

Economic Impact Assessment of Proposed Rangitikei District Plan Zoning Change – Rural to Industrial near Marton

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Abstract:

Soil conservation is a key tenet of the RMA. The lower North Island and principally the Rangitikei District contains a not-insignificant proportion of New Zealand's Class 1 and 2 soils. Their preservation from other, less robust uses is judicious.

This paper looks purely at the economic case for re-zoning 217 hectares of land on the edge of Marton from Rural to Industrial.

1. Description of Land Proposed for Change

The land borders SH1, Wings Line, the Main Trunk Railway line and Makirikiri Road (Valuation Numbers 134024802 and 1344024804 at 27.88 Ha and 188.75 Ha respectively – total 216.63 Ha), located immediately to the southeast of Marton Township. It comprises mainly Class 2 soils and is currently used predominantly for maize production and harvesting of grain/silage.

2. Rangitikei District Current Economic Performance

The District's average GDP growth over the last 10 years at 1.1% is a full 1% below the NZ average, employment growth is 0.0% (vs 1.3% NZ average), population growth is 0.2% (vs 1.4% NZ average), earnings growth is a little below at 2.7% (vs 3.0% NZ average), but perhaps most worryingly growth in business units is -0.6% (vs 1.0% NZ average). Significant drops in population in all age groups except the >65s are expected over the next 25 years.

3. Proposed Re-zoning in Context of Rangitikei District Long-Term Plan 2018-28

RDC, as one of its nine "Community Outcomes", has tasked itself under Economic Development with "facilitating growth through infrastructure investment, an enabling regulatory framework and collaboration".¹ The District comprises five townships of which Marton is the largest and 4,480 sq kms of mainly rural land. The District includes a number of plains and terraces throughout the lower half of mostly Class 1 and 2 soils, used for cropping, drystock farming, market gardening, horticulture and dairying.²

The Manawatū-Whanganui Regional Growth Study, a central Government initiative being delivered via "Accelerate 25", has identified six growth areas for the Rangitikei: tourism, sheep and beef farming and processing, land-use intensification (maximising use of Class 1 and 2 soils), manuka honey, fresh vegetables, poultry and grain processing and forestry harvesting.

The harvesting of large-scale forests established during the 1990s is an anticipated key change in the District's economy - hence the need to consider bio-forestry in the re-zoning possibilities. Forestry planting could increase further as a result of Government's "One Billion Trees" Programme. Moderate population growth is also forecast for which RDC believes it has already appropriate infrastructure.³

The site under review is estimated to constitute c 0.3% of Class 1 and 2 soils in the District and produces average potential maize grain or maize silage yields accounting for approximately 1.1% or

¹ RDC Adopted 2018-2028 Long Term Plan, p16

² *ibid*, p17

³ *ibid*, p18

0.5% of total annual NZ production respectively, (depending upon for which end-use the maize is grown).

4. Context: Fit with Neighbouring Territorial Authorities’ Plans

Marton has for decades labelled itself as the “Hub of the Rangitikei” which in itself is one of the more central locations in the lower North Island. Developing from a significant agricultural base, it attracted industry upon the completion of the main North Island Trunk railway line in 1878 and its strategic location at the junction of the Auckland-Wellington and Wellington-New Plymouth lines. It became a thriving railway junction for the next 100 years. Restructuring of railways during the 1980s saw a significant reduction in rail traffic⁴ - of all descriptions.

Palmerston North (40 kms or c.30 mins south of Marton) views, as a key point of difference, its strength in distribution. Quoting its LTP 2018-2028: “Over the next five years or so, over a billion dollars will come into the city and region for infrastructure. As a major freight and logistics hub for the lower North Island, we already shift six times the freight of Taranaki and two and a half times as much as Wellington. Developing our infrastructure will enable even greater opportunity in this critical sector”.⁵

Whanganui (35 kms or c. 30 mins NW of Marton) likewise is adopting a similar strategy. After being dormant for more than 20 years, the Whanganui-Castlecliff rail line reopened nine years ago and is now used by trains transporting containers between Whanganui’s inland port and CentrePort in Wellington. From an initial 10 wagons per day, it has moved to 30 and continues to grow.⁶ Further upgrades are occurring. Government has also earmarked funds for the revitalisation of the Port of Whanganui. Eastown on the other side of Whanganui has also been developed.

