

Napier and Hawkes Bay Economic Impacts of Ravensdown Manufacturing Operation

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Executive Summary

It is noted that the main findings of the detailed analysis provided in the main body of this report are summarised using the requested format as below.

Potential Effects Covered

This report provides a Hawkes Bay region-based economic assessment of the major Napier-based Ravensdown operation. This includes its Awatoto manufacturing plant and co-located ARL research and analysis subsidiary business; Port of Napier related raw material/final product importing, storage and distribution activities; and Severn St, Pandora product distribution store.

Assessments Undertaken

Specifically, the economic assessment covers the following aspects:

- The direct economic impacts of the Ravensdown operation in Napier.
- The results of a formal economic impact modelling assessment of the business operation for the Napier City and Hawkes Bay region local government areas, for the 2019/20 financial year.
- An assessment of other important local and regional economic gains of the Ravensdown operation.

The main information sources used for the assessment have included appropriate production, financial, employment and other statistics provided by Ravensdown; relevant Statistics New Zealand economic data; Napier City Council District Plan and other information; the results of a formal economic impact modelling analysis (of the Napier Ravensdown operation) undertaken by Hughes Consulting, Auckland; and ESL's own review of the potential local/regional economic gains stemming from the operation.

Results of Assessment

Direct Economic Effects

These include as follows:

- The Company's major manufacturing operation is located in the Awatoto Industrial Zone of Napier. The Company's associated ARL research and analysis subsidiary business service is co-located in this Zone. The other parts of the local Ravensdown business are also located within main industrial zones of the City (Port of Napier and Pandora).
- The Awatoto operation contains a range of established and specialised manufacturing facilities and plant/equipment with a combined insurance value of approximately \$250 million.
- Annual production from the plant is currently in the order of 300,000 tonnes.
- The total site area of the Ravensdown manufacturing plant accounts for approximately 11% of the Awatoto main industrial zone area.
- The Awatoto operation is an important part of Napier's overall wealth-creating manufacturing and processing sector.

- The operation is Ravensdown's largest and only North Island enterprise, and accounts for in excess of half of the Company's national production.
- Total direct employment of 94 staff with a diverse range of skill sets.
- Some 170 contractors are used during the year for required plant maintenance and development work.
- The Company makes a significant contribution to the Port of Napier's overall business performance (and import infrastructure and capability), accounting for 40% of total Port import tonnages and 5% of the total value of imports.

Economic Impacts

The key results from the formal economic impact modelling assessment (for the 2019/20 financial year) undertaken for the collective group of Ravensdown business activities based in Napier, are as follows:

- Direct economic impacts for the Hawkes Bay region of: total operating Revenue \$100.86 million, total full/part-time Employment 94 persons, total Net (or disposable) Household Income generated of \$5.87 million and total Value Added or contribution to the regional economy/Gross Regional Product GRP of \$21.71 million.
- Indirect and induced ('backward or supplier' industry linkage) economic impacts for the Hawkes Bay region of: Revenue \$128.71 million, Employment 407 persons, Net Household Income \$15.10 million and Value Added/GRP \$52.25 million. These impacts represent the multiplied or flow-on economic impacts within the region.
- Total economic impacts for the Hawkes Bay region of: Revenue \$229.57 million, Employment 501 persons, Net Household Income \$20.97 million and total Value Added/GRP \$73.96 million. On average, these economic impacts represent 1% of the regional totals for these economic impact measures. This is considered to be a significant result for a single manufacturing enterprise in the region.
- Total economic impacts for the Napier City area are estimated at Revenue \$144.62 million, Employment 232 persons, Net Household Income \$11.0 million and Value Added/GRP \$39.48 million. On average, these values represent approximately 54% of the total Hawkes Bay economic impacts.

Other Economic Gains

Other economic gains generated for the Napier City/Hawkes Bay areas by the Ravensdown operation in Napier, include:

- Contributing significantly to maintaining the underlying economic strength, capacity and efficiency of the overall Awatoto Industrial Zone of Napier.
- The different parts of the Ravensdown operation are all located in relatively close proximity to each other in the City. This significantly assists the Company's operational efficiency and overall business performance in terms of servicing its various markets.
- These factors are also assisted by the relatively close proximity of the overall Napier operation to the local and external roading/transport network.

- The Company provides an ongoing significant business opportunity for Hawkes Bay trucking businesses and for a wide range of specialist plant maintenance and development contractors.
- Provision of employment opportunities within the overall operation covering a wide range of specialist occupations.

Suggested Approach for Effects Identified

It is recommended that the overall importance of the Napier Ravensdown operation to the local and regional economies, as indicated by the detailed economic assessment results provided in this report, be taken into consideration by the Hawkes Bay Regional Council in the course of its deliberations on the Company's application for renewal of its long-term water and air discharge consents.

