of the most affected party[7], Maori land owners are disproportionately impacted by the grandparenting approach to allocation. Parties such as Maori land owners have not had either the time nor the capital resources to historically develop their land and provide for their economic well-being. As outlined in the Section 32 report[8] the position taken by BOPRC is that this inequity has been perpetrated by Rule 11 of the RWLP, limiting nitrogen discharge to the baseline (2001 to 2004) period. From an economic perspective however, the options available under PC10 should be assessed against each other in my view. If indeed the baseline position is that outlined by Rule 11 of the RWLP, PC10 nevertheless represents an opportunity to 'undo' the economic inequities created by that Rule. While these may not, in the context of cost benefit analysis, represent costs of the grandparenting allocation, they do represent economic benefits for allocating through the alternative natural capital approach.[9]

44. This inequity was highlighted in the Motu review of the Taupo nitrogen allocation adopted through Variation 5 to the then Proposed Waikato Regional Plan:

'*However, grandparenting significantly favours those with high discharges in the benchmark period (2001–05). Those lands previously used for low-nitrogen leaching activities, along with those farms previously facing capital constraints or other factors that historically restricted their ability to operate at higher production levels, now face significant costs if they wish to convert*

[7] With over 25% of the identified PC10 catchment
[8] See page 120.
[9] These inequities were outlined by Environmental Management Services 2009

their land to more nitrogen-intensive uses. This restriction significantly affected the local iwi, Ngati Tuwharetoa'.[10]

45. The extent of this inequity in the PC10 context is more than significant in my opinion. Estimating the value to land owners of tradeable nitrogen rights is difficult but an estimate based on the value attributable to the incentives scheme gives some degree of magnitude to the value. With 100 tonnes and $40 million, I estimate that nitrogen may trade at $400kg which would value the redistribution of the rural sectors rights at over $182 million; this is a sizable redistribution (this excludes the value of the reduction required by 2032 including gorse reduction). The grandparenting approach essentially provides substantial capital value to existing land uses benefitting those land uses that have existing high discharges of nitrogen and low productivity values (in other words, the converse of the natural capital approach).

46. An allocation based on pre-existing operations like that currently proposed in PC10 simply, in my opinion, serves to reinforce existing inefficiencies and create additional barriers to the Rotorua rural economy becoming more efficient in the long term.

47. While the transactional and redistribution costs of a natural capital approach are potentially higher than the comparative costs of a grandparenting approach, these can be mitigated through the facilitation of a transition by way of information provision, utilisation of an incentives scheme and incorporation of a viable transition period. The economic assessment undertaken for PC10 highlights the gap between the current land use and that which would be sustainable longterm under a natural capital scenario. This scenario allows historical inefficiencies to be rectified rather than perpetuate them and, in the case of allocating tradeable rights reinforce them with additional capital rights.

48. In my opinion, whichever allocative approach is finally adopted in PC10, the costs and benefits will not be evenly distributed. However I consider it is important that, when contemplating the

[10] Dohun, McDonald and Kerr. Motu Working Paper 15-07. Nitrogen Trading in Lake Taupo. 2015, page 10.

appropriate economic position, that all potential costs and benefits are appropriately assessed and weighed. In my view the section 32 evaluation for PC10 has not yet done this.

The Recognition of Urban Infrastructure

49. A further economic concern raised in the RLC submission relates to the provision of wastewater infrastructure and the economic ramifications of potentially restricting growth, with subsequent costs to the community.

50. While the impact of nitrogen discharge from urban infrastructure (and rural residential discharge) is acknowledged in Rule 11 of the RWLP, PC10 represents a further potential impact on the Rotorua District economy through its potential restriction on growth and the costs associated with that restriction. While it is acknowledged that urban infrastructure (primarily wastewater) contributes to the discharge of nitrogen into Lake Rotorua, it is also fundamental to both the economic growth of the District and the community's economic wellbeing that is brought about through population growth.

