

PROPERTY **E**ECONOMICS



TAUPŌ FUTURE INDUSTRIAL

LAND OPTIONS ECONOMIC

MULTI-CRITERIA ANALYSIS

Client: Taupō District Council

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Date: September 2022



SCHEDULE

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TABLE OF CONTENTS

1. INTRODUCTION	5
1.1. OBJECTIVES.....	5
1.2. DATA SOURCES.....	6
2. INDUSTRIAL LAND OPTIONS.....	7
3. TAUPŌ INDUSTRIAL MARKET OVERVIEW.....	9
4. TAUPŌ DISTRICT INDUSTRIAL LAND SUFFICIENCY.....	14
5. HIGHLY PRODUCTIVE SOILS	16
6. LAND CONSTRAINTS AND ENCUMBERANCES	23
7. MULTI CRITERIA ANALYSIS TABLE OF ECONOMIC RESULTS.....	26
7.1. OPTION 1: CENTENNIAL NORTHERN EXTENSION	28
7.2. OPTION 2: CENTENNIAL EASTERN EXTENSION	29
7.3. OPTION 3: CENTENNIAL SOUTHERN EXTENSION	30
7.4. OPTION 4: BROADLANDS ROAD WEST	31
7.5. OPTION 5: BROADLANDS ROAD EAST	32
7.6. OPTION 6: RANGATIRA E	33
7.7. OPTION 7: NAPIER ROAD.....	34
7.8. OPTION 8A: ARATIATIA ROAD	35
8. CONCLUSION.....	36
9. APPENDIX 1: DETAILED CRITERIA.....	37

LIST OF TABLES

TABLE 1: TAUPŌ INDUSTRIAL SECTOR CONSENTED FLOORSPACE.....	9
TABLE 2: TAUPŌ DISTRICT INDUSTRIAL LAND DEMAND.....	14
TABLE 3: TAUPŌ DISTRICT INDUSTRIAL LAND POTENTIAL OPTIONS LONG TERM SUFFICIENCY (2053) 15	
TABLE 4: LANDED AREA BY SOIL CLASS	22
TABLE 5: SUMMARY OF MCA AND RANKED OPTIONS.....	27

LIST OF FIGURES

FIGURE 1: GEOSPATIAL DISTRIBUTION OF ZONED INDUSTRIAL LAND.....	7
FIGURE 2: IDENTIFIED INDUSTRIAL LAND OPTIONS.....	8
FIGURE 3: CONSENTED INDUSTRIAL FLOORSPACE OVER THE PAST 20 YEARS	10
FIGURE 4: TAUPŌ DISTRICT EMPLOYMENT BY SECTOR (2000 – 2021).....	11
FIGURE 5: DISTRIBUTION OF INDUSTRIAL SECTOR EMPLOYMENT IN TAUPŌ DISTRICT (2021)	12
FIGURE 6: TAUPŌ EMPLOYMENT PROJECTIONS BY SECTOR (2021 – 2053).....	13
FIGURE 7: OPTION 1 – CENTENNIAL NORTHERN EXTENSION LUC SOIL CLASSES	17
FIGURE 8: OPTION 2 – CENTENNIAL EASTERN EXTENSION LUC SOIL CLASSES.....	17
FIGURE 9: OPTION 3 – CENTENNIAL SOUTHERN EXTENSION LUC SOIL CLASSES	18
FIGURE 10: OPTION 4 – BROADLANDS ROAD WEST LUC SOIL CLASSES	18
FIGURE 11: OPTION 5 – BROADLANDS ROAD EAST LUC SOIL CLASSES	19
FIGURE 12: OPTION 6 – RANGATIRA E LUC SOIL CLASSES	19
FIGURE 13: OPTION 7 – NAPIER ROAD LUC SOIL CLASSES.....	20
FIGURE 14: OPTION 8A – ARATIATIA ROAD LUC SOIL CLASSES.....	20
FIGURE 16: KNOWN CONTAMINATED SITES, HOT GROUND HAZARD AREAS AND FAULT LINES IN TAUPŌ DISTRICT	23
FIGURE 17: AMENITY LANDSCAPES, OUTSTANDING LANDSCAPES AND SIGNIFICANT NATURAL AREAS IN TAUPŌ DISTRICT	24
FIGURE 18: LAND CONTOURS AND STATE HIGHWAY / HIGH CAPACITY ROAD IN TAUPŌ DISTRICT.....	24



1. INTRODUCTION

Property Economics has been engaged by Taupō District Council (TDC or 'Council') to undertake an economic assessment in the form of an economic multi-criteria analysis (MCA) of future industrial land options for the district as part of a broader, multidisciplinary MCA for the same industrial land options to assist in assessing the most appropriate and efficient location(s) for additional industrial zone land in the district.

This report is designed to also assist Council meet its NPSUD¹ obligations in terms of land supply sufficiency over the short, medium, and long term (3-, 5- and 30-year timeframes respectively) and provide increased certainty around future infrastructure provision and long-term strategic planning for the district.

This analysis is intended to provide Council with a broad recommendation as to the suitability of each identified land option to accommodate industrial development, from an economic perspective, across a suite of economic criteria and provide details of the cardinality of ranked options to be used in a weighted matrix of criteria. This will result in a ranked order of the nine identified industrial land options.

This assessment is intended to be used with other expert assessments in determining the suitability of each land option for industrial zoning and is not intended to be an exhaustive or superseding recommendation.

1.1. OBJECTIVES

Key objectives in this assessment are:

¹ National Policy Statement on Urban Development 2022

- Delineate the nine identified future industrial options geospatially.
- Identify Taupō District demand and sufficiency for industrial land over short-, medium- and long-term time frames.
- Assess recent trends in industrial investment in the district, including consented value and floorspace of industrial use consents.
- Assess industrial employment trends across the district.
- Identify and assess key economic criteria for industrial land in Taupō District.
- Undertake an economic MCA of each option relative to each other.

1.2. DATA SOURCES

Data sources used in this report are from the following sources:

- 2006, 2013, 2018 Census Data – Stats NZ
- Business Demography Data – Stats NZ
- ESRI Dark Map – ESRI
- Geographic Boundaries – Stats NZ
- Land Use Classifications – Land Care Research
- Location Names – LINZ
- Population and Household Projections – Stats NZ
- Road Network Centrelines – NZTA
- Satellite Imagery – ESRI
- Taupō District Plan – Taupō District Council
- Taupō Proposed District Plan Review – Property Economics

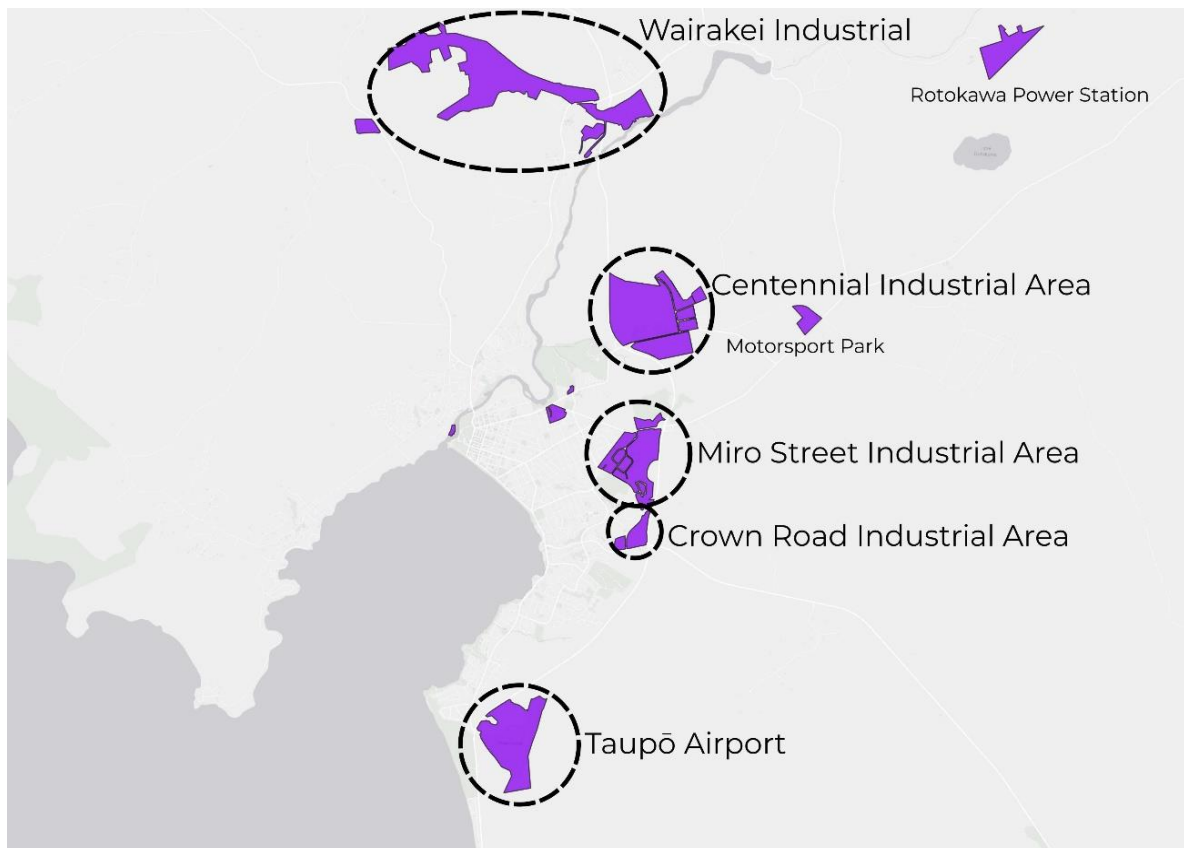
2. INDUSTRIAL LAND OPTIONS

The following figure identifies the current distribution of industrial land in and around the main urban area of Taupō township. In total, Taupō District has 1,083ha of industrial zone land with most of it, 914ha (or 84%), in close proximity to the main urban township of Taupō, pictured in the figure below. The balance is in and around Tūrangi.

The main industrial areas identified in the figure are:

- Miro Street Industrial Area
- Centennial Industrial Area.
- Crown Road Industrial Area
- Taupō Airport.
- Wairakei Industrial Area

FIGURE 1: GEOSPATIAL DISTRIBUTION OF ZONED INDUSTRIAL LAND



Source: ESRI, Taupō District Council.