1- Introduction

- 1.1 Ravensdown Ltd (the Company) is a long-established and key Napier/Hawkes Bay manufacturing operation based in the Awatoto industrial-business zone of Napier City, with allied operations also located in this zone and at the Port of Napier and Pandora industrial nodes.
- 1.2 The Company holds a number of permits to enable its ongoing operation. These include Hawkes Bay Regional Council permits relating to the discharge of contaminants into both air and water (specifically the Tutaekuri River-Waitangi Estuary). These permits are due to expire in 2022 and the Company is required to make formal application to the Council for the long-term renewal of the permits. The Company is proposing to lodge its (combined) permit renewal application by November 2021 and is currently in the process of preparing relevant background technical information to support its application.
- 1.3 As part of this, Economic Solutions Ltd (ESL) has been requested by the Company to prepare a suitably detailed analysis and report on the Napier and Hawkes Bay economic importance of its local operations, as one of the important background items for consideration of the Company's permit application by the Council.
- 1.4 Accordingly, this economic assessment report considers the economic context for the Ravensdown operation and specifically addresses the following matters:
 - The underlying local and regional economic profile of the Company's operation in Napier/Hawkes Bay;
 - The specific Hawkes Bay region economic impact gains arising from the annual activities of the various Ravensdown business operations located in the Napier City area; and
 - Other positive economic effects of the Ravensdown operation in Hawkes Bay.
- 1.5 The key base information sources used for the report have included relevant business, financial and other information provided by the Company in response to specific information requests from ESL; economic impact modelling results provided on a sub-contracted basis to ESL by Dr Warren Hughes (Hughes Economics), specialist economic impact modelling consultant of Auckland; and relevant Statistics New Zealand data. The detailed economic impact modelling results are contained in **Appendix 1** to the report, with **Appendix 2** providing a brief resume of the academic and economic consultancy work experience of Dr Hughes.
- 1.6 The next section of the report presents the local and regional economic context for the Ravensdown operation in Napier City.

2- Ravensdown Economic Context

- 2.1 The Ravensdown operation is located within the Napier City area of the Hawkes Bay region.
- 2.2 The operation comprises four component activities. These are the major fertiliser manufacturing plant located in the Awatoto industrial Zone of the City; the ARL subsidiary company also located in the Zone and which provides a range of complementary soil, plant, feed and water analysis services to the rural sector; Company operations at the Port of Napier facilitating the import, storage, transport and distribution of both raw materials and other products; and the product distribution store located in the Severn St, Pandora industrial area of Napier.
- 2.3 Across these four enterprises, a total of 94 people are directly employed at the current time, with the manufacturing plant accounting for approximately 70% of this figure. The co-located ARL operation accounts for approximately 25%. The economic impact assessment analysis provided in section 3 of this report indicates the additional important flow-on employment impacts of the Napier Ravensdown operation.
- 2.4 The manufacturing operation in Awatoto has been in existence since 1953. It was initially run by the East Coast Fertiliser Company until 1987. Ravensdown took over the operation in that year. Thus, the business has been in existence in Napier for a period of some 68 years now. It is a long-established, well-known and important part of both the City's industrial infrastructure and the economic performance of the wider region.
- 2.5 The Awatoto business zone is one of five main industrial areas in Napier. The others are Ahuriri, Port of Napier, Pandora and Onekawa West. Traditionally, Awatoto has been an important location in the City for larger-scale, primary sector orientated, manufacturing/processing and environmentally sensitive industries. Aside from the manufacturing and ARL enterprises in the Awatoto Zone, Ravensdown's other operations are also located, as noted in section 2.2 above, in the Port of Napier and Pandora main industrial zones.
- 2.6 The Company imports its main raw material requirements through the Port of Napier, which are then transported to the manufacturing plant in Awatoto. Other fertiliser products imported through the Port are distributed to the market either directly from there or via the sales/distribution facility in Pandora. Manufactured product is distributed to users either directly from the Awatoto production base or via the Company's North Island network of sales stores.
- 2.7 With regards to the Port of Napier, over the 2019/20 financial year the Company's imports of fertiliser related products accounted for about 40% of total Port import tonnages and approximately 5% of the total value of Port imports. The Company thus makes an important contribution to the Port Company's import handling infrastructure. Company imports of raw materials for its manufacturing process account for 63% of its total import tonnage and other related imports the balance of 37%.