Distribution and transport is one of the four elements critical to the success of Manawatū-Whanganui’s Economic Action Plan, according to Accelerate 25.⁷ The challenge for all regions is not to adopt “siloed” planning.

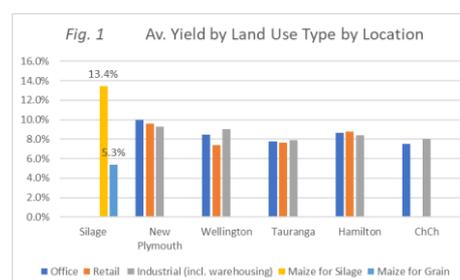
In an independent study by Berl, the inland port’s partner CentrePort and its customers and service providers support 21,350 FTEs and the company itself contributes some \$2.5 billion to central New Zealand GDP.⁸

The current Government coalition is signalling a return to rail as a key mode of transport with its recent announcement of an extra \$1 billion to KiwiRail. This could be of benefit to Marton’s and the District’s transportation network.

5. Current Use of Site

As stated, the land under review is currently used predominantly for maize production and harvesting of grain or silage.

Regarding current use, whether the maize is harvested for grain or instead for silage raises contrasting economic propositions: Figure 1 shows markedly different \$ yields for maize for silage (13.4% ROI) and maize for grain (5.3% ROI) overall in New Zealand for 2014/15 (the latest figures available). It suggests that growing maize for silage harvesting is at least twice as effective as harvesting for grain for the season in question (2016/2017) and competes well with the



⁴ Marton Town Centre Plan, p4

⁵ Message from the Mayor and CE, Palmerston North City Council, LTP 2018-2028, p6

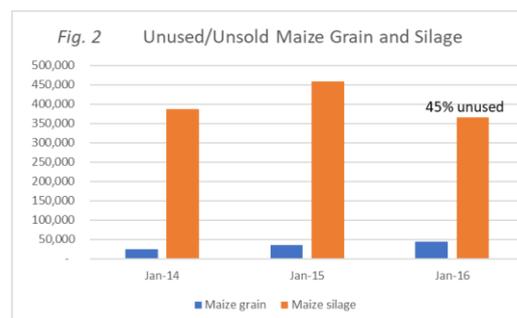
⁶ Whanganui-Castlecliff rail line provides crucial link for business, Whanganui Chronicle, 1 May 2018

⁷ idem

⁸ Idem

other uses in the chart (office, retail, industrial) in a variety of larger centres in terms of yield or ROI. The decision to harvest for silage however appears to be dependent upon a number of factors:

- One of the drivers behind the intensification of dairying in New Zealand has been the use of maize silage as a feed supplement. Growing maize on-farm imposes production and opportunity costs on the farm business. Research findings indicate that the economic appropriateness of growing maize silage on-farm depends upon 1) the farm system, 2) the pay-out on milk solids at the time and, 3) the cost to purchase maize silage in a given year – the interplay of these three factors goes to determine whether a farmer should grow maize on farm or not – all highly variable.
- Maize supplement is not the only supplement in the mix – 43% of supplement in 2013 was imported Palm Kernel Expeller, but large price fluctuations in more recent years as well as concerns about sustainability and biosecurity are apparent.
- Researchers determined that “the financial and opportunity cost of maize silage grown on farm was found to be significantly higher than the figure indicated by industry participants, because opportunity cost is not accounted for by industry. Results indicate[d] that in the 2013/14 season with an \$8.40/kg milk solids pay-out, the costs to many farmers growing maize would have been more than the price for which it could have been purchased. [Anticipated range for 2019 is now lower at \$6.25-\$7.25/kg.]⁹
- With all of these factors at play farmers’ growing intentions are naturally affected: Spring 2016 sowing intentions for grain were 36% down on the previous season, not including a quarter of maize-grain growers not prepared to make sowing predictions, citing uncertainty over price and/or contracts. Intentions to sow for silage were only slightly down (-8%). Reasons cited were poor demand, maize is expensive to grow, silage on hand and over-supply.¹⁰ A year later prices were expected to be higher, but this was largely due to difficult harvesting conditions in many areas¹¹.
- The level of “over-supply” or unused/unsold product can compound the issues (see Fig. 2). In 2016 it was 45% for silage and 11% for grain.¹²