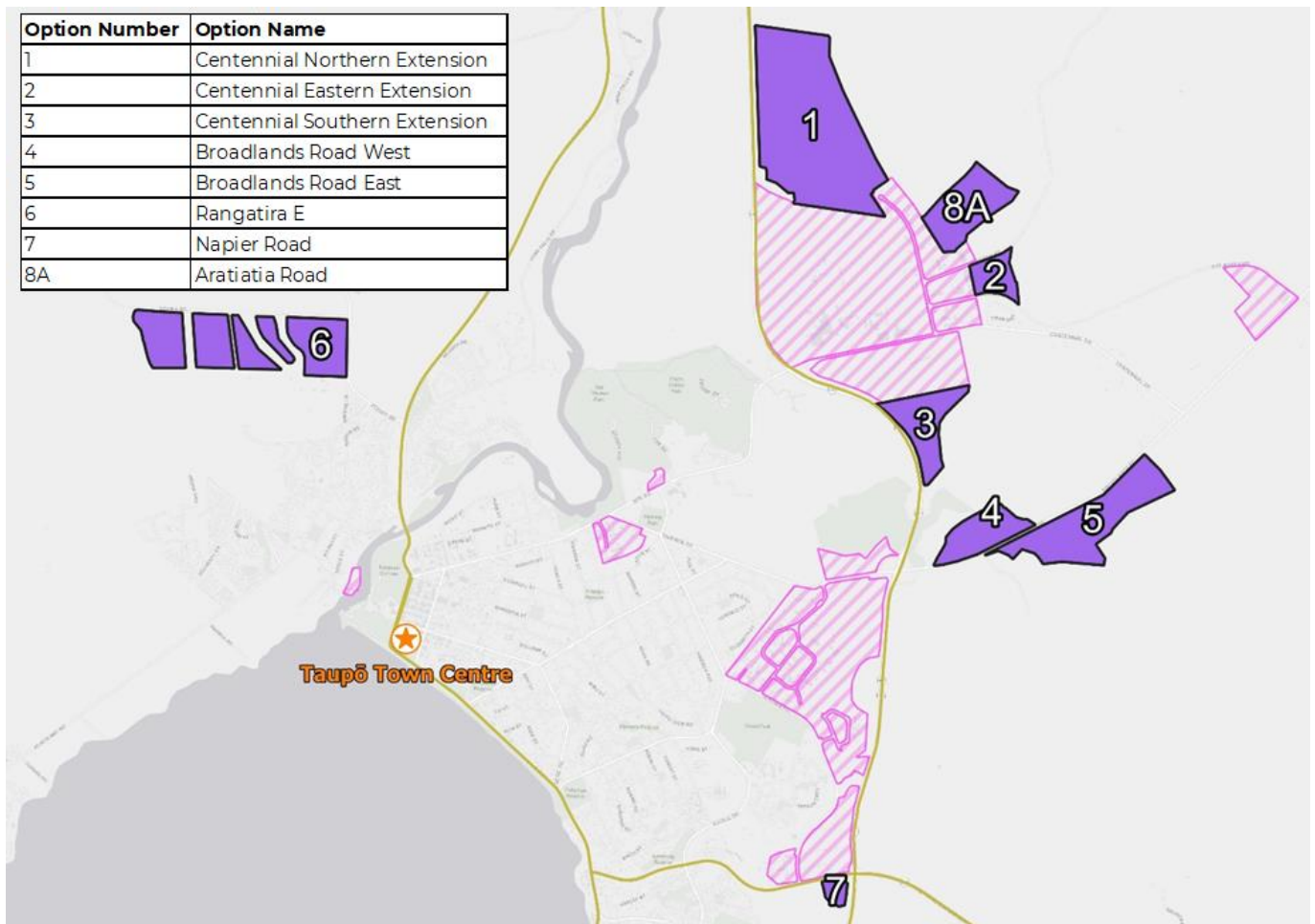
The following figure outlines the nine options identified as possible extensions to Taupō's industrial land network in relation to the existing industrial network (refer Figure 1). The indicated boundaries of the identified extension areas should be regarded as indicative only.

The nine options are referred to as:

1. Option 1: Centennial Northern Extension (105.5ha)
2. Option 2: Centennial Eastern Extension (10.0ha).
3. Option 2: Centennial Southern Extension (21.3ha).
4. Option 4: Broadlands Road West (20ha).
5. Option 5: Broadlands Road East (41.8ha)
6. Option 6: Rangatira E(57.2ha).
7. Option 7: Napier Road (3.5ha)
8. Option 8A: Aratiatia Road (25.7ha)

Other industrial areas exist within Taupō District but are a significant distance from the main urban township (Taupō Township) and the proposed industrial areas that they do not form part of the general landscape of industrial activity that could substitute effectively for the identified potential net additions.

FIGURE 2: IDENTIFIED INDUSTRIAL LAND OPTIONS



Source: ESRI, Taupō District Council.

3. TAUPŌ INDUSTRIAL MARKET OVERVIEW

This section outlines the current health of Taupō's Industrial market as a cross check on an assessment of industrial land demand. This section uses broad economic indicators to assess Taupō's industrial sector.

Building Consents

The following table shows the number of industrial building consents granted across the district over the 2001 – 2020 period.

The district has shown a fair amount of resilience in its industrial sector with steady levels of investment over the period shown. While the number of industrial consents was generally lower over the most recent decade, it was not substantially lower and the total value was, on average, higher in the most recent 10-year period than over the whole period shown (partly driven by higher build costs). The 2020 year, for example, had almost \$9m of industrial consents, or around 14,000sqm of industrial GFA.

TABLE 1: TAUPŌ INDUSTRIAL SECTOR CONSENTED FLOORSACE

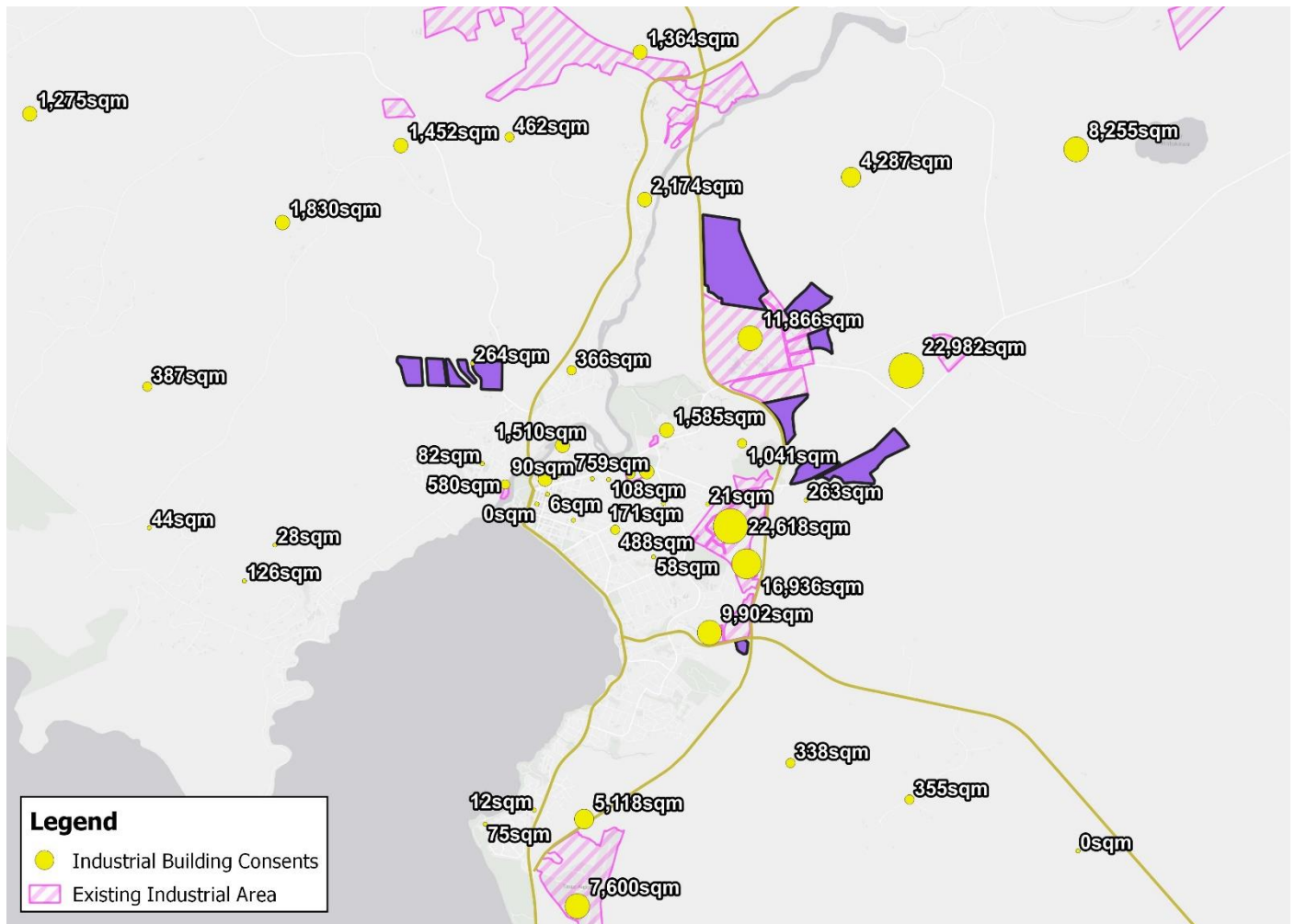
Years	Number	Value (\$000)	Floor Area (sqm)
2001 - 2005	113	\$14,149	40,716
2006 - 2010	114	\$29,990	48,255
2011 - 2015	79	\$36,931	41,480
2016 - 2020	70	\$21,687	28,095
Total	376	\$102,756	158,546

Source: Stats NZ

The following figure shows the geospatial distribution of the total floor area (sqm) of industrial building consents granted over the past 20 years. These consents are aggregated to the meshblock² level for publication each point on the figure represents the centre of a meshblock (meshblocks do not align perfectly with zoning). Note, the size of the dot indicates the total amount of floorspace consented over this period.

The areas with the largest total consented floorspace are those in the established Miro Street and Crown Road industrial Areas as well as the Centennial Industrial Area, around the Motorsport Park and close to / at Taupō Airport. Industrial consents correlate highly with the industrial zoned areas.