- 2.8 Statistics New Zealand figures for the 2020 year for the broad Awatoto/Meeanee 'statistical area' (which includes the Awatoto industrial area, as well as surrounding agriculture) of Napier indicate the leading industry employers in the area as including agriculture, manufacturing and construction. Overall employment in the area accounts for 5.2% of the City total, whilst employment across the above three industry groups accounts for 17% of the City total for these groups.
- 2.9 The total site coverage of the Ravensdown manufacturing plant, at some 8 hectares, accounts for 11.4% of the total area coverage of the Awatoto Main Industrial Zone. It is noted that the Company also owns an additional 19 hectares of currently bare land on the western side of Waitangi Rd. It is further noted that the Awatoto industrial area also incorporates a Wastewater Treatment Zone providing for the treatment of Napier's domestic and trade waste water. The area coverage of this zone is 71 hectares.
- 2.10 The Awatoto industrial location affords a number of specific key business advantages for the Ravensdown operation, including as follows:
- The existing portfolio of major specialised production buildings/facilities and plant/equipment at the Company site.
 - Close proximity to the deep water Port of Napier with capacity and infrastructure to facilitate and handle large-scale ships for the importation of raw materials
 - Port of Napier's exposure to bulk freight exports providing a complementary out-bound leg to the importation of raw materials by Ravensdown. The Awatoto plant acts as backup to South Island manufacturing with product coastally shipped from Napier to South Island ports if needed.
 - Established and sizeable domestic freight network and infrastructure associated with the Napier City area which facilitates external distribution of finished product.
 - Proximity to a sizeable and skilled labour force available within the Napier-Hastings urban area.
 - Proximity of access to outsourced Company service requirements such as engineering and other trades.
 - Proximity to the regional client base.
- 2.11 Ravensdown currently operates three manufacturing plants in New Zealand, with the Awatoto plant being its only North Island operation. The Awatoto facility is the Company's largest and accounts for over 50% of its national manufacturing volume. The facility is one of only two remaining fertiliser manufacturing plants in the North Island. Approximately 300,000 tonnes of finished product is currently manufactured each year at the Awatoto plant. This plant is also the despatch point for finished product to regional markets. The Company has two stores in the Hawkes Bay area-one in Napier and the other in Central Hawkes Bay (Waipukurau).
- 2.12 In terms of the growth outlook for the Napier Ravensdown business, it is noted from Company information provided for this report that manufactured product sales are not expected to grow beyond the Awatoto site's current manufacturing capacity. However, the site has seen significant acid sales growth in recent months; this product is purchased for a range of

industrial uses including geothermal plants operated by Mercury Energy (currently the largest consumer of the acid product). No plans presently exist to expand operations beyond potentially enhancing capacity and storage as part of site redevelopment of some end of life assets.

- 2.13 **Summary-** Ravensdown is a long-established and important part of the overall Napier City industrial infrastructure. Its Awatoto industrial zone location provides a range of important operational advantages for the Company, including relatively close proximity to the Port of Napier which handles its key manufacturing raw material and other import product requirements. Awatoto is the Company's only North Island manufacturing operation and the base from which its regional customers are serviced.

3- Economic Impacts of Annual Company Operation 2019/20

- 3.1 This section indicates the multiplied or flow-on economic impacts of the Ravensdown operation in Napier, at the Napier City and Hawkes Bay region levels. The first part describes the nature of economic impact assessment and the second part quantifies the various economic impacts of the operation for these two levels.

Economic Impact Assessment

- 3.2 Economic Impact Assessment (EIA) quantifies the total multiplied economic impacts for a specific geographical area (local/regional/national) of a significant existing or new revenue/expenditure operation, development or activity in an area.
- 3.3 The total economic impacts comprise the initiating direct expenditure or revenue/turnover impact associated with the operation/activity and its flow-on or 'multiplied' economic impacts.
- 3.4 'Backward linked' flow-on impacts incorporate both production (indirect) and consumption (induced) impacts. The production impacts comprise the flow-on gains for businesses supplying goods and services to the relevant expenditure or revenue activity being considered, whilst the consumption impacts comprise the additional household spending of employees working directly in the activity and also in the businesses supplying goods/services to the activity.
- 3.5 It is noted that the various multiplier results presented in the report incorporate Type II 'backward linkage' multipliers, which include both production and consumption flow-on economic impacts.
- 3.6 Economic impacts are traditionally measured using four different variables, these being Total Revenue/Gross Output (the total value of the economic impact including the value of any imported items), Net (Disposable) Household Income (after removing taxation, savings, superannuation, etc.), Total Employment (measured in terms of persons/jobs) and Total Value Added/Gross Domestic Product GDP (or Gross Regional Product GRP for sub-national areas).

- 3.7 The GRP impact is considered to best measure the true multiplied gain in total economic activity in an area as a result of an expenditure or revenue activity/operation, as it excludes the value of imported items required for the activity/operation (payments for which flow out of the area to externally based suppliers of goods and services).
- 3.8 An economic impact or input-output table/model for a particular district/region/country is used in order to calculate multiplied economic impacts for an area. The economic impact results presented in this report are based on the latest available (year ended December 2020) Hawkes Bay region and New Zealand multiplier results for relevant sectors within 106-sector (economic impact) models for these areas.
- 3.9 The underlying national input-output table for these results relates to the 2013 year and was released by Statistics New Zealand in 2016. The national table has subsequently been modified for the purposes of regional and local application. The various area models have then been updated using latest available annual industry employment data.
- 3.10 **Appendix 1** of this report contains the detailed results of the economic impact modelling work undertaken by Hughes Economics of Auckland in relation to the Ravensdown manufacturing operation in Napier. It is noted that the results provide the basis for the further impact evaluation work undertaken by ESL in relation to the specific Ravensdown industry case. This work has necessitated use of different figures to the Hughes Economics base impact results in order to better reflect the nature, scale and supplier linkages of the specific Ravensdown operation in Napier/Hawkes Bay.