51. Population projections provided by BERL (unrestrained) show the District's population increasing by 23% or some 16,000 residents in the next 20 years. This level of growth will have a significant impact upon the District's economy, supporting continued economic growth beyond that experienced nationally.

52. The potential for PC10 to restrict this growth comes at a significant risk and should be, in my view, better understood and recognised in the PC10 provisions. Adherence to the restrictions (and potential reductions) also comes at considerable implementation costs. While these implementation costs could be weighed against the cost of the community buying nitrogen rights post-2022, the risk of financial restrictions could lead to a less than economically efficient outcome for the community.

53. While I understand from Mr Banks' evidence that some allowance has been agreed between BOPRC and RLC for urban growth as a

result of expansion into rural land, this still does not expressly allow for growth through intensification either of residents or tourism operators. It is fundamental, in my opinion, that there is a clear understanding of the potential risks associated with limited flexibility. While this, once again, raises the question of the baseline for impacts (being the restrictions imposed under Rule 11 of the RWLP), PC10 offers a potential opportunity to meet the community's economic needs through the facilitation of sustainable and efficient growth.

54. These impacts become evident when considering the marginal costs of providing for increasingly improved infrastructure. While maintaining Rotorua's wastewater infrastructure at the limit of technology may cost $30 million in order to meet the RWLP's nitrogen requirements, I note Mr Brian's estimate annexed to Mr Banks' evidence, that beyond this point reducing this discharge by only a few tonnes more may cost between $15 million and $20 million. This illustrates the significant diminishing returns of the cost to the community which are likely to very quickly exceed the economic benefits. While this may be a short term issue, the longer term issue is the funding of nitrogen trading for community needs and the financial issues pertaining to this.

55. The potential costs associated with PC10 as currently proposed go beyond the potential impact on Rotorua's resident population; the costs extend to the tourism sector as well. With Rotorua's visitor spend expected to exceed $1 billion by 2030, the corresponding demand on urban infrastructure and discharge rates will increase significantly. The economic significance of the tourism sector alone is sufficient to warrant increased flexibility in future allocation under PC10.

56. It is important to note that the provision of urban infrastructure is a public service, reflected in RLC's statutory duties and functions under the Local Government Act, due to the crucial economic benefits accruing from its utilisation. This however means that the economic benefits are primarily realised by the community itself and not the provider. As such, RLC does not operate effectively

and efficiently within the market as a provider of urban infrastructure and is unlikely to be an efficient participant in the purchase of nitrogen rights.

57. I am unaware of any economic assessment that has been utilised by BOPRC to assess the appropriate level of nitrogen allocation for the public or an outline of the potential risks to the Rotorua economy due to the potential lack of flexibility in allocation under PC10.

Moratorium on Tradeable Rights

58. While I agree that the nitrogen trading programme will provide a potentially low cost approach to the re-balancing of nitrogen usage, the economic costs to the economy of the moratorium on trading until 2022 has not, to my knowledge, been assessed.

59. Though there appears to be clear rationale for the suspension (in terms of restricting the market pressure on the incentive scheme) the relative costs of this approach on the efficient operation of the economy has not been assessed in terms of its relative risk. This approach essentially restricts any rural land use change (including unexpected changes to urban growth) for up to 5 years and is likely to come at a short term economic cost.

60. In terms of economic cost benefit it is important, in my opinion, that decisions that could significantly impact upon Rotorua's economy are assessed against their relative risks. While there is a risk associated with requiring participation in an open market (i.e. the requirement to purchase 100 tonnes) it is important to consider the level of this risk.

61. In my opinion there is insufficient economic analysis to allay RLC's concern regarding the potential economic impacts of this moratorium on the Rotorua community's economic well-being.

Economic Assessment Undertaken

62. As I have identified above, there are a variety of economic concerns stemming from my review of the assessment undertaken

by BOPRC in the context of PC10. While I acknowledge the work undertaken by the experts in assessing the potential changes to the rural markets and the subsequent economic impacts, I believe that the assessment compiled by BOPRC has been too narrowly focussed and has not adequately assessed the level of risk (or the economic costs and benefits) associated with all possible approaches available to the management of nitrogen discharges to Lake Rotorua.