² Meshblocks are the smallest geographic unit Stats NZ publishes geographic data at and are approximately the size of a city block in urban areas and get progressively larger into rural areas.

FIGURE 3: CONSENTED INDUSTRIAL FLOORSPACE OVER THE PAST 20 YEARS


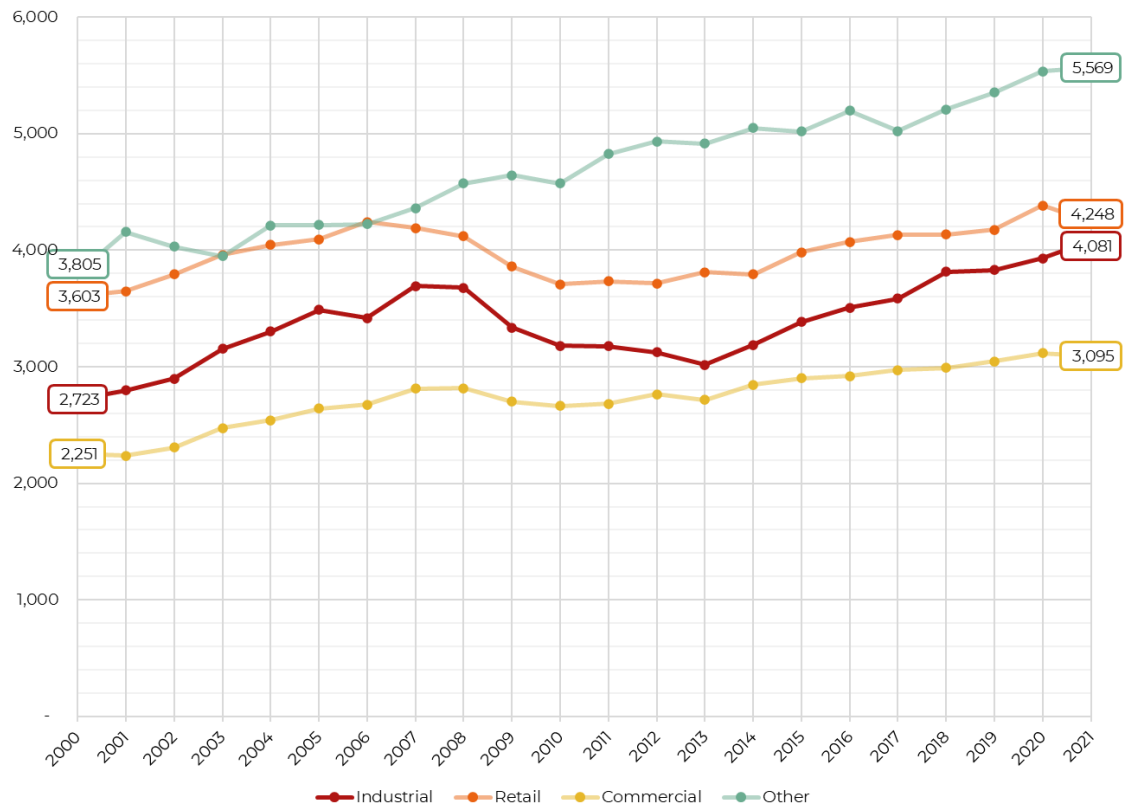
Source: Stats NZ, Taupō District Council.

Industrial Sector Employment

The following figure shows the nominal employment figures for industrial employment across Taupō District over the 2000 – 2021 period.

Growth in industrial sector employment has been strong over the most recent past; Industrial sector employment has been increasing year-on-year in Taupō District since 2013 after experiencing a drop off following the 2008 Global Financial Crisis. On average, industrial sector employment has grown by 136 net additional employees per annum since 2013 and the district has an industrial employment base 50% larger now than in 2000.

Industrial sector employment in Taupō appears to be strong which reflects positively as a geographic location for industrial activity, on growth prospects for the sector and demand for industrial land moving forward.

FIGURE 4: TAUPŌ DISTRICT EMPLOYMENT BY SECTOR (2000 – 2021)


Source: Stats NZ

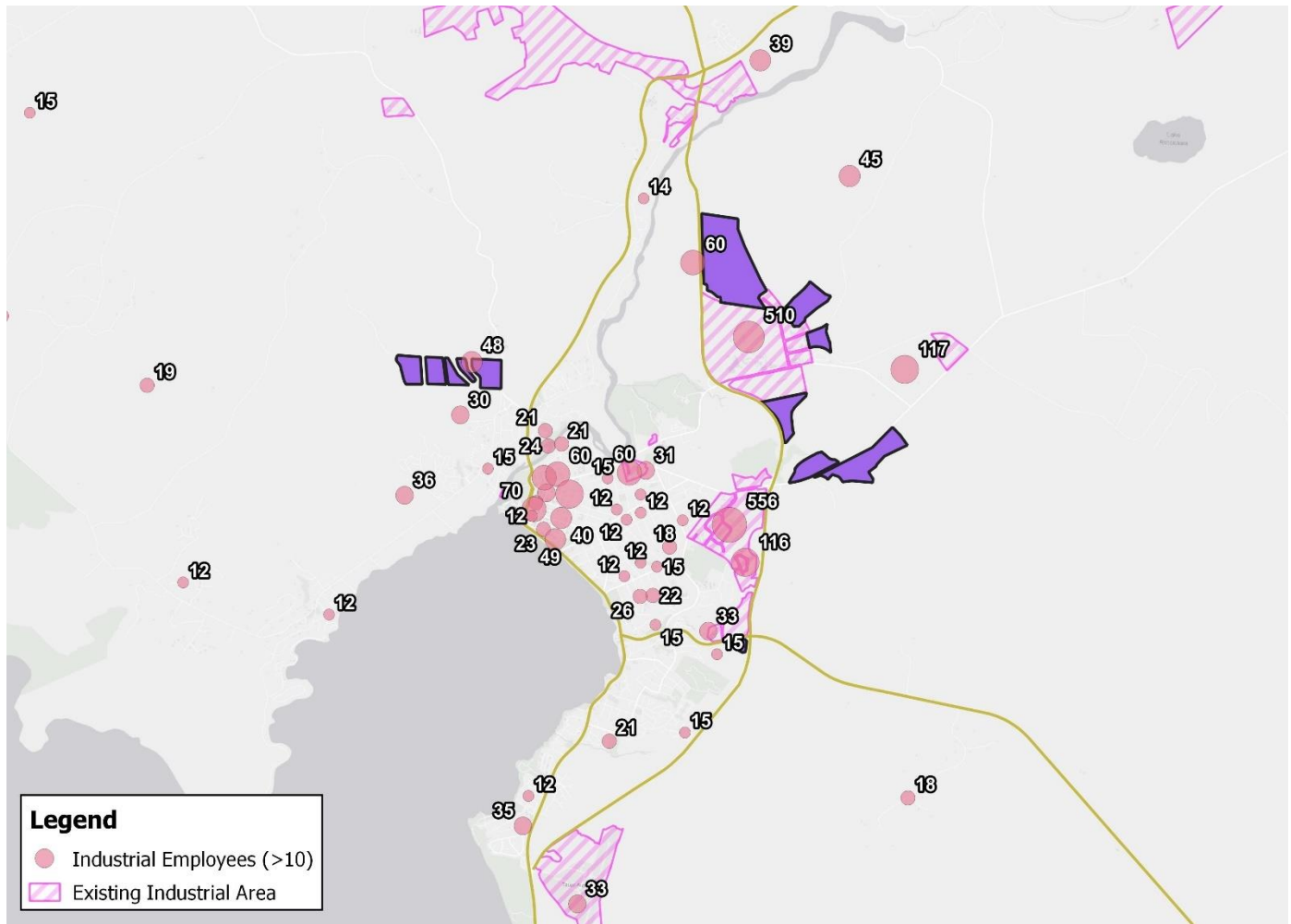
The following figure shows the location and number of industrial employees currently employed in and around the main Taupō settlement by meshblock³ (meshblocks with fewer than 10 industrial employees were suppressed). This shows the geospatial distribution of key employment nodes for industrial employees. Meshblocks with no industrial employees were suppressed.

The main nodes of industrial employment mostly line up with the locations of industrial zoning with the area north of Spa Road to the lakefront, corresponding with the town's centre, also showing a significant number of industrial sector employees mainly in Construction, Wholesale Trade and Transport, Postal and Warehousing.

There is existing industrial employment near all the new potential industrial areas though there is less of a presence at the Rangatira E and Broadlands Road sites.

³ Meshblocks are the smallest geographic bounds used by Stats NZ to publish geographic information. They are roughly the size of a city block in urban areas and get larger in less urbanised areas.

FIGURE 5: DISTRIBUTION OF INDUSTRIAL SECTOR EMPLOYMENT IN TAUPŌ DISTRICT (2021)



Source: Stats NZ, Taupō District Council.

The following figure shows the anticipated growth in employment by broad sector over the 2021 – 2053 period. These projections are based on the latest Stats NZ Medium growth (2018 census base) scenario projections using the 2018 Census as a base. These projections are the same as those presented in the Taupō District Plan review process at the broad sector level.

Industrial employment in Taupō is anticipated to continue growing out to 2053, albeit at a more subdued rate than the recent 20-year period. In total, Industrial Sector employment is anticipated to account for almost 4,800 employees, around 860 more employees than in 2020. As a proportion of total employment, Taupō's Industrial sector is anticipated to represent 22% of total employment in 2053, compared to 24% in 2021.

This more muted growth is anticipated for a variety of reasons: advances in technology (automation), change in job preference (service sector), increased levels of technical expertise, outsourcing to foreign countries, reduced demand for some industrial products, etc.



There is a strong correlation between business zone land and industrial employment, and no reason to suggest that this relationship would breakdown over the next 30-years. For this reason, we would anticipate the existing industrial nodes with capacity to continue to grow in employment numbers and any proposed new nodes to also absorb a portion of the projected industrial employment growth.