Economic Impacts

- 3.11 This section quantifies the Hawkes Bay region-related economic impacts of the annual Ravensdown operation in Napier during the financial year ended May 2020. The operation comprises the four component parts of: the Awatoto based manufacturing plant; ARL subsidiary business also located in Awatoto; Port of Napier located Ravensdown import/storage/distribution activities; and Severn St, Pandora product selling and distribution activities.
- 3.12 The direct economic impact results derived from the modelling work for the Hawkes Bay economic impacts of the Napier based Ravensdown operation, are as follows:
- A total operating revenue figure of \$100.86 million for the financial year, comprising fertiliser and other related product manufacturing sales of \$96.98 million and ARL operating revenue for the year of \$3.88 million.
 - For the purposes of the economic impact modelling process, the fertiliser revenue figure was inputted to the 'fertiliser/pesticides' industry in the regional economic model whilst the ARL figure was inputted to the 'Science and Technology' industry in the model.
 - Total Net Household Income of \$5.87 million (consistent with a gross employee remuneration figure of \$8.38 million).
 - A total direct employment figure of 94 persons employed on a full or part-time basis.

- A total direct regional Value Added or GRP impact derived from the Hawkes Bay economic model, of \$21.71 million.

The above results are indicated in the first two rows of **Table 1** on page 10. They are also indicated in Table 2 of the modelling analysis report contained in **Appendix 1** to this report.

- 3.13 The flow-on (or multiplied) economic impacts also quantified in the table below comprise ‘backward linkage’ industry impacts. These refer to the value of goods and services generated by both Hawkes Bay and other New Zealand based suppliers of inputs to the Ravensdown operation during the year. Tables 3 and 4 of Appendix 1 detail the specific industry regional and national backward linkages for the year 2019/20 Ravensdown operation. From a Revenue and Employment perspective, the leading backward linked/supplier industries include fertiliser/pesticides, road transport, basic materials wholesaling and other wholesaling. It is noted that Ravensdown’s imported raw material requirements for its manufacturing operation are landed at the Port of Napier before being transported to the operation’s Awatoto site.
- 3.14 It is further noted that as the Napier Ravensdown operation is the Company’s only North Island manufacturing plant, accounts for over half of its manufactured product, is the base for the distribution of the final product throughout the North Island and uses local transport operators to move this product to the market, the Table 4 (Appendix 1) national ‘backward linkage’ figures are considered to best reflect the Hawkes Bay situation in terms of the value of these linkages. However, in order to take into account the fact that some of Ravensdown’s operational requirements are sourced from outside the Hawkes Bay region, the analysis in this report assumes that 80% of the ‘Rest of NZ’ backward linkage values indicated in Table 2 of Appendix 1 can be attributed to the Hawkes Bay region.
- 3.15 It is further noted that the Hawkes Bay specific ‘backward linkage’ values in Table 3 (in Appendix 1) tend to reflect an ‘average industry’ case within the region’s fertiliser/pesticides sector, rather than the specific Ravensdown case. It is also noted that the economic impact model allocates the linkage values across the full area being considered (i.e. the country as a whole in this case) rather than for just the Hawkes Bay region.

Table 1: Direct & Backward Linked HB Economic Impacts of Napier Ravensdown Annual Operation 2019/20

Economic Impact Components	Economic Impact Measures			
	Revenue (\$M)	Net Household Income (\$M)	Employment (Persons)	Value Added/ GRP (\$M)
Initiating Total Operating Revenue	100.86			
Total Direct Economic Impacts	100.86	5.87	94	21.71
Total Flow-on Backward Linkage Economic Impacts	128.71	15.10	407	52.25
TOTAL HAWKE’S BAY ECONOMIC IMPACTS	229.57	20.97	501	73.96

- 3.16 The key total economic impact results for the Hawkes Bay region resulting from the full Ravensdown operation in Napier City are therefore as follows below. It is noted that these results are different from the regional economic impacts reported in Table 2 of Appendix 1.