63. The first point I would like to make relates to the baseline assessment. The section 42A report[11] states that the position from which to assess the economic impacts (and other factors) starts at the baseline created by Rule 11 of the RWLP. At this point it is unclear whether economic criteria and economic well-being played a role in the establishment of the restricted levels applied to existing uses under Rule 11 or whether PC10 now offers an opportunity to reassess this. However, as I have already discussed, with regard to economic cost benefit, the most economically efficient approach should be sought; this would suggest that potential economic costs incurred through Rule 11 that can be redressed through PC10 should be.

64. There are, however, some issues that remain as a result of the approach taken by the economic assessment outlined in the section 32 evaluation. While I agree with the general approach taken in the economic assessment undertaken by Perrin Ag Consultants, Parsons et al, and Market Economics there remain some issues I will now record with the overall approach to a cost benefit assessment undertaken by BOPRC.

65. It is important to note that this assessment is relative and although there are concerns regarding the inclusion of tourism impacts and other factors, I consider these are unlikely to alter the relativity between the options. This includes the potential impacts on

[11] See Section 7.2.

tourism of the reduction proposed by PC10 as outlined with regard to urban infrastructure.

66. There are also direct impacts on capital to be considered. The Motu review of the Taupo scheme found anecdotally that land prices fell by between 5 and 10%, while the Telfer Young report provided to BOPRC found a 15 to 25% fall in dairy land as a result of Rule 11 (and predicted a further 10 -15% fall due to PC10).

67. While property price impacts are likely to be experienced under each scenario these property price falls have significant economic impacts on the wealth and economic prosperity and viability of the Rotorua community.

68. Essentially, in my opinion, a key issue with the economic assessment is that it does not adequately outline and weigh all the potential economic costs and benefits of the PC10 approach.

69. In terms of the direct impacts on the rural sector of the Rotorua economy, there are two deciding factors in the assessment and several significant assumptions. The first is the type of allocation and the second is the level of 'efficiency' in relation to trading.

70. 100% efficient trading means that the nominal impacts are the same between the allocation options, with the grandparenting approach exhibiting the lowest nominal impacts under the 50% efficiency assessment. However, the operation of a trading market to 2032 is likely to be impacted by several other factors including the established price of nitrogen and the original allocation. Thus, if greater trading occurs under the natural capital approach then the direct economic impacts are likely to be relatively less.

71. Overall however I do not believe that beyond these direct impacts the potential extent of other economic costs have been adequately assessed in the section 32 evaluation.

72. Turning to the ME report, its assessment of the economic impacts of Rotorua nitrogen reduction would appear to be more limited in scope than the title would first suggest. The report itself focuses

on the impact of scenarios for land use change to the rural sector of the Rotorua economy predicted to occur through the implementation of PC10 at the point where the nitrogen targets have been met. This assessment has been based on the Parsons et al report.

73. With regard to PC10, the ME report states that it seeks to inform the consideration of the proposed change in terms of the principles of equity/fairness and resource use efficiency. While not being privy to the workings and full assumptions (which raises some questions in my mind) of the report, it does provide an outline of the process which would adequately assess the direct impacts on the farming sectors, as a result of the changes in land use activities there are several aspects that are concerning or absent from the economic assessment.

74. The ME report explicitly identifies its limitations, including the fact that it does not constitute all costs and benefits associated with implementation of PC10. This fact is crucial, in my view, when considering the wider economic impacts that have the potential to result from the PC10 provisions as they are currently proposed.

75. There are several issues that are raised by the both the results of the ME report, and subsequent evidence, and the breadth of its focus on the principles outlined.

76. As I identified earlier, the level of direct economic impact (through the economic impact assessment) is highly sensitive to the level of efficiency under the tradeable rights scheme with little difference in the nominal impact between the 3 allocation scenarios assessed. The development and allocation of a scheme that tends more towards that which natural capital will facilitate is likely to result in greater production per nitrogen discharge and under favourable market conditions is likely to have a greater propensity for this efficiency. As such the direct impacts upon this aspect of the economic cost benefit for PC10 are likely to be less discernible than indicated through the ME report.