FIGURE 6: TAUPŌ EMPLOYMENT PROJECTIONS BY SECTOR (2021 – 2053)

Sector	2020	2033	2053	Growth (2020 - 2053)	
				Nominal	Percentage
Industrial	3,930	4,118	4,786	856	22%
Retail	4,380	4,448	4,554	174	4%
Commercial	3,115	4,157	5,397	2,282	73%
Other	5,535	6,597	7,302	1,767	32%
Total	16,960	19,320	22,040	5,080	30%

Source: Stats NZ, Property Economics

4. TAUPŌ DISTRICT INDUSTRIAL LAND SUFFICIENCY

The following table identifies anticipated demand for industrial land and current industrial land sufficiency enabled within the Taupō District Plan⁴.

There is currently just under 38ha of industrial land enabled by the District Plan that is vacant and ready for industrial use. This figure is based on zoned, vacant, and unencumbered industrial land across Taupō district from the Taupō District Plan review process. This figure likely understates the total supply of industrial land to some degree and is therefore considered a conservative estimate.

Based on Stats NZ Medium population projections, there will be almost 860 net additional industrial employees in the district by 2053, as shown in Figure 6 above.

This level of industrial employment translates into demand for net additional industrial land of around 78.6ha. After accounting for additional land using buffers outlined in the NPS-UD to provide for a range of choice in location, price, etc., the total amount of net additional land required in the district by 2053 is a little over 90ha.

This level of demand, and the current industrial land capacity, suggest an insufficient level of district wide industrial land of almost 53ha over the long term. i.e., there will be a shortfall in industrial land of almost 53ha by 2053.

TABLE 2: TAUPŌ DISTRICT INDUSTRIAL LAND DEMAND

Taupō District Industrial	2020	2023	2033	2053
Industrial Employment Base	3,930	3,974	4,119	4,786
Net Additional Land Requirement (ha)	-	4.0	17.3	78.6
Industrial Land Requirement Including NPS Buffer (ha)	-	4.8	19.9	90.4
Current Vacant Industrial Land (ha)	37.8			
Net Supply and Demand Differential (ha)	37.8	33.0	17.8	-52.6

Source: Taupō District Council, Stats NZ, Property Economics.

Of the identified potential net additions to Taupō's industrial land pool, Options 1 and Option 6 would provide sufficient net additional industrial land to overcome anticipated long-term demand by themselves.

Option 6 provides approximately the same as the current anticipated long-term land deficit. Option 1 provides significantly more capacity, in the order of 53ha, than what would be needed to meet the long-term sufficiency for the district.

Options 2, 3, 4, 5, 7 and 8A with extant vacant supply would yield net long-term deficits of 42.6ha, 31.3ha, 32.6ha, 10.8ha, 49.1ha and 26.9ha respectively, if enabled on their own. In combination together, or with one of the large Options, these could provide additional geospatial diversity that may add diversity to the industrial land supply pool.

⁴ This table was provided in a previous report on Taupō's PDP process, "Taupō Proposed District Plan Review Economic Assessment". Property Economics (2021).

Generally, there are greater gains to clustering / agglomerating industrial activity, however, some efficiency can be gained by having a number of small industrial land options for smaller enterprises and enabling short travel time from residential areas for workers.

The following table identifies the net sufficiency enabled by each option, assuming 100% of the land is otherwise unconstrained and developable. Property Economics has used indicative boundaries to identify each potential option area which may skew the indicated land area and the exact size of each area may differ slightly from that indicated in the table.

TABLE 3: TAUPŌ DISTRICT INDUSTRIAL LAND POTENTIAL OPTIONS LONG TERM SUFFICIENCY (2053)

	1 - Broadlands Road West	2 - Centennial Southern Extension	3 - Scoria Road	4 - Centennial Northern & Eastern Extension	5 - Broadlands Road East	6 - Rangatira E	7 - Napier Road	8A - Aratiatia Road
Gross Additional Land Provided by Option	+105.5	+10.0	+21.3	+22.0	+41.8	+57.2	+3.5	+25.7
Estimated Current Industrial Capacity	+37.8							
Total Land Supply Provision	143.3	47.8	59.1	59.8	79.6	95.0	41.3	63.5
Long-term Industrial Sufficiency including NPS-UD buffer (ha)	52.9	-42.6	-31.3	-30.6	-10.8	4.6	-49.1	-26.9

Source: Taupō District Council, Property Economics.

There are both positive and negative economic impacts of providing more industrial land than is anticipated to be required over the long term. Some of the high-level costs and benefits include

- ⊕ Lower industrial land prices.
- ⊕ Increased choice in location.
- ⊕ Increased certainty in future location of industrial land provision to market.
- ⊕ Disincentivising ad hoc, out of zone industrial activity.
- ⊖ Possible inefficient infrastructure allocation – infrastructure is allocated to an area where it is not yet required or demanded.
- ⊖ Decreased impetus of intensified / efficient industrial land development.

While these are not principal determining factors for the purpose of this MCA, significantly excess industrial land provision is worth considering.



5. HIGHLY PRODUCTIVE SOILS

The anticipated NPS-HPL will likely identify the areas with high grade soils (Class 1, 2 & 3 Land Use Classification (LUC)) as soils that need protection. These soils need protecting from an economic point of view as they are a meaningful representation of a precious land resource that is invaluable and contributes substantially to the regional and national economy through its productive capacity.

High class soils are / could be used for efficient agricultural use with little to no improvement needed. They are regarded as the best soils for such purposes and are anticipated to have higher yields than other soils. These soils represent the highest soil uses and are described in the Land Use Capability Handbook (3rd Edition) as:

Class 1 is the most versatile multiple-use land with minimal physical limitations for arable use. It has high suitability for cultivated cropping (many different crop types), viticulture, berry production, pastoralism, tree crops and production forestry.

Class 2 is very good land with slight physical limitations to arable use, readily controlled by management and soil conservation practices. The land is suitable for many cultivated crops, vineyards and berry fields, pasture, tree crops or production forestry. The most common physical limitations which may occur include:

- Slight susceptibility to erosion under cultivation
- Moderate soil depth (45-90cm)
- Slight wetness after drainage
- Occasional flood overflow
- Unfavourable soil structure and difficulty in working
- Very weak to weakly saline
- Slight climatic limitations

Class 3 land has moderate physical limitations to arable use. These limitations restrict the choice of crops and the intensity of cultivation, and / or make special soil conservation practices necessary. Class 3 land is suitable for cultivate crops, vineyards and berry fields, pasture, tree crops or production forestry. The most common limitations that may occur include:

- Moderate susceptibility to erosion under cultivation
- Rolling slopes (8°-15°)
- Shallow (20-45 cm) or stony soils
- Wetness or waterlogging after drainage
- Occasional damaging overflow
- Low moisture holding capacity
- Moderate structural impediments to cultivation
- Low natural fertility
- Weak salinity
- Moderate climatic limitation.

Other soils classes, classes 4-7, are unlikely to be included as highly productive in the NPS-HPL as the physical limitations for arable use are more than moderate. Class 8 soils are associated with non-rural land use (villages, towns, cities, etc.) and are for all intents and purposes non-arable.

The following figures identify the nine sites in relation to the underlying and surrounding soils classes.

FIGURE 7: OPTION 1 – CENTENNIAL NORTHERN EXTENSION LUC SOIL CLASSES



Source: Bing, Land Care Research NZ, Taupō District Council, Property Economics.

FIGURE 8: OPTION 2 – CENTENNIAL EASTERN EXTENSION LUC SOIL CLASSES



Source: Bing, Land Care Research NZ, Taupō District Council, Property Economics.

FIGURE 9: OPTION 3 – CENTENNIAL SOUTHERN EXTENSION LUC SOIL CLASSES



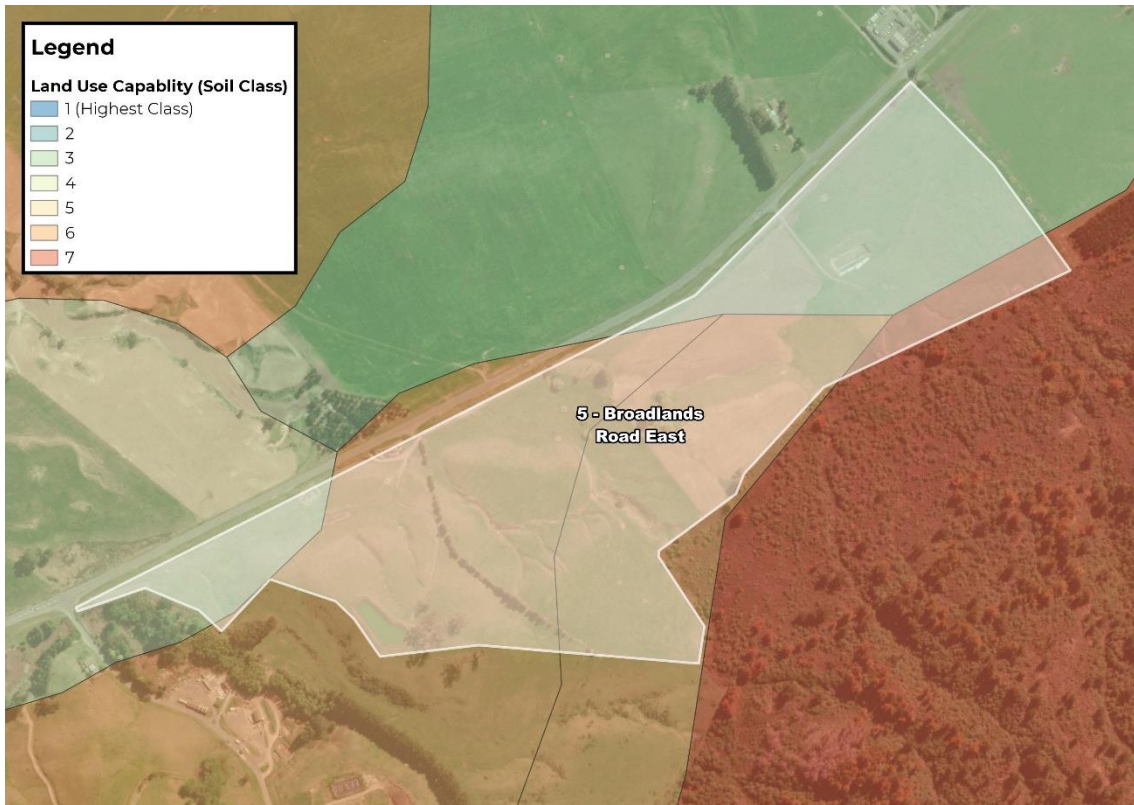
Source: Bing, Land Care Research NZ, Taupō District Council, Property Economics.

