IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of a submission in respect of the **PROPOSED WAIKATO DISTRICT PLAN** by **AMBURY PROPERTIES LIMITED** pursuant to Clause 6 of Schedule 1 of the Act seeking the rezoning of land at Ohinewai

STATEMENT OF EVIDENCE OF PHILIP MARK OSBORNE

1. INTRODUCTION

1.1 My name is Philip Mark Osborne. I am an economic consultant for the company Property Economics Ltd ("PEL"), based in Auckland. The company provides property development, land use research and impact assessment services to both the private and public sectors throughout New Zealand.

Qualifications and experience

1.2 My academic qualifications include Bachelor of Arts (History/Economics), Masters in Commerce, and a Masters in Planning Practice, from Auckland University. I have provisionally completed my doctoral thesis in developmental economics.

1.3 I have provided economic advice for both local government throughout New Zealand and central government agencies. Areas of advice relevant to this evidence have included the potential economic impacts of public projects as well as the economic impacts in relation to industrial, commercial and residential land use issues and their influence on economic well-being.

1.4 I also provide consultancy services to a number of large private sector clients in respect of a wide range of property issues, including economic impact assessments, commercial and industrial market assessments, and forecasting market growth and land requirements across all property sectors.

Involvement in the application

1.5 Property Economics was engaged by Ngati Tuwharetoa Geothermal Assets Limited (NTGA) to assess the economic risks to their operations in the current economic climate and situation in Kawerau, in particular, the potential commercial and economic effects that are likely to arise as a result of a requirement to expend circa $35-45 million on the infrastructure required for reinjection of geothermal fluid.

Purpose and scope of evidence

1.6 Against that background, the purpose of my evidence is to:

(a) Assess the potential economic effects arising out of the operations of Ngati Tuwharetoa Geothermal Assets (NTGA) on the regional economy.

(b) Assess the value of the businesses currently supplied by NTGA operations.

(c) Assess the potential risks associated with the application of a consent requiring the development of reinjection infrastructure within the current economic environment.

1.7 Specifically, my evidence will:

(a) Outline economic considerations relevant to NTGA's operations (Section 3);

(b) Outline the Bay of Plenty regional economy (Section 4);

(c) Assess the economic contribution of NTGA operations to the regional economy (Section 5);

(d) Discuss operating risks - general economic costs, benefits and risks (Section 6); and

(e) Provide a brief conclusion (Section 7).

1.8 A summary of my evidence is provided in Section 2.

1.9 My evidence needs to be considered alongside the evidence of NTGA Chief Executive, Spence McClintock, which describes NTGA's operations and customer base.

Expert Witness Code of Conduct

1.10 I have read the Code of Conduct for Expert Witnesses, contained in the Environment Court Consolidated Practice Note (2014) and I agree to comply with it. I can confirm that the issues addressed in this statement are within my area of expertise and that in preparing my evidence I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

2. SUMMARY OF MY EVIDENCE

2.1 In terms of its business operation, NTGA seeks to attract and supply businesses adopting clean energy technologies. These operations represent a unique opportunity to provide a high heat resource that provides for industrial requirements and supports varied and productive business operations within the Bay of Plenty Region.

2.2 NTGA supplies geothermal industrial process heat from the Kawerau Geothermal Field (KGF) and electricity generated from the KGF to a number of industrial customers in Kawerau. Kawerau is the largest direct heat use site of geothermal steam in the world and NTGA is the largest supplier of geothermal industrial process heat in the world. These operations account for 86% of New Zealand's direct use of process heat for industrial processes.

Contribution to regional economy

2.3 The NTGA operations directly contribute to the regional economy through energy production providing a total of $23m per annum and 128 jobs (including indirect and induced impacts). The direct uses associated with NTGA outputs contribute a further $195m per annum to the Bay of Plenty economy and support over 2,000 jobs.

Risks faced by NTGA

2.4 There are a number of risks facing NTGA's geothermal production, and by association, its economic contribution to the local and regional economies. These risks include:

(a) Significant upfront and ongoing capital investment in infrastructure as well as increased operational expenses.