If the site remains as rural zoning, another crop option may be barley. The Rangitikei is one of New Zealand’s main barley growing regions. In fact, Malteurop operates a malt factory on Wings Line adjacent to the site under review. About 30 per cent of the barley used by the Marton factory is grown in the Manawatu, Rangitikei and Hawke’s Bay regions. The other 70 per cent comes from the Canterbury plains.¹³ The issue here however appears to be the danger of the disease ergot, which is toxic and harmful to humans and animals, causing ergotism. Ergotism affects the blood and can cause gangrene and death. The biggest ergot outbreak in more than a generation forced Malteurop to reject some barley crops as recently as 2013.¹⁴

6. Economic Assessment of Rural Use vs Industrial Options using Input/Output Model

An **Input/Output** model is a quantitative economic technique which represents the interdependencies between branches of a national economy or different regional economies. It shows how much the

⁹ *The true cost of maize silage*, Fausett, Howarth & Scrimgeour, Journal of New Zealand Grasslands

¹⁰ *Survey of Maize Areas and Volumes – June 1, 2016: Arable Industry Marketing Initiative*

¹¹ *Dairy farmers should expect to pay higher maize feed prices this season*, www.stuff.co.nz, Jul 26 2017

¹² See Reference 10

¹³ *Charge your glasses to Marton’s malt*, Manawatu Standard, 27 Mar 2014

¹⁴ *Disease hits farmers hard*, Manawatu Standard, 14 Mar 2013

production of each sector is and how output from each sector may become an input to another sector.

Derived from Input/Output tables, **Multipliers** are summary measures used to estimate the total impact on the local economy or local industries due to changes in the output of one industry. In this case that one industry which we are examining for the site under review is either (1) rural (as is) or (2) Industrial – mainly Warehousing or (3) Industrial – mainly Bio Forestry. Multipliers are designed to quantify the **direct**, **indirect** and **induced** impacts of policies/projects in an economy. **Direct** impacts or effects are, in this example, the construction workers, new employees (FTEs) in the zone and the visitors to those sites and their total spend. **Indirect** effects (or **Multiplier I**) includes changes in sales, jobs, income in industries supplying e.g. the motels or the cafes which these visitors or new employees frequent. **Multiplier II** includes Multiplier I plus the additional spend by employees in those tourism-related firms, e.g. by the chefs and motel cleaners etc. In other words, we are here evaluating the total economic impact to Marton and the Rangitikei region of keeping the proposed site as is for rural use or rezoning it as industrial (either mainly-warehousing or mainly-bio forestry), making sure that we back out any output not produced locally i.e. “imported”, so as not to double-count and overstate the impact.

Time has not allowed and the resources have not been available to build a Rangitikei-specific Input/Output model – this one is borrowed from the University of Michigan with some small adjustments¹⁵ - but the basic relationships hold true anywhere. The Multipliers are quite conservative. The table below, rather than be definitive, attempts to establish the order of magnitude of the three options. The numbers in each cell represent a 10-year snapshot – if the site is filled in five years, the impacts are the same, they simply occur in five years.