- A total Revenue impact of \$229.57 million, comprising a direct impact of \$100.86 million and a backward linked industry impact of \$128.71 million.
- A total Net Household Income impact of \$20.97 million, comprising a direct impact of \$5.87 million and a backward linked industry impact of \$15.10 million.
- A total Employment impact of 501 persons, comprising a direct impact of 94 persons and a backward industry linkage impact of 407 persons.
- A total Value Added/GRP (Gross Regional Product) impact of \$73.96 million, comprising a direct impact of \$21.71 million and a backward industry linkage impact of \$52.25 million.
- Across the four economic impact measures, the average 'backward industry linkage' multiplier value is 3.65, with the individual impact multiplier values ranging from 2.28 for the Revenue impact to 5.33 for the Employment impact.

3.17 Using the total Hawkes Bay economic impact results indicated in Table 1 above and the region's current levels for the four economic impact aggregates quantified in Table 5 of Appendix 1, the Ravensdown operation's share of these regional aggregates averages out at approximately 1%. This is considered to be a significant result for a single Hawkes Bay manufacturing operation.

3.18 The estimates for the Napier City located economic impacts of the Ravensdown operation are Revenue \$144.62 million, Net Household Income \$11.00 million, Employment 232 persons and Value Added/GDP \$39.48 million. On average, Napier City accounts for approximately 54% of the total Hawkes Bay economic impacts of the Ravensdown operation.

3.19 The **transport sector** is a key component of the overall Napier Ravensdown operation. Transport services are required for the movement of raw material imports from the Port of Napier to the Awatoto manufacturing plant, the movement of other imported products to the Severn Street, Pandora distribution store and the transport of final manufactured product from Awatoto to North Island markets. Over the 2019/20 year, Ravensdown Awatoto expended some \$13.65 million on transport services, representing approximately 20% of total annual gross operating costs for the Company.

3.20 The estimated Hawkes Bay region economic impacts of this expenditure are Revenue \$27.50 million, Net Household Income \$5.31 million, Employment 121 and Value Added/GRP \$10.73 million. The latter result represents approximately 15% of the total Value Added/GRP impact of the overall Ravensdown operation in Hawkes Bay. The associated Hawkes Bay backward linkage multiplier values range from 1.81 for Net Household Income to 2.01 for the Revenue economic impact. The average multiplier value across the four economic impact measures is 1.93. The base reference table in Appendix 1 for the above economic impact results is Table 6.

4- Other Economic Benefits of Napier Ravensdown Business Operations

4.1 This section indicates other important economic benefits within the Hawke's Bay region emanating from the ongoing Ravensdown operation in Napier City.

- 4.2 The operation makes a significant contribution to the underlying economic strength and capacity of the overall Awatoto industrial Zone, particularly in relation to its specialist location option for existing and potentially additional/new larger-scale, primary production orientated and 'wet' industrial activity in the City. The Zone in turn adds to the diversity of industrial areas available in Napier for appropriate increased existing or new business activity.
- 4.3 As noted earlier in the report, the imported raw material requirements of the Company's Awatoto manufacturing plant are a significant component of the Port of Napier's import handling infrastructure and activity and, in turn, the Port's overall business operation. Ravensdown benefits significantly from its relatively close proximity to the Port, in terms of helping to minimise costs of transporting imported raw materials from the Port to the Awatoto plant. The Port is also located in relatively close proximity to the Severn St, Pandora product distribution store. As also noted earlier in the report, the other important component of the overall Napier Ravensdown operation, the ARL business, is co-located in the Awatoto industrial zone near the manufacturing plant. Thus, Napier City is able to accommodate all the essential parts of the North Island orientated Ravensdown operation, which is a major advantage.
- 4.4 Aside from the Port of Napier, the Napier Ravensdown operations provide an ongoing major business opportunity for Napier/Hawkes Bay businesses. Total annual Company expenditure on transport services in relation to its Napier business activities is currently in the order of \$13.65 million. Annual plant repairs and development expenditure was \$5.1 million for the 2019/20 financial year and the services of some 170 local contractors were utilised for the related range of work undertaken during the period. The Company utilises a range of other local suppliers in the course of its ongoing annual operation.
- 4.5 The Awatoto manufacturing operation provides valuable direct employment opportunities covering a range of different occupational categories. These include site management and support functions (e.g. project managers, operations managers, compliance, and health and safety), specialist acid plant engineers, plant operators, plant maintenance, supply chain (North Island logistics and inventory managers) specialists, customer relations, call centre staffing and IT specialists. In addition, there are the specialist labour requirements of Ravensdown's Port of Napier, Pandora distribution store and ARL scientific/technical analysis business activities. It is noted that the average gross remuneration levels for staff in the different Ravensdown operations in Napier are significantly higher than that for the broader comparison industries in Hawkes Bay of manufacturing, transport/storage and professional/scientific/technical services.