(b) Fixed locational supply to a limited range of large customers., some of which are supplied under 'legacy' contracts that NTGA assumed from the Crown when it acquired the Crown's steamfield assets in

2005 and which contained 30-year contractual obligations for supply that do not expire until 2035.

(c) Covid 19 has impacted upon much of the economy. In relation to NTGA operations it has primarily impacted upon the markets relied upon by their customers, generally impacting upon viability and sustainability.

2.5 As regards (b) above, highly relevant in the present context are the issues facing the operation of the Norske Skog (NST) mill – recent reports indicate that the longevity of this business is in question and its closure likely.

2.6 As a customer, NST accounts for nearly 30% of NTGA revenues and currently relies on the low-cost energy (as provided for by the legacy Crown contracts) provided by the geothermal operations to keep over 160 people employed.

2.7 This in turn places substantial operational and financial risk on NTGA to deal with that significant reduction in income, including diversification into alternative aspects of geothermal energy demand (e.g., cascade use) all of which would require significant research and development and capital costs.

2.8 In this context, the requirement for NTGA to develop infrastructure necessary to re-inject spent geothermal fluid (including wells and pipelines) would represent a significant financial imposition that, coupled with the impact of the likely NST closure, signifies a substantial risk to NTGA operations and the 2,000 regional jobs currently generated through their energy provision.

Material countervailing benefits required

2.9 To justify that economic imposition and consequent adverse effects, I consider that material countervailing benefits would need to be demonstrated. This is typically undertaken through economic cost benefit analysis. My understanding is that:

(a) Reinjection is not required to maintain the KGF;

(b) The discharge that would be discontinued to enable reinjection is having only minor adverse effects on the Tarawera River;

(c) The only opposition to the discharge is on cultural grounds.

2.10 In these circumstances, I consider that the most prudent course of action, from an economic perspective, is to enable the status quo to be maintained under the current conditions.

3. NTGA'S OPERATIONS - ECONOMIC CONSIDERATIONS

3.1 NTGA supplies geothermal fluid and steam from the Kawerau Geothermal Field (KGF) and electricity generated from the KGF to a number of industrial customers in Kawerau. Kawerau is the largest direct heat use site of geothermal steam in the world and NTGA is the largest supplier of geothermal industrial process heat in the world.

3.2 In terms of its business operation, NTGA seeks to attract and supply businesses adopting clean energy technologies. These operations represent a unique opportunity to provide a high heat resource that provides for industrial requirements and supports varied and productive business operations within the Bay of Plenty Region.

3.3 As noted in Mr McClintock's evidence:

> *"4.2 NTGA has supply contracts with the following organisations:*
>
> *(a) Norske Skog Tasman ("NST") – 2,000,000 tonnes per annum ("tpa") of steam.*
>
> *(b) Asaleo Care NZ Limited – 228,000 tpa of steam.*
>
> *(c) OJI Fibre Solutions – 175,000 tpa of steam.*
>
> *(d) Kawerau Dairy Plant (Waiu) – 25,000 tpa of steam.*
>
> *(e) Carter Holt Harvey Wood Products ("CHH") – 368,000 tpa of steam.*
>
> *(f) Ngati Tuwharetoa Electricity (TOPP1 Power Plant) – 1,000,000 tpa of steam and 5,260,000 tpa of brine.*
>
> *(g) Sequal Lumber – 150,000 tpa of steam.*
>
> *4.3 NTGA also has an agreement to supply 2,190,000 tpa of two-phase geothermal fluid from KA24 to the Eastland Generation Geothermal Development Limited power plant under an operating lease arrangement that relies on shallow reinjection by Eastland Generation."*

3.4 Of particular note in the present context is the very large supply to Norske Skog Tasman (NST), given what I understand from Mr McClintock to be the very high likelihood of these operations closing.

4. THE BAY OF PLENTY ECONOMY

4.1 The Bay of Plenty economy has grown steadily over the past decade achieving employment growth materially higher than the national average (20% nationally compared to 28% for the region[1]).