Table 1: Direct Economic Impact Matrix

Impact Type	Current – Maize	Proposed – Industrial mainly Warehousing	Proposed – Industrial mainly bioForestry
Direct			
- Employees (FTEs)	8-10	1,350	1,800
- Employee Income	\$0.3m	\$59m	\$81m
- Visitor Impact Nos.	190	52,000	13,000
- Visitor Impact (\$m)	\$0.01m	\$3.1m	\$0.8m
- Total spend	\$0.11m	\$19m	\$22m
- Yield Value range	5% or 13%	8.5%	8.5%

... to which Aggregate Multipliers (*see Table 2*) are then applied:

Table 2: Aggregate Multiplier Calculations

Multiplier	Formula	Value
Sales II	Total sales/Direct Sales	1.55
Income II	Total Income/Direct Sales	0.32
Jobs II	Total Jobs/Direct Sales	28
Income Multiplier II (Ratio)	Total Income/Direct Income	1.59
Jobs Multiplier II (Ratio)	Total Jobs/Direct Jobs	1.34
Capture rate	Direct Sales/Total Spend	64%
Effective Spend. Multiplier	Sales II x Capture rate	1.00

¹⁵ E.g. Allowing for the higher proportion of fuel in individuals’ daily expenses in NZ

For example, by way of explanation of Table 2, a Jobs II Multiplier of 1.34 means that for every 1 FTE created directly another 0.34 FTEs are created down the line; the Jobs II ratio means that for every extra \$1m in sales 28 additional FTEs are created; the Sales II Multiplier means that for every \$1 in direct sales a further 55 cents is generated down-line.

When we apply two of the main Multipliers (Jobs and Spend) to Table 1: Direct Economic Impact Matrix, we obtain Table 3:

Table 3: Total Economic Impact Matrix

Impact Type	Current – Maize	Proposed – Industrial mainly Warehousing	Proposed – Industrial mainly bioForestry
Direct + Indirect + Induced (Multiplier II)			
- FTEs – Jobs Multiplier II	12	1,800 <i>(up from 1,350 in Table 1)</i>	2,400 <i>(up from 1,800 in Table 1)</i>
- Employee + Visitor Spend – Sales II Multiplier	\$0.2m	\$29m <i>(up from \$19m in Table 1)</i>	\$34m <i>(up from \$22m in Table 1)</i>

[Key assumptions used in impact matrix:

- Using NZ averages there is space for c.40 warehousing sites or c.20 bioForestry sites in the 217 Ha zone. They will be filled on a steady basis at 4 or 2 sites per year over 10 years.
- Average no. of employees per site: 35 mainly-Warehousing, 90 mainly-bioForestry (based on Northland F33 Warehousing and C14 Wood Product Manufacturing examples).
- Average no. of visitors per site per day excl. Rangitikei assumed: 0.4 farming, mainly-Warehousing 4, mainly-bioForestry 2.
- Proportion of visitors staying overnight assumed: farming 50% (but on-site), mainly-Warehousing and mainly-bioForestry 5%.
- Spending per person per day assumed, based on University of Michigan example but adjusted for fuel (for 260 days per year, which is light).
- Average incomes per year are: Farm worker \$43k, Warehouse worker \$44k, Wood processor - \$45k].

Spend per Person/day Sector	Day		
	Employees	Visitors	O'night Visitors
Accommodation	0	0	75
Restaurant	10	20	30
Groceries	10	10	10
Petrol	5	10	10
Recreation	5	5	5
Other incl. Retail	15	10	25
Total	45	55	155

The Multiplier effects are therefore quite significant.

7. Conclusions:

The average spend, employee and visitor number assumptions and the application of a non-Rangitikei-specific Input/Output model can of course be debated, but the assumptions are in my view on the whole quite conservative.

However the magnitude of the differences is marked. Dairying could also have been considered in the mix but the results would probably have been more closely aligned to those for maize production.

Marton, the “Hub of the Rangitikei”, is closely-equidistant and between the strong Palmerston North and resurging Whanganui economies, both of which are benefitting from a distribution focus. It has good and likely to improve road and especially rail links (SH1 and Main Trunk rail).

The possible added FTEs is the key factor, with or without the Multiplier effect. If such numbers are realised, they could increase the Rangitikei Region workforce by 33% to 43% over a 10-year period or sooner depending on the rate at which the 217 Ha site is filled.