FIGURE 10: OPTION 4 – BROADLANDS ROAD WEST LUC SOIL CLASSES



Source: Bing, Land Care Research NZ, Taupō District Council, Property Economics.

FIGURE 11: OPTION 5 – BROADLANDS ROAD EAST LUC SOIL CLASSES



Source: Bing, Land Care Research NZ, Taupō District Council, Property Economics.

FIGURE 12: OPTION 6 – RANGATIRA E LUC SOIL CLASSES



Source: Bing, Land Care Research NZ, Taupō District Council, Property Economics.

FIGURE 13: OPTION 7 – NAPIER ROAD LUC SOIL CLASSES



Source: Bing, Land Care Research NZ, Taupō District Council, Property Economics.

FIGURE 14: OPTION 8A – ARATIATIA ROAD LUC SOIL CLASSES



Source: Bing, Land Care Research NZ, Taupō District Council, Property Economics.

There is only a limited overlap between the identified potential industrial land options and high-class soils (Class 1, 2 & 3). The following table summarises each area by the amount and proportion of the underlying lands land use classification soil class. Class 1, 2 & 3 soils have been highlighted to show areas where there is overlap between an identified option and high-class soils.

The only higher-class soils that overlap with the identified areas are some areas with class 3 soils. While class 3 soils are considered arable, for agricultural use, as indicated above, they have more limited use than class 1 and 2 soils. As a result, the associated cost from losing these soils to a non-productive (soil usage) purpose is significantly more limited.

In nominal terms, the Option 1 and Option 6 show the largest loss of high-class soils of the identified options with 61.9ha and 44.3ha of class 3 soils, respectively. These losses translate to 59% and 77%, respectively, of each options total land area provision. This is potentially a substantial cost to the supply of high-class soils in Taupō.

Based on the soil status identified by NZ Land Resource Inventory (NZLRI), Option 1 (Class 3 part) is identified as flat terraces with yellow-brown pumice soils developed on coarse-textured Taupō flow tephra or water-sorted Taupō tephra. Soils are subject to periods of moisture deficiency and are of low natural fertility.

Option 6 (Class 3 parts) is undulating slightly dissected slopes with yellow-brown pumice soils developed on coarse Taupo flow tephra. Soils are of low fertility and subject to periods of severe moisture deficiency. There is a potential for very severe gully and streambank erosion, and severe sheet erosion.

As such, these two options are considered to represent a small amount of productive land use loss if actioned.

Option 2 and Option 4 also show some nominal losses of high-class soils – 4.3ha, 0.1ha and 7.5ha, respectively. These losses represent 43%, 0% and 14%, respectively, of each options total land area provision. This likely represents only a small cost to the supply of high-class soils in Taupō.

While the quantum of high-class soils that could potentially be lost through rezoning may not be large for any individual option, the cumulative effect of high-class soil loss or degradation should also be considered carefully by Council.

TABLE 4: LANDED AREA BY SOIL CLASS

		1 - Centennial Northern Extension		2 - Centennial Eastern Extension		3 - Centennial Southern Extension		4 - Broadlands Road West		5 - Broadlands Road East		6 - Rangatira E		7 - Napier Road		8A - Aratiatia Road	
Soil Class	Class 1	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
	Class 2	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
	Class 3	61.9	59%	4.3	43%	0	0%	0.1	0%	10.1	24%	44.3	77%	0	0%	0	0%
	Class 4	34.7	33%	4.0	40%	0	0%	18.0	100%	2.7	6%	0	0%	0	0%	0	0%
	Class 5	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
	Class 6	8.8	8%	1.7	17%	21.3	100%	0.0	0%	27.1	65%	5.5	10%	0	0%	25.7	100%
	Class 7	0	0%	0	0%	0	0%	0	0%	1.9	5%	7.4	13%	3.5	100%	0	0%

Source: Land Care Research NZ, Property Economics.

6. LAND CONSTRAINTS AND ENCUMBERANCES

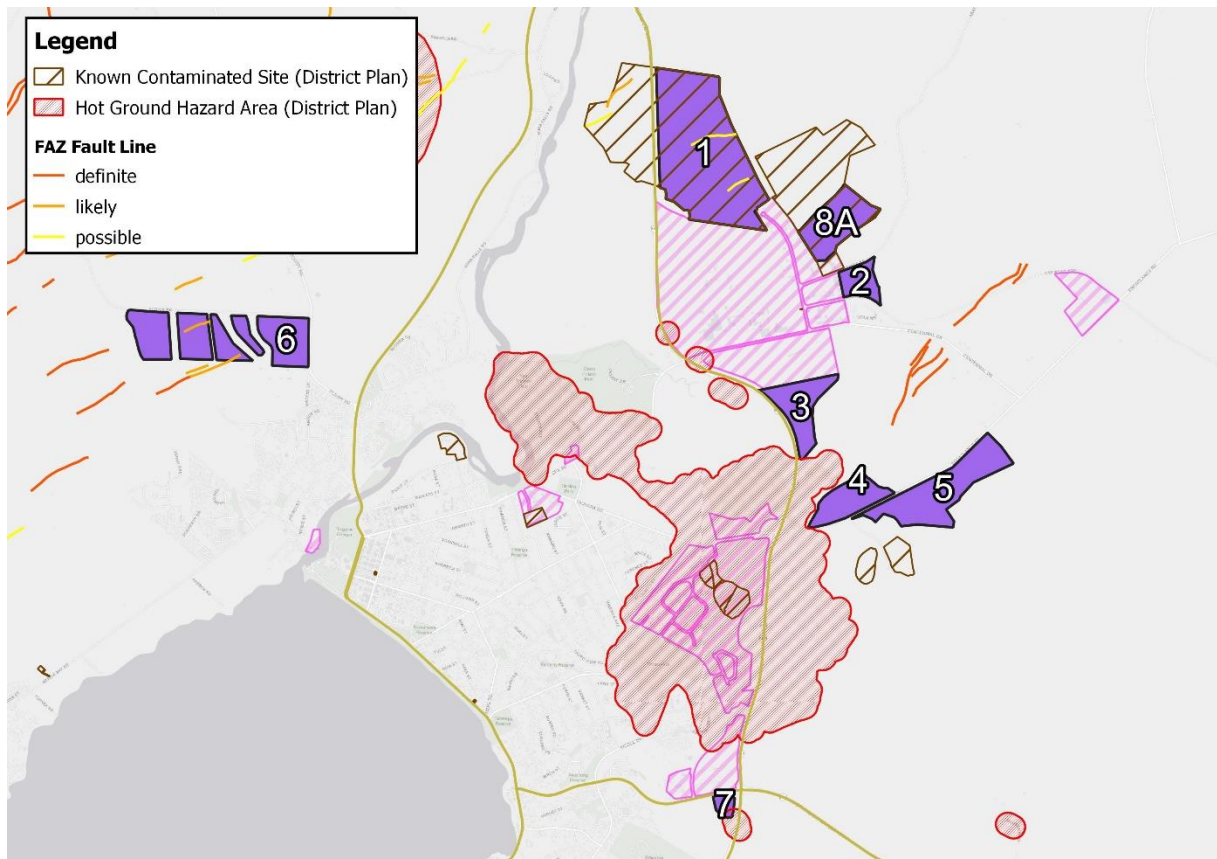
The following figures show the location of known, potentially constraining factors that may impede the development of the identified land options for industrial use. The following constraints have been mapped:

- Known Contaminated Ground
- Hot Ground Hazard Areas
- Fault Lines
- Amenity Landscape Areas
- Outstanding Landscape Areas
- Significant Natural Areas
- Land Contours
- State Highways / High-Capacity Road Network

It is assumed that all identified land options are all geotechnically possible locations for industrial land options as no technical reports or recommendations have been provided as part of this analysis

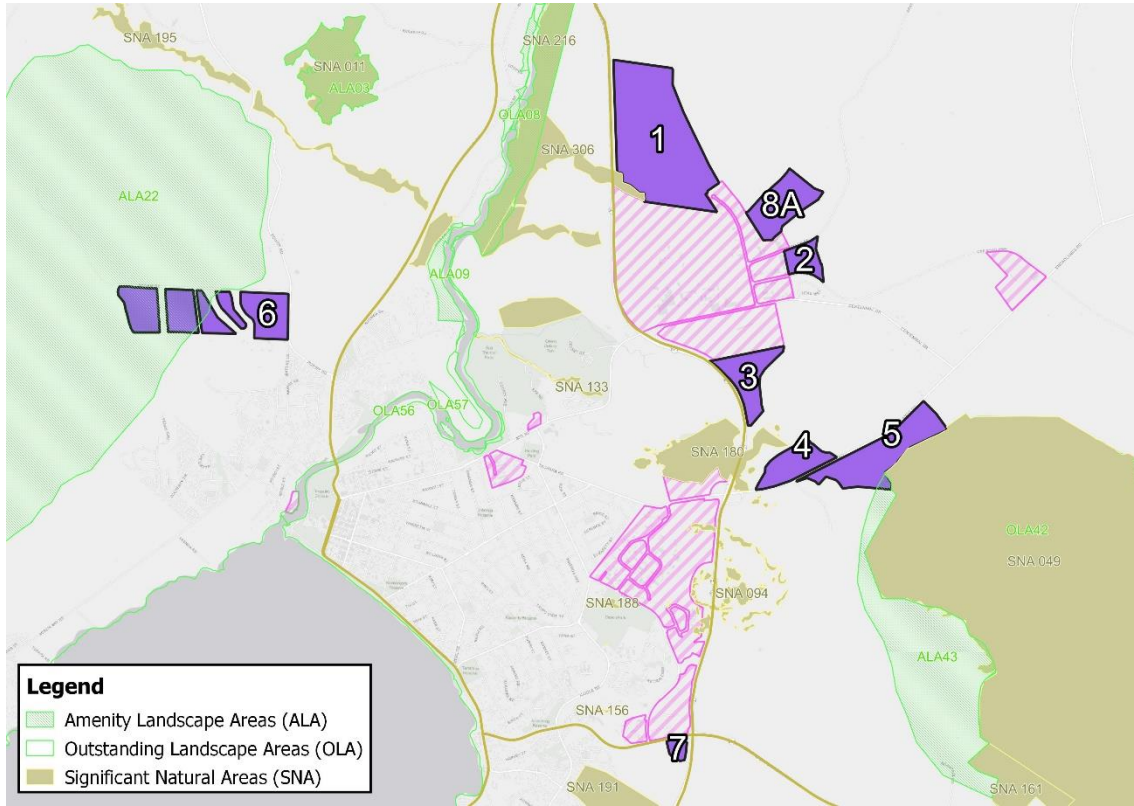
The only exceptions to this that are known to Property Economics is the three waters constraints related to the northern areas of Option 1 (Northern Centennial Extension). These constraints at this point in time are considered fatal to this option being progressed.