4.2 As identified in Table 1 below, while growth in the 'Wood Product and Pulp and Paper Manufacturing' sectors has been slightly more subdued, 15% respectively, the sector growth has also outstripped relative national growth rates. Several recent reports have highlighted geothermal energy as a significant economic advantage to the Bay of Plenty Region, not only in terms of production but its ability to attract high use businesses, that seek clean energy sources, into the region.

Table 1: Regional Employment Growth (2000 – 2020)

	2000	2010	2014	2020
A Agriculture, Forestry and Fishing	7,300	9,900	10,000	12,000
B Mining	80	110	100	85
C Manufacturing	12,600	11,800	11,700	13,400
C14 Wood Product Manufacturing	*3,050*	*2,150*	*2,150*	*2,450*
C15 Pulp, Paper and Converted Paper Product Mar	*1,900*	*1,100*	*810*	*940*
D Electricity, Gas, Water and Waste Services	340	560	780	1,600
D26 Electricity Supply	*55*	*140*	*250*	*1,050*
E Construction	4,750	6,700	8,000	11,600
F Wholesale Trade	3,450	4,050	4,450	5,300
G Retail Trade	10,500	12,300	12,200	14,500
H Accommodation and Food Services	6,500	8,200	8,400	10,700
I Transport, Postal and Warehousing	4,950	4,700	5,400	6,500
J Information Media and Telecommunications	1,400	780	820	770
K Financial and Insurance Services	1,400	1,700	1,650	2,100
L Rental, Hiring and Real Estate Services	1,150	1,500	1,350	2,000
M Professional, Scientific and Technical Services	4,000	5,500	5,900	6,900
N Administrative and Support Services	2,850	5,500	5,800	8,000
O Public Administration and Safety	3,300	4,250	4,550	5,900
P Education and Training	7,200	10,100	10,000	11,600
Q Health Care and Social Assistance	9,800	13,600	14,500	16,400
R Arts and Recreation Services	1,650	2,200	2,150	2,850
S Other Services	2,850	4,050	4,100	5,300
TOTAL	**86,070**	**107,500**	**111,850**	**137,505**

4.3 While this overall growth is important, Table 2 below highlights the relative business sector advantages represented by the regional employment composition. This illustrates the relative advantages and importance of Agriculture (1.67), but also that of Utilities, specifically the Energy Sector (1.43) to the regional economy. In fact, employment in the Energy Sector

[1] Based on Statistics New Zealand Business Frame data as of March 2021

has tripled over the past 10 years with Electricity Supply accounting for 90% of this growth.

4.4 The information in this table represents an important consideration in assessing NTGA's contribution to the regional economy.

Table 2: Regional Employment (National) Composition Relativity (2020)

ANZSIC (2020)	Total Employment		Relative Employment
	Bay of Plenty Region	New Zealand	Bay of Plenty Region
A Agriculture, Forestry and Fishing	12,000	120,800	1.67
B Mining	85	5,700	0.25
C Manufacturing	13,400	235,200	0.96
D Electricity, Gas, Water and Waste Services	1,600	18,900	1.43
E Construction	11,600	183,300	1.07
F Wholesale Trade	5,300	116,700	0.77
G Retail Trade	14,500	221,500	1.10
H Accommodation and Food Services	10,700	174,300	1.03
I Transport, Postal and Warehousing	6,500	98,500	1.11
J Information Media and Telecommunications	770	32,200	0.40
K Financial and Insurance Services	2,100	58,100	0.61
L Rental, Hiring and Real Estate Services	2,000	34,900	0.97
M Professional, Scientific and Technical Services	6,900	189,000	0.62
N Administrative and Support Services	8,000	123,500	1.09
O Public Administration and Safety	5,900	137,300	0.72
P Education and Training	11,600	195,600	1.00
Q Health Care and Social Assistance	16,400	250,100	1.10
R Arts and Recreation Services	2,850	44,600	1.08
S Other Services	5,300	76,600	1.17

5. NTGA REGIONAL ECONOMIC CONTRIBUTION

5.1 The following analysis of the potential economic impacts associated with the NTGA operations is not intended to be an exhaustive assessment of all impacts of the operations, but rather a primary assessment of the economic contribution at a regional level resulting from the sustained NTGA operations and the regional business that currently relies on these outputs.