**RAVENSDOWN NAPIER OPERATIONS IN 2019/2020:
ECONOMIC IMPACTS FOR THE HAWKES BAY REGION**

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INTRODUCTION

This report documents the regional and national economic impacts of the Ravensdown Napier facility for the financial year ended May 2020. The facility is one of 3 major production and distribution facilities operated nationally by Ravensdown Limited and accounts for over half of total NZ manufacturing production by the cooperative. Ravensdown is a farmer/shareholder cooperative providing fertilizer and other services to farmers in Hawkes Bay and throughout NZ. There are four component operations in Napier, two of which are in the Awatoto industrial zone, one at the Port of Napier (PON), and the fourth in the Pandora industrial zone of the city. *Scientific & Technical Services* are provided by Advanced Research Laboratories (ARL) to farmers and growers throughout NZ. The impacts from the operations of ARL are included in this report.

Summary statistics from the economic models for the year ended December 2020 are shown for NZ and the Hawkes Bay Regional Council (RC) region in Table 1. These aggregates serve to provide a basis for determining percentage impacts for Napier and Hawkes Bay.

TABLE 1: SUMMARY STATISTICS FOR NEW ZEALAND & THE HAWKES BAY REGION FOR THE 2020 YEAR

Economic Measure	New Zealand	Hawkes Bay RC	Hawkes Bay % of NZ
GDP/GRP* for the year ended December 2020 \$ m	322,093.0	9,206.4	2.9%
Population as at June 2020	5,084,300	178,600	3.5%
Employment Count as at February 2020	2,316,553	82,361	3.6%
Value Added per Employment Count 2020 in \$	\$139,040	\$111,781	80.4%

*GDP/GRP = Gross domestic product/Gross regional product, the regional equivalent of GDP.

Note that Employment Count (EC) data is produced for industry sectors at the end of November of each year by *Statistics NZ*. Accordingly, year ended December 2020 regional and national economic impact models are the latest models we can use for assessing current economic impact results.

The analysis presented here derives from 106-sector economic models of the Hawkes Bay Regional Council (RC) economy and the New Zealand economy for the year ended December 2020. Basic statistics on these two economies are presented in Table 1. Both economies have been impacted by the Covid-19 virus outbreak. In particular, hospitality sectors in the models such as *Accommodation, Food & Beverages* have lost employment in recent months. Currently, primary production and processing appear unaffected. Note that sectors in the models are *italicized* as above for easy identification.

RAVENSDOWN PRODUCTION IN NAPIER

Table 2 shows the total impacts for the Hawkes Bay and NZ economies from *Fertiliser & Pesticide* production and *Scientific & Technical Services* undertaken at the Awatoto, Pandora and Advanced Research Laboratory (ARL) facilities. In addition, Ravensdown has operations at the Port of Napier (PON). All activities are shown below as direct impacts from Napier production. These operations require inputs from other production facilities in the Hawkes Bay and wider NZ economies. For example, packaging from the *Pulp & Paper* sector as well as basic materials from *Basic Materials Wholesaling*. Major supplying sectors to Ravensdown are listed in Tables 3 and 4.

Total sales by Ravensdown in the 2019/20 May year were fertilizer and related manufacturing production \$96.98 m and \$3.88 m for *Scientific & Technical Services* or testing by ARL. This gives a total Ravensdown, Napier revenue figure of \$100.86 m. No account is taken of Ravensdown activity in the

South Island. Only Hawkes Bay and the Company's supplier links in the rest of the North Island are considered here. Although there will be spillovers into the rest of NZ (e.g., travel by Hawkes Bay farmers and growers into the South Island) these are only shown in aggregate below for all NZ. All impacts are detailed in Table 2.

TABLE 2: TOTAL ECONOMIC IMPACTS EMANATING FROM PRODUCTION AT RAVENSDOWN NAPIER

Impact Round	Revenue \$ m	Net HH* Income \$ m	Employment Persons	Value Added or GRP** \$ m
Direct impacts from Ravensdown, Napier	100.86	5.87	94	21.71
Backward Linkages supplying sectors – Table 3	108.22	10.24	342	34.40
Total Impacts for the Hawkes Bay Economy	209.08	16.11	436	56.11
<i>Multipliers for the Hawkes Bay Region</i>	<i>2.07</i>	<i>2.74</i>	<i>4.64</i>	<i>2.58</i>
Backward Linkages from Rest of NZ – Table 4	25.61	6.07	81	22.31
Total Impacts for the New Zealand Economy	234.69	22.18	517	78.42
<i>Multipliers for the New Zealand Economy</i>	<i>2.33</i>	<i>3.78</i>	<i>5.50</i>	<i>3.61</i>

*HH = Household **GRP = Gross Regional Product the regional equivalent of GDP

Note that a Net Household Income direct impact of \$5.87 m is consistent with gross remuneration (before tax etc.) at Ravensdown of \$8.38 m.