FIGURE 15: KNOWN CONTAMINATED SITES, HOT GROUND HAZARD AREAS AND FAULT LINES IN TAUPŌ DISTRICT



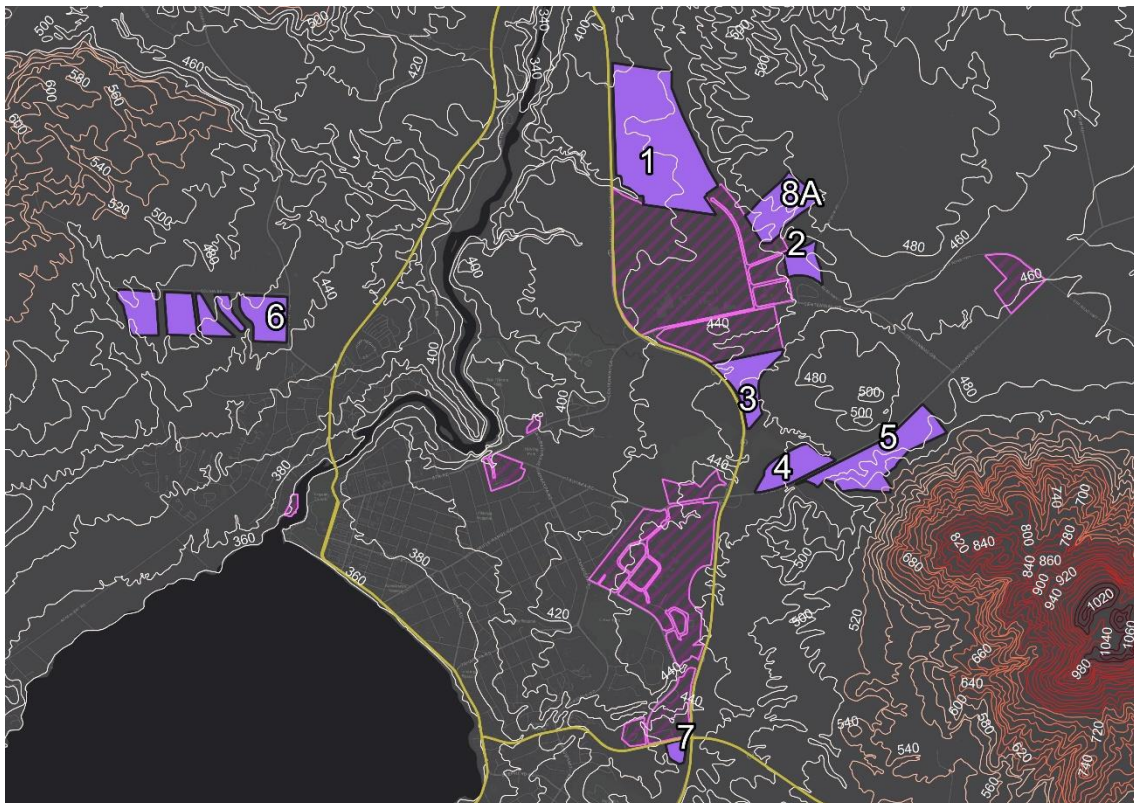
Source: LINZ, ESRI, Taupō District Council, NZTA, Property Economics.

**FIGURE 16: AMENITY LANDSCAPES, OUTSTANDING LANDSCAPES AND SIGNIFICANT NATURAL AREAS
IN TAUPŌ DISTRICT**



Source: LINZ, ESRI, Taupō District Council, NZTA, Property Economics.

FIGURE 17: LAND CONTOURS AND STATE HIGHWAY / HIGH CAPACITY ROAD IN TAUPŌ DISTRICT



Source: LINZ, ESRI, Taupō District Council, NZTA, Property Economics.

All the identified areas are relatively flat with only gentle sloping gradient, as indicated by elevation contours.

Option 1 borders the “Waikato River Conservation Area” and has a small amount of overlap with it, though this is unlikely to impede development significantly or cause damage to the Conservation Area with proper development techniques. However, Three Waters constraints are fatal in the MCA to this option being realised in the foreseeable future.

All industrial land options are either adjacent to an existing industrial node or very close by, except for Option 6: Rangatira E. Most of the industrial land close to Taupō’s main urban area is on the eastern side of the Waikato River, Option 6 is on the western side away from other industrial or commercial activity. This represents both a detriment and a benefit as proximity to existing areas could yield additional agglomeration and dynamic synergies across industrial sub-sectors but geospatial distancing allows for greater accessibility for a wider labour force base.

All existing industrial activity is close to a State Highway or other high-capacity road. The potential Option 6 industrial area is the furthest from the network though it is only a 1-2 minute drive from Rangatira E to Wairakei Drive. This road would take industrial traffic through an existing residential area which may yield some negative externalities relating to noise, smoke, dust, etc. that could lower amenity.

Option 6 has some minor streams running through it which may restrict the use of the land for some industrial activity. Option 1: Centennial Northern Extension, similarly, has a minor stream in the Significant Natural Area adjacent to it which may limit the use of the land nearby.

The identified options are mostly flat or have a slight incline with the exception of the Option 3: Centennial Southern Extension which has a western border lined with trees that is more undulating and has a steep drop off to the contiguous State Highway 1 and the Option 5: Broadlands Road East option also has rolling hills on its western flank. Option 8A: Aratiatia Road also has a slightly elevated pitch but can likely be managed with correct urban design such as the use of terraces.

While these likely do not preclude the land from industrial use they likely limit it somewhat as flat land is generally preferred for industrial use and provides the greatest flexibility in industrial land development. The more constraints that land has to overcome the more limited the land use options and the less feasible the land is to develop. This lower level of feasibility in and of itself is a constraint as many industrial activities rely on large amounts affordable land to operate such as warehousing, storage and logistics.

7. MULTI CRITERIA ANALYSIS TABLE OF ECONOMIC RESULTS

The multi-criteria analysis is undertaken with six key variables identified as being the most salient for the decision-making process of ranking preferred options.

Each criterion is given a percentage weighting indicating its ranked importance to the process in determining best placement for future industrial land.

Each option's criteria is scored from -5 to +5 (0 inclusive) independently of one another, where -5 corresponds to areas that scored poorly in a criteria and +5 corresponds to areas that scored well in a criteria.

Each option is summed by its Weighted criteria and ranked in order of best option to the least preferred option.

Criterion	Weighting
Constrained Land – how constrained is the land for development (hills, valleys, swamps, floodplains, etc.) or encumbered with regulatory constraints?	30%
Infrastructure – does the land have infrastructure, or is it infrastructure ready? Are there significant impediments / costs to getting infrastructure for the land?	25%
Contiguity – does the geospatial position of the land make sense in the context of other industrial areas and other zones?	20%
Sufficiency – does the proposed option provide sufficient industrial land to meet demand over the life of the district plan / 30-years?	10%
Productive Land Opportunity Cost – Is the industrial land use likely to result in the loss of productive land or high-class soils (NPS-HPL)?	10%
Likelihood of generation of reverse sensitivities – how likely is the option to generate reverse sensitivities with the surrounding environment and is it likely to prevent future growth?	5%

Some criteria have overlap with other criteria, for example, the determination of soil classes (determining if soil is suitable for arable land use) considers the slope of the land which is also accounted for in the constraints on the land as industrial activity, similarly, does not occur on heavily sloping land. These overlaps cause a minor bias in our recommendations, but Property Economics has been careful to minimise any potential double counting.

A detailed explanation of each of the criteria is provided in Appendix 1.

Additional commentary is provided on known cultural or preservation considerations that may need specific assessment and / or interventions. These considerations were not included in the MCA explicitly as the evaluation of these criteria falls outside the scope of this assessment.

These considerations are, however, important and should be included in ultimate evaluation and decision of options to ensure appropriate environmental and cultural recognition is maintained to consider the environment and people.

The following table summarises the scoring and ranking of options of the MCA. The weighted total represents the ordinality of preferences with a cardinal ranking following. This cardinal ranking represents, from an economic perspective, the best industrial land options to unlock in order. This analysis does not consider the joint unlocking of multiple parcels.

The top scoring option was Option 7: Napier Road followed by Option 4: Broadlands Road West and Option 2: Centennial Eastern Extension.