Assessment approach

5.2 The position presented in this evidence is that the cumulative risk on NTGA operations is likely to be significant, with increased financial outlay and substantial short-term risks associated with current customers. This could

result in cessation of operations with limited to no productivity value associated with the existing capital investment and therefore a limited associated economic contribution.

5.3 The economic assessment overview has estimated the total value-added production to the Bay of Plenty Region's business activity brought about by the NTGA direct operations as well as the value added by the activities currently sourcing energy from these operations that are assumed to be 'unique'[2] in terms of an addition to the regional economy.

5.4 The specific information pertaining to the levels of activity (business spend, employment, etc) for the geothermal activities have been provided by NTGA. When considering such 'flow-on' activities as direct use, the assessment has utilised activities relevant directly to the NTGA operations while assessing data at a higher district and regional level. This is undertaken through both regional GDP assessments and Statistics New Zealand employment measures, such as those outlined in Table 1 above.

5.5 It is important to note that due to the location of these resources the assessment is location specific and as such has significant barriers to entry (including the capital investment required) that would make replication difficult.

5.6 As outlined, the economic impacts likely to be at risk as a result of the requirement to investment in reinjection wells and pipelines are broken down into two aspects:

(a) The direct operations of NTGA in the production of energy and process heat; and

(b) The businesses that currently rely on NTGA operations for production and their economic contribution to the regional economy

5.7 Both of these aspects are measured in terms of their expected direct, indirect, and induced economic impacts upon the regional economy. The direct economic impacts are derived from the actual spending / expenses incurred through the operation of the associated businesses.

5.8 Indirect economic impacts are the increased spending brought about by those firms / households and their employees / occupants, who supply the development, while induced economic benefits are measured in terms of the

[2] Assumed that these operations are unlikely to operate with alternate energy sources

additional income that will be spent in the area due to increased business activity.

Assumptions

5.9 The following assumptions have been applied in order to assess the level of economic injection into the overall economy at this time. This has some (limited) impact on the distributional effects of the costs and benefits but can be quickly adjusted to accommodate more specific construction and ongoing costs and injections:

(a) Not all economic impacts will be restricted to the Bay of Plenty Region, however, the distribution of these wider impacts were not assessed and are not addressed in this statement of evidence.

(b) The origin of labour has been assessed based on regional labour movements furnished by Statistics NZ based on 2018 data. Employment data has been updated as per the Business Frame data to March 2021.

(c) This statement of evidence address the economic impact of proposed development on the Bay of Plenty Region. These are specifically the direct impacts related to the operation of the unique aspects of the businesses.

(d) Labour movements are based on average retention rates rather than specific company locations.

(e) The proportion of materials and labour internalised in direct benefits to the Bay of Plenty are based on standardised labour movements as well as employment (depicted in Tables 1 and 2) and production composition within the Region.

(f) The NTGA operation has an indicative operating cost of $5m per annum.

(g) The retention of retail expenditure (through increased employment and household spend) is based on the current level of retail provision.

(h) The unique nature of the business impacts are limited to the NTGA operations, additional retail spend attracted regionally, and associated 'additional' business activities.

5.10 Table 3 below outlines the economic contribution of these activities in terms of both value-added GDP and employment to the Bay of Plenty Region. Currently the direct injection into the Bay of Plenty Regional economy, as a result of the NTGA operations, is estimated at $23m per annum (in 2020 dollars) with an additional 128 EC's (employees) generated.