77. The ME report addresses equity in terms of sector imbalance and considerations of private infrastructure investment. However, as outlined earlier in my evidence there are significant impacts on land investment and property values that have not been addressed in light of the economic benefits associated with the scenarios available.

78. Additionally, the ME report has not addressed the concept of resource use efficiency in terms of a sustainable Rotorua economy where production considers the costs of nitrogen (and other environmental costs) and allocates activities to the most productive (least cost) land available.

79. No assessment has been undertaken that I am aware of as to the costs associated with continuing to encourage a market where the most efficient land use is not maintained. This approach does not seek to balance the costs and benefits of land use over the longterm where the most productive land (including per nitrogen discharge) is identified and encouraged.

80. This assessment, in my opinion, sits at the crux of the purpose of the Act (RMA) to promote the sustainable management of natural and physical resources.

Conclusions

81. Lake Rotorua and the quality of the water and the associated environment plays a significant role in the economic well-being of the Rotorua community.

82. The sustainable management of this resource through the management of impacts from nitrogen discharge are a vital economic consideration.

83. It is important in understanding the most appropriate policy and management approach to adopt , to have regard to the economic costs and benefits associated with intervention that seeks to balance and internalise appropriate costs into the market.

84. In considering the options for the management, and reduction, of nitrogen discharge in the Lake Rotorua catchment it is important to consider the resulting levels of resource efficiency and whether or not PC10 is likely to facilitate or hinder this level of efficiency in the future.

85. In addressing and 'internalising' the cost of nitrogen discharge it is important to have regard for the balance of economic costs and benefits.

86. The adoption of an allocative approach for nitrogen rights utilising a grandparenting (with sector averages) methodology is likely to have significant impacts on allocative efficiency and equity over the long term. While the direct economic impact of potential changes to land use profitability have been assessed under the section 32 report this assessment does not, in my opinion, form a sound basis to assess the potential economic costs associated with the approach.

87. If it is held that Rule 11 of the RWLP is the appropriate baseline from which to assess impacts, it is still prudent to consider the potential effects of an approach that results in positive economic benefits in light of changes to the existing framework.

88. The concept of natural capital as an appropriate response to environmental considerations allows previously 'external' impacts to be considered in market decisions by recognising the lower environmental costs associated with land when considering the overall productivity and viability.

89. This approach also addresses the concern with regard to the equity associated with underdeveloped land that potentially meets the low cost criteria.

90. This flexibility for land use is crucial, in my opinion, in achieving an economically efficient land use outcome.

91. Given the need for flexibility for land use change there is an economic concern regarding the potential costs associated with the

moratorium on trading to 2022. While the concerns that have led to this proposal are acknowledged, it is currently unclear if an assessment has been undertaken illustrating the potential risk to the economy of restricting land use changes over this period of time.

92. A further economic risk associated with PC10 as it is proposed is the impact on residential growth. While significant efforts and expense have been made by RLC to reduce the overall level of nitrogen discharge from wastewater management, the costs to the community of future under allocation has the potential to be more than significant.

93. Given the substantial level of residential growth (in excess of 50%) projected by BERL over the next 15 years it is crucial that the additional demand can be met by public infrastructure both practically and in a cost-effective manner. It is important to note that the price mechanisms (with regard to the productive value of nitrogen discharge) that apply to the private market for nitrogen rights are not as clear with regards to the public sector i.e. the value attributable to their use is a community wide benefit.

94. Given the level of risk associated with restricting Rotorua's growth it is recommended that PC10 provides this public infrastructure with greater flexibility and potential allocation.

95. Overall, it is my opinion that the economic assessment of PC10 does not consider adequately all potential and pertinent economic costs and benefits. On the basis that I consider that an alternative allocation methodology, which in this case is the natural capital approach, is more likely to meet the requirements of economic efficiency and equity for the Rotorua community.

Phil Osborne
22 February 2017