TABLE 5: SUMMARY OF MCA AND RANKED OPTIONS

	1 - Centennial Northern Extension	2 - Centennial Eastern Extension	3 - Centennial Southern Extension	4 - Broadlands Road West	5 - Broadlands Road East	6 - Rangatira E	7 - Napier Road	8A - Aratiatia Road	Applied Weight
Constrained Land	-5 (fatal)	+3	0	+5	0	0	+5	+1	30%
Infrastructure	+3	+3	-2	+4	+2	-3	+5	+3	25%
Contiguity	+5	+5	+3	+2	+2	-3	+1	+5	20%
Sufficiency	+5	+1	+1	+1	+3	+5	0	+1	10%
Productive Land Opportunity Cost	-4	0	+5	0	-1	-4	+5	+5	10%
Likelihood of Generating Reverse Sensitivities	+5	+5	+5	+5	+5	+2	+2	+5	5%
Weighted Total	+0.6	+3.0	+1.0	+3.3	+1.4	-1.2	+3.6	+2.9	-
Rank	7	3	6	2	5	8	1	4	-

Source: Property Economics

7.1. OPTION 1: CENTENNIAL NORTHERN EXTENSION

Criterion and Reason for Score	Score (-5 - +5)
<p>Constrained Land – this area has a gentle slope and a number of possible fault hazard zones. It is also understood that this area may have issues surrounding infrastructure placement due to ground / soil issues that will require further testing. Additionally, this area is owned by the Council and used for wastewater disposal purposes. As such it is considered a three waters asset and subject to the Water Services Bill whereby it will be compulsory acquired by the new regulator / entity. This is a fatal constraint of the option and reflects that there is no certainty on the land that it could be realised for industrial uses.</p>	<p>-5 (Fatal)</p>
<p>Infrastructure – The area directly adjoins the existing centennial industrial area with the existing infrastructure that is put in place to service business activities in and around the industrial zone. This means that the infrastructure costs associated with this option would be relatively lower in contrast to some of other options which have no existing industrial activities around the site.</p> <p>This is consistent with the Infrastructure Assessment results that three waters and transportation servicing can be accommodated at this site with no particular issues identified.</p>	<p>+3</p>
<p>Contiguity – The area would form part of the northern and eastern expansion areas of the centennial industrial area. This would help further establish the area and improve the area's agglomeration potential and industrial intensification.</p>	<p>+5</p>
<p>Sufficiency – The area provides additional 105.5ha of industrial land which meets the district's long-term industrial land demand and provides a surplus of almost 53ha. This provides the industrial land market with sufficient security of provision.</p>	<p>+5</p>
<p>Productive Land Opportunity Cost – The option covers 61.9ha of land with class 3 productive soils. This is a significant quantity of high-class soils that would be lost, and the greatest nominal amount among the identified options, and accounts for 59% of the total options land area.</p>	<p>-4</p>
<p>Likelihood of generation of reverse sensitivities – The option is unlikely to result in significant generation of reverse sensitivities as there are no nearby residential or commercial areas that would be disrupted through this lands utilisation for industrial.</p>	<p>+5</p>
Weighted Total	+0.6
Rank	7th (Fatal)

There is a small area of overlap between the northern tranche and an area of natural significance, Waikato River Conservation Area. Further consultation would be needed but it assumed that some protective barriers (green barriers, buffer areas, open space, fencing, etc.) would be needed in order to prevent adverse effects on the area. No other known cultural or preservation criteria apply to this land.

7.2. OPTION 2: CENTENNIAL EASTERN EXTENSION

Criterion and Reason for Score	Score (-5 - +5)
<p>Constrained Land – the site has a gentle slope towards the east but is generally free of constraints and encumbrances. The slope may limit some activities or impose additional costs in order to be fully developable for industrial purposes.</p>	+3
<p>Infrastructure – The option is contiguous with the existing centennial industrial area and will likely be relatively easy to fully infrastructure. The road access is via the existing industrial area which may impose some cost on the transport network through increased traffic.</p> <p>These observations are consistent with the results of the Infrastructure Assessment that no particular issues are associated with the Wastewater, Transportation and Stormwater servicing at the site. However, a pump station would likely to be needed to ensure appropriate fire flows for industrial land at this site. Property Economics considers this requirement a minor water servicing constraint of the site and would not materially undermine the economic viability of the option.</p>	+3
<p>Contiguity – The area would form part of the northern and eastern expansion areas of the centennial industrial area. This would help further establish the area and improve the area’s agglomeration potential and industrial intensification.</p>	+5
<p>Sufficiency – The area only provides additional 10.0ha which is a small amount of the 30-year demand (circa 90ha). In combination is a number of other small options, or a larger option, this option could go some way in providing sufficient industrial capacity to the district.</p>	+1
<p>Productive Land Opportunity Cost – The option covers land with 4.3ha of class 3 productive soils. This is only a small portion of high class soils, though represents a significant portion of the total area of the option, approximately 43%. On a nominal, relative basis, however, this cost is likely to be small and can be managed for cumulative effects if other options have sufficiently small quantum of high class soils.</p>	0
<p>Likelihood of generation of reverse sensitivities – The option is unlikely to result in significant generation of reverse sensitivities as there are no nearby residential or commercial areas.</p>	+5
Weighted Total	3.0
Rank	3rd

There are no other known cultural or preservation criteria that apply to this land. No archaeological, heritage, viewshafts or outstanding natural landscapes.

7.3. OPTION 3: CENTENNIAL SOUTHERN EXTENSION

Criterion and Reason for Score	Score (-5 - +5)
<p>Constrained Land – The land appears to have a fairly steep hill on its far eastern edge (though it is not known if this is intended to be zoned as part of the area). The area appears to be accentuated with rolling hills that may limit some industrial activity. There are no other known constraints or encumbrances on the land.</p>	0
<p>Infrastructure – The option has inferior infrastructure access compared to other options albeit it is contiguous with an existing but largely underutilised industrial zone in close proximity to SH1. There may be issues accessing the site as the industrial zone to the north is unlikely to be developed in the foreseeable future and therefore is land locked unless options to the south are rezoned.</p> <p>Additionally, as identified in the Infrastructure Assessment, this option would require significant pipework and pumping upgrades, extension of public sewer, road form and function development, and further stormwater management to accommodate industrial activities at this site.</p>	-2
<p>Contiguity – The land is to the direct south of the centennial industrial area and would form part of a natural expansion path for that area, though this site may not be developed in the near future. The site is adjacent to another option that could generate a large contiguous industrial land block and generate its associated benefits.</p>	+3
<p>Sufficiency – The option provides 21.3ha of net additional industrial land. This is a small amount of additional provision and does not meet the long-term sufficiency target by itself. This option, in combination with other options could provide sufficient industrial land to meet long-term demand. The option does provide additional industrial land options and choice.</p>	+1
<p>Productive Land Opportunity Cost – The area does not occupy any high-class soils and is not nearby high-class soils. There are anticipated to be no significant productive land opportunity costs.</p>	+5
<p>Likelihood of generation of reverse sensitivities – The option is not near densely urbanised residential land uses and forms part of the gradient between the existing centennial industrial area and the rural landscape. The land is unlikely to generate reverse sensitivities based on existing urban form patterns.</p>	+5
Weighted Total	+1.0
Rank	6th

There are no other known cultural or preservation criteria that apply to this land. No archaeological, heritage, viewshafts or outstanding natural landscapes.

7.4. OPTION 4: BROADLANDS ROAD WEST

Criteria and Reason for Score	Score (-5 - +5)
<p>Constrained Land – The land is not known to have any constraints or encumbrances that would prevent efficient industrial development.</p>	+5
<p>Infrastructure – From an economic perspective, there is good infrastructure access as the area is close to a SH1 interchange and existing industrial zones but not contiguous with them. There may be some expense in running additional three waters, telecommunications and electricity through to the area, but it is unlikely to be prohibitive and this is somewhat offset by the existing high-capacity road. The area is not known to already have infrastructure.</p> <p>The Infrastructure Assessment suggests that wastewater servicing extension is achievable at this site. However, this option would require pump station upgrade, road form and function development, and some stormwater management at the site.</p>	+4
<p>Contiguity – The area is non-contiguous with existing industrial land but is only a short distance away. The gap is bridged by land occupied by the existing road network and land that is unlikely capable being used for industrial purposes itself. There are other options that, if enabled, could also facilitate in contiguity and generating a critical mass of industrial zoned land.</p>	+2
<p>Sufficiency – The option provides around 20ha of net additional industrial land. This is a small amount of additional provision and does not meet the long-term sufficiency target by itself. The option does provide additional industrial land options and choice, and this may be reflected in a lower cost of industrial land if a sufficient quantity is unlocked.</p>	+1
<p>Productive Land Opportunity Cost – The land occupies mostly non-productive soils with only a small overlap with class 3 productive soils. The area is near productive soils that may limit future expansion potential or expose productive soils to pollutants from the site.</p>	0
<p>Likelihood of generation of reverse sensitivities – There is limited opportunity for the area to generate reverse sensitivities as the area is close to the existing industrial area and forms a gradient to a rural area. There is no dense urbanised residential nearby.</p>	+5
Weighted Total	+3.3
Rank	2nd

There are no other known cultural or preservation criteria that apply to this land. No archaeological, heritage, viewshafts or outstanding natural landscapes.

7.5. OPTION 5: BROADLANDS ROAD EAST

Criterion and Reason for Score	Score (-5 - +5)
<p>Constrained Land – The land appears to be made up of rolling hills across its western border which limits some of the industrial activity that could otherwise occur on the site but flattens out to the east. There are no other known constraints or encumbrances on the site. This area is currently owned by Contact Energy, and it is understood that they have no intention of releasing this land to the market or developing the land for industrial purposes. This suggests that the land is not suitable for rezoning as it would not result in additional industrial activity or realisable industrial capacity.</p>	0
<p>Infrastructure – The site is a short distance from other industrial zones and urbanised areas, i.e., the site is not contiguous with other urbanised areas but is across the road from Options 1 and 7.</p> <p>The Infrastructure Assessment indicates that extension of public sewer to this area is achievable. However, this option would require pump station upgrade and other network upgrades, and road function development at the site. Development for flow paths off Mt Tauhara would also be required. The site is located in the catchment of some of the geothermal vegetation to the north of Broadlands Road and therefore would require some stormwater management.</p>	+2
<p>Contiguity – The area is non-contiguous with existing industrial land but is only a short distance away. If Option 1 land is also unlocked for industrial use this will be contiguous with it, separated only by Broadlands Road.</p>	+2
<p>Sufficiency – The proposed option provides additional capacity of +41.8ha which represents a significant step towards meeting the projected long-term shortfall. With the proposed option there would still be an anticipated shortfall of around 10.8ha, though this could be compensated for with additional industrial land in another identified option area e.g., Option 1.</p>	+3
<p>Productive Land Opportunity Cost – The proposed industrial land option covers approximately 10.1ha of class 3 soils, or 24% of its total industrial zone area covers class 3 soils. This is a small area of productive land loss, and these soils are on the lower end of productive land use.</p>	-1
<p>Likelihood of generation of reverse sensitivities – the area is distant enough from urbanised residential areas that it is unlikely to generate reverse sensitivities.</p>	+5
Weighted Total	+1.4
Rank	5th

There may be some overlap or interference with a Significant Natural Area, Mt Tauhara. This may limit the land somewhat to protect this with greenspace boundaries or fencing.