TABLE 3: HAWKES BAY SECTORS GAINING MOST FROM SUPPLYING INPUTS INTO RAVENSDOWN OPERATIONS (BACKWARD LINKAGES)

SALES REVENUE or OUTPUT			EMPLOYMENT		
#	Inputs from supplying sectors	\$ mill	#	Persons employed in supplying sectors	Persons
1	Fertiliser & Pesticides	28.13	1	Basic Materials Wholesaling	26.38
2	Basic Materials Wholesaling	6.50	2	Road Transport	25.55
3	Road Transport	5.35	3	Fertiliser & Pesticides	16.41
4	Other Wholesaling	4.36	4	Food & Beverages	16.03
5	Pulp & Paper	2.84	5	Employ & Business Services	13.19
Top 5 supplying sectors		47.18	Top 5 supplying sectors		97.56
Remaining 101 sectors & H'holds		61.04	Remaining 101 sectors		244.44
Total Backward Revenue Links		108.22	Total Backward Employment Links		342

Note that the \$28 m shown for *Fertiliser & Pesticides* in Table 3 would include the phosphate rock, sulphur etc. imported through the PON and not manufactured in NZ.

Further on in the report, we examine the transport and Port of Napier operations that apply at Ravensdown in some detail. Table 4 does, however, suggest those sectors of the economies that are important for Ravensdown operations. Note that Ravensdown directly spent \$13.65 m in the transport sectors for the Hawkes Bay and other North Island markets in the 2019/20 year. This shows up in the

\$17.31 m below in Table 4 which is slightly larger than the direct cost to Ravensdown of \$13.65 m which supplies the rest of the North Island from Napier.

TABLE 4: NZ SECTORS GAINING MOST FROM SUPPLYING INPUTS INTO RAVENSDOWN OPERATIONS (BACKWARD LINKAGES)

SALES REVENUE or OUTPUT			EMPLOYMENT		
Inputs from supplying sectors			Persons employed in supplying sectors		
#	Sector	\$ mill	#	Sector	Persons
1	Fertiliser & Pesticides	28.22	1	Road Transport	72.75
2	Road Transport	17.31	2	Basic Materials Wholesaling	26.55
3	Basic Materials Wholesaling	6.80	3	Fertiliser & Pesticides	19.85
4	Other Wholesaling	4.69	4	Other Wholesaling	18.98
5	Electricity Generation	3.39	5	Food & Beverages	17.68
Top 5 supplying sectors		60.41	Top 5 supplying sectors		155.81
Remaining 101 sectors & H'holds		73.42	Remaining 101 sectors		267.19
Total Backward Revenue Links		133.83	Total Backward Employment Links		423

Note that Table 4 values are for all NZ so include the Hawkes Bay values already shown in Table 3. So total Backward Linkages are 108.22 m (Hawkes Bay) plus \$25.61 m (Rest of NZ) for a national total of \$133.83 m as shown in Table 4. Similarly for Employment the numbers are 342 persons plus 81 for a national total of 423 persons. Also note that *Electricity Generation* required at Ravensdown Awatoto is backward linked out of the Hawkes Bay to other electricity generating regions in the NZ economy such as Waikato. Imports through the PON could exceed the \$28 m shown in Table 3 since raw materials through the port may service years beyond the current 2020 year.

IMPORTANCE OF RAVENSDOWN FOR HAWKES BAY AND NAPIER CITY

The Ravensdown Napier facility is of major importance to the Hawkes Bay RC and Napier City economies. Table 5 below documents the four economic impact results for both areas.

TABLE 5: RAVENSDOWN ECONOMIC IMPACTS AS PERCENTAGE OF HAWKES BAY AGGREGATES

Region for Impacts	Revenue \$ m	Net HH* Income \$ m	Employment Persons	Value Added or GRP** \$ m
Ravensdown Impacts for Hawkes Bay (Table 2)	209.08	16.11	436	56.11
Hawkes Bay RC Aggregates y/e Dec 2020 (Table 1)	14,493.9	3,256.3	82,361	9,206.4
<i>Ravensdown Percentage</i>	<i>1.4%</i>	<i>0.5%</i>	<i>0.5%</i>	<i>0.6%</i>
Napier City Impact from Ravensdown				
Direct Impacts in Napier City (Table 2)	100.86	5.87	94	24.71
34% of Backward Linkages (Table 2)	36.79	3.48	116	11.70
Totals for Napier City	137.65	9.35	210	32.41
<i>Napier City as Percent of Hawkes Bay above</i>	<i>66%</i>	<i>58%</i>	<i>48%</i>	<i>58%</i>

*HH = Household **GRP = Gross Regional Product

Note that Napier City accounts for 37% of Hawkes Bay population, 32% of its business units and 33% of its Employment Count. This would suggest that Napier City is approximately 32% - 37% of the Hawkes Bay economy. The Employment impact above is in this range, but the other percentages show Napier to have a bigger percentage. The average Napier impact above is 58% for Hawkes Bay in total.