Table 3: NTGA Regional Economic Contribution (2020)

	Direct Value Added	Indirect Value Added	Induced Value Value	Total Value Added
Economic Contribution ($m)				
Total Energy Production	7.72	15.06	0.39	23.17
Total Direct Use Production	65.24	127.22	3.26	195.72
Employment Contribution (EC's)				
Total Energy Production	15	108	4	128
Total Direct Use Production	522	1,463	53	2,038

5.11 The total direct use production directly contributes $65m per annum to the regional economy. When considering indirect and induced effects this increases to over $195m per annum to the region. In terms of employment the total uses resulting from NTGA operations supports over 2,000 jobs in the region each year.

5.12 As a result of NTGA operations, Ngati Tuwharetoa provides financial assistance through a trust to the local Kawerau community. These funds represent significant value to the community's economic and social well-being. Mr McClintock's evidence in that regard at paragraphs 2.9 and 2.10 is, in summary, that the trust distributed $300,000 to its beneficiaries in the 2020 year and was intending to significantly increase distributions in coming years, but those distributions would be at significant risk if NTGA's operations are at significant risk.

5.13 It is clear from the above that NTGA operations represent a considerable direct and supporting contribution to both the district and regional economy, through direct value-added production, employment, and direct support through trust contributions to the local community.

5.14 These contributions in whole or part are potentially at risk of a confluence of financial and operational issues.

6. OPERATING RISKS

6.1 There are several factors that are likely to contribute to a business environment that could potentially influence the extent (or cessation) of NTGA operations.

6.2 Several sectors within the industries that support both the district and regional economies in the Bay of Plenty have recently seen substantial constraints coupled with increasing production costs. More recently, these manufacturers have seen increased energy costs[3] that, coupled with the effects of Covid, have placed increased pressure on rationalisation and closures.

6.3 The regional significance of NTGA operations and supported business is outlined above; however, the importance of this activity is even more significant in the national context. This is made evident through the legacy contracts inherited from the Crown in 2005 that NTGA is required to honour. Originally, these contracts were entered into by the government to provide cheaper energy for large employers in the region. Specifically, the contracts provide energy to businesses such as NST at 65% of the market value.

6.4 The second key risk associated with the value NTGA brings to the regional and local economy is the NST operations themselves[4]. These operations make up approximately 35 – 40% of NTGA revenues. The closure, or reduction of NST operations would, in itself, have a significant impact on NTGA viability. While NTGA would likely struggle over the short term, it does have longer term options to partner with new businesses and seek more cascade uses.

6.5 This in turn would places substantial operational and financial risk on NTGA, including diversification into alternative aspects of geothermal energy demand all of which would require significant research and development and upfront and ongoing capital costs as well as increased operational expenses.

6.6 These factors alone are likely to create an uncertain short term future for NTGA geothermal operations. However, if this was coupled with the requirement to fund reinjection wells and pipelines, costing $35-45 million would place increased financial pressures on operations already facing significant risk.

6.7 Given the material economic contribution that NTGA operations have on the district and regional economies it is important to consider the level of risk to this value associated with the proposed consent condition, especially in light of the current economic environment and the cumulative impact on NTGA and its ability to provide affordable energy and process heat.

[3] **High power prices caned as another mill mulls possible sale**, Stuff, 18 March 2021
[4] **Changes at Kawerau's Norske Skog paper mill amid ongoing review**, Stuff, 1 February 2021

7. CONCLUDING COMMENTS

7.1 To justify the economic imposition and potential economic adverse effects identified above, I consider that significant countervailing benefits would need to be demonstrated. My understanding is that:

(a) Reinjection is not required to maintain the KGF;

(b) The discharge that would be discontinued to enable reinjection is having only minor adverse effects on the Tarawera River; and

(c) The only opposition to the discharge is on cultural grounds.

7.2 The Bay of Plenty economy is likely to experience direct economic impacts from the potential loss of businesses such as NST. Imposing additional financial pressures on primary businesses such as NTGA operations is likely to increase the propensity for a domino effect, resulting in decreased economic activity throughout the supply chain and amplifying the economic effects on the regional economy.

7.3 In these circumstances, I consider that the most prudent course of action, from an economic perspective, is to enable the status quo to be maintained under the conditions applied for by NTGA.

Philip Mark Osborne
21 May 2021