Also, the average percentage impact of Ravensdown on the Hawkes Bay RC economy for the four economic impacts in Table 5 is 1%. This does not include accounting for the \$4.14 m of new capital expenditure undertaken by Ravensdown in the 2019/20 financial year. This would add to Hawkes Bay capability in the *Non-Residential Construction, Construction Services* and *Non-Building Construction* (roads and bridges) sectors. Accordingly, we can state confidently that Ravensdown operations in Napier contribute over 1% to Hawkes Bay economic aggregates.

RAVENSDOWN IMPORTANCE FOR THE PORT OF NAPIER AND TRANSPORT

Ravensdown is a major user of the Port of Napier (PON) services and transport in Hawkes Bay and the North Island generally. Two Ravensdown employees are based at the PON. Over \$12 m was expended by Ravensdown in the 2019/20 year on distributing product in the North Island. Accordingly, Ravensdown is an important factor in developing logistic services in Napier and the Hawkes Bay generally. In the 2019/20 year Ravensdown expended over \$13 m on transport and PON services. Direct and flow-on impacts from these expenditures are detailed in Table 6 for the Hawkes Bay region.

TABLE 6: RAVENSDOWN ECONOMIC IMPACTS DERIVING FROM TRANSPORT LOGISTICS FOR THE HAWKES BAY REGION

Origin of Economic Impacts	Revenue \$ m	Net HH* Income \$ m	Employment Persons	Value Added or GRP** \$ m
Direct Impacts from Ravensdown Napier	13.65	2.93	63	5.45
Flow-on Impacts from supplying sectors	14.47	2.12	52	5.52
Total Impacts for the Hawkes Bay Region	27.82	5.05	115	10.97
<i>Hawkes Bay Regional Multiplier</i>	<i>2.04</i>	<i>1.72</i>	<i>1.83</i>	<i>2.01</i>

*HH = Household **GRP = Gross Regional Product

Integration of the PON with road transport generally will be very important for any expansion at the Port. Table 6 shows that Ravensdown operations are currently playing a significant part in developing capabilities at PON.

Note that the direct impact of \$13.65 m includes transport services to 23 Ravensdown stores in the North Island so almost certainly includes payments to business units resident outside the Hawkes Bay region. Of course, this does support road transport services in North Island regions other than Hawkes Bay but they emanate from Napier City. These direct and flow-on impacts are included in Tables 3 and 4 above but are presented here to show their importance for the NZ economy which relies so heavily on primary production and the logistics of transport to sustain it. In effect, the Hawkes Bay region is exporting transport services to other NZ regions from the operations at Ravensdown in Napier city.

APPENDIX 2

Dr WARREN R HUGHES – AUTHOR PROFILE

The author is Cambridge, NZ born and a graduate of the University of Auckland and Indiana University in the USA, where he completed his doctorate in Business Economics and Public Policy in 1970.

Since that time, he has taught in the areas of econometrics, forecasting, financial economics and managerial strategy at The University of New South Wales in Sydney (1970 – 1978) and most recently at The University of Waikato (1978 – 2007). At various times, he has taught in MBA programmes at the University of Florida in Gainesville and in the Graduate School of Management at the University of California at Irvine. Dr Hughes retired from the University of Waikato in 2007 and was appointed an Honorary Fellow in Economics in 2008. At the present time, he works as an independent economic consultant based in Auckland.

The author has published extensively, mainly as single-authored articles in international journals such as *Decision Sciences, Theory and Decision, The Journal of Business, Mathematical & Computer Modelling, Environment & Planning, Australian Journal of Management, Forest Science, Australasian Journal of Regional Studies* and, most recently in April 2009, *OMEGA*, the international journal of management science and again in September 2010 in the *Chinese Business Review*. Other articles on theoretical and applied economics have been published by the author in *NZ Economic Papers* and *Australia's Economic Record*. He is a former member of the Advisory Board for the Wiley journal *Managerial and Decision Economics* and maintains a continuing interest in the latest developments in economic theory as it relates to management and business. The author has developed a particular expertise in the area of impact and regional analysis. He was the Editor/Manager of the *Regional Economic Bulletin*, which focused on topical issues relevant to the business and wider communities, mainly but not exclusively, in the Waikato and Bay of Plenty regions. The *Bulletin*, which was a complimentary publication of the University of Waikato, ceased publication in 2008.

The author has acted as a consulting economist for *Economic Solutions Limited, Environment Waikato, Carter Holt Harvey Limited, Contact Energy, Norske Skog Tasman Limited, Port of Tauranga Limited, Port of Napier, Feltex Carpets Limited, Man'O War Farm Limited, Refining NZ Limited, Zespri International, Waikato Innovation Park, Property Council of NZ, Creative Napier, Katolyst, Priority One BOP, Vision Manawatu, Enterprise Franklin, Venture Taranaki*, various District Councils in the Waikato, Bay of Plenty, Hawke's Bay and other regions and for events such as *Tauranga's Montana Jazz Festival, Hamilton's Balloons Over Waikato* and *Napier's Art Deco Weekend*.

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