7.6. OPTION 6: RANGATIRA E

Criterion and Reason for Score	Score (-5 - +5)
Constrained Land – The land appears to be broken up by a number of rivers / ditches / valleys that may limit the land's industrial use. The land only has a gentle slope but likely has a number of active faults running through it as identified by the fault avoidance zones.	0
Infrastructure – The land is a small distance away from the urbanised area of Taupō township so may have additional infrastructure costs associated with providing sufficient infrastructure to the land. This high-level observation is consistent with the infrastructure constraints identified by the Infrastructure Assessment which suggests this option would require a new high pressure zone including network extension / pump station, significant transportation servicing and stormwater management. The Assessment also suggests that the site would not be suitable for wet industry particularly given the wastewater treatment capacity restrictions over the bridge.	-3
Contiguity – The option is not contiguous with any existing industrial zone or known industrial activity. The potential option would, however, form its own industrial node in an area of the district where none is currently provided (west of the main urban township).	-3
Sufficiency – This option provides additional 57.2ha of industrial land to Taupō District which is anticipated to leave a long run net surplus of industrial land of around 4.6ha. This meets the sufficiency target for long-term demand by itself.	+5
Productive Land Opportunity Cost – The land covers a tranche of class 3 soils, circa 44.3ha, that would be lost. While this is the lowest of the high-class soils likely to appear in the NPS-HPL it represents a significant loss as around 77% of the total potential options land area covers these class 3 soils.	-4
Likelihood of generation of reverse sensitivities – The area is some distance from urbanised residential areas but may generate reverse sensitivities through its connectors to the transport network. The presence of lorries, vans, and other heavier work vehicles may impose some negative externalities on the nearby residential and anticipated future residential growth path.	+2
Weighted Total	-1.2
Rank	8 th

There are no known culture or preservation criteria that apply to this land. No archaeological, heritage, viewshafts or outstanding natural landscapes.

7.7. OPTION 7: NAPIER ROAD

Criterion and Reason for Score	Score (-5 - +5)
Constrained Land – The land is mostly flat with a gentle slope and not known to have any geo-constraints or encumbrances that would make the land difficult to develop for industrial purposes. The land is suitable for industrial development.	+5
Infrastructure – The site is contiguous, across Napier Road, with an existing industrial area and it is assumed that there would not be significant infrastructure investment required to unlock this land for industrial activity. The land is also adjacent to a key SH1 interchange which is a major benefit for industrial accessibility. These observations are in line with the result of the Infrastructure Assessment that there are no particular infrastructure issues associated with this site for industrial activities. Three waters and transportation servicing can be easily achieved / upgraded at this site.	+5
Contiguity – The area is contiguous with an existing large industrial area and would likely act as a small extension to this area proving additional capacity and agglomeration benefits of industrial activity.	+1
Sufficiency – This option provides only 3.5ha of land for a total long-term deficit of almost 50ha. By itself this option is insufficient for providing long-term industrial land supply to Taupō District. This option could be included with a collection of other options or a large option to provide sufficient industrial land for the districts long-term requirements. This would also enable more geospatial locations for additional industrial land development and activity.	0
Productive Land Opportunity Cost – The identified land covers an area with poor soil quality (Class 7 soils) that is unlikely to be useful for soil productive purposes. This means there is no loss of productive soils.	+5
Likelihood of generation of reverse sensitivities – The area is a separate from residential activity but there is a small possibility that some activities may generate reverse sensitivities as the EUL expands in the future, albeit this is risk is considered low and manageable.	+2
Weighted Total	+3.6
Rank	1st

There are no known culture or preservation criteria that apply to this land. No archaeological, heritage, viewshafts or outstanding natural landscapes.

7.8. OPTION 8A: ARATIATIA ROAD

Criterion and Reason for Score	Score (-5 - +5)
Constrained Land – This land has a slightly elevated pitch that may limit its industrial use slightly, but this can likely be managed with efficient engineering and urban design. The land is otherwise not known to be constrained.	+1
Infrastructure – The land is adjacent to a major existing infrastructure ready, industrial area. There are no known reasons why this land would not be suitable for industrial infrastructure. Note that the Infrastructure Assessment has not reviewed this option.	+3
Contiguity – The land is a large extension to one of Taupo District's major industrial nodes, the Centennial Industrial Area.	+5
Sufficiency – The area of land provides 25.7ha of land which does not meet the existing anticipated shortfall in industrial land for the district. This land does represent a significant portion of industrial land capacity shortfall that would be alleviated by its enablement and could be unlocked with other land parcels to fully ameliorate the projected supply and demand of the district.	+1
Productive Land Opportunity Cost –The area is entirely over class 6 soils, one of the lowest soil classes that has very little to no opportunity for productive soil use.	+5
Likelihood of generation of reverse sensitivities – The area is significantly distant from other non-industrial activity, outside of rural land use. It is unlikely to generate reverse sensitivities.	+5
Weighted Total	+2.9
Rank	4 th

There are no known culture or preservation criteria that apply to this land. No archaeological, heritage, viewshafts or outstanding natural landscapes.

8. CONCLUSION

The results of the economic MCA show that the best option, given the current and future anticipated industrial land requirements of Taupō, based on economic considerations, is Option 7: Napier Road followed by Option 4: Broadlands Road West and Option 2: Centennial Eastern Extension.

In combination these three identified industrial land options ameliorate a significant portion of the existing shortfall, though a shortfall in the order of 21ha still exists in the long run.

Unlocking the 4th best option (from an economic perspective) option 8A: Aratiatia Road would provide a sufficient quantity of land to Taupō district to meet their long-term industrial land needs with a surplus of around 4.7ha after 2053.

On balance, given the outcome of the economic MCA, it is likely that unlocking a number of the assessed industrial land options would represent the most appropriate outcome for the district. This is because some of the smaller industrial land options performed better than the larger ones, using these economic criteria, and would likely generate more economic benefits for the district. This may mean Council's best option, from an economic perspective, is to unlock a number of the smaller parcels to provide sufficient capacity to the industrial land market.

Council will likely have other considerations and directions, beyond the pertinent economic considerations mentioned in this report – such as known cultural approbation or heritage values not previously identified. These considerations may impact the overall preference order indicated in this economic MCA and the ultimate order of land use enablement of the identified options.

Most of the options identified appear to have many notable characteristics that make them generally amenable for industrial land use, so such a reordering would be unlikely to agitate the market from an economic efficiency point of view.

Council should, however, remain vigilant with regards to the level of industrial land capacity as the sector is of vital importance to the district's employment base and economy. Planning the unlocking of sufficient industrial land should remain high on Council priorities and regular revision and assessment should be maintained to ensure an efficient and competitive industrial land market exists.

Should industrial land become significantly scarce or concentrated inefficient market outcomes may arise – unstable prices, anti-competitive behaviour, deadweight losses, etc.

9. APPENDIX 1: DETAILED CRITERIA

This appendix details each of the criteria used in this economic MCA in determining the appropriateness, and subsequent economic order of preference for industrial land use, for each of the identified parcels.

Criterion	Explanation
<p>Constrained Land – how constrained is the land for development (hills, valleys, swamps, floodplains, etc.) or encumbered with regulatory constraints?</p>	<p>Physical constraints or regulatory constraints that impact the degree to which land can be used for its intended (zoned) purpose are considered in comparison to ideal industrial land (flat, unbroken land with regulatory rules that impact the development or operation of industrial activity).</p> <p>Land that is constrained for industrial activity in some way is less useful, by definition, than land that is unconstrained for industrial activity.</p>
<p>Infrastructure – does the land have infrastructure, or is it infrastructure ready? Are there significant impediments / costs to getting infrastructure for the land?</p>	<p>Industrial land needs to have industrial infrastructure readily available in order to be useful. This includes electricity, telecommunications, transport (road, rail, water, air) and three waters (wastewater, stormwater, freshwater). Infrastructure is also a condition of the NPS-UD in order to be considered as serviced.</p> <p>While not all infrastructure layers are provided, or within Property Economics area of expertise, basic principles of contiguity are applied. Where identified options are contiguous, or within a short distance or, existing industrial areas it is assumed that the area can be readily provided with necessary infrastructure at a comparatively low cost compared to an area further away.</p> <p>Industrial land generally requires access to high-capacity transport networks (state highways, rail, sea and air). This is because the sector is heavily reliant on interconnectedness to function efficiently and often has stringent timeframes for project completion that rely on the movement of physical goods.</p> <p>Land areas closer to prominent transport nodes tend to be more highly prized by many industrial firms because of the relative discount applied to their transport costs.</p>
<p>Contiguity – does the geospatial position of the land make sense in the context of other industrial areas and other zones?</p>	<p>New industrial land that is contiguous with existing industrial areas provides a benefit beyond the generally lower cost of infrastructure and mitigation of reverse sensitivities. Industrial activity benefits from the agglomeration of industrial activity through enhanced synergies and returns to scale as well as expansion potential for existing businesses.</p>

<p>Sufficiency – does the proposed option provide sufficient industrial land to meet demand over the life of the district plan / 30-years?</p>	<p>As part of Central Government policy (NPS-UD) Council must provide sufficient business land capacity over short-, medium- and long-term timeframes. This policy is aimed at allowing markets to operate efficiently and provide opportunity for businesses.</p> <p>Insufficient business land capacity exposes the business land market to unnecessary market failure risk, such as monopoly pricing, which generate perverse incentives and rent-seeking behaviour. These are inefficient outcomes from an economic land use lens.</p> <p>Taupō District currently has a long-term constraint on industrial land. This means sometime after 10 years and before 30 years there is likely to be a shortfall in industrial land to meet anticipated demand. While this timeframe is the least pressing (compared to short- and medium-term), in terms of policy and economic outlook, weight must be given to industrial land options that meet this outcome.</p>
<p>Productive Land Opportunity Cost – Is the industrial land use likely to result in the loss of productive land or high-class soils (NPS-HPL)?</p>	<p>Opportunity cost is an important consideration for any land use outcome as land use planning outcomes are particularly sticky (once one land use is decided it rarely, if ever, changes back). This is particularly true of greenfield land that has an existing productive land use.</p> <p>The NPS-HPL has, at time of publication, not yet been finalised but will likely add regulatory weight to the protection of soils with highly productive land uses (or soils with land use classifications of a high enough order (1, 2 or 3)). These soils represent an important land resource for New Zealand as a highly agrarian country and are the most productive soils available.</p>
<p>Likelihood of generation of reverse sensitivities – how likely is the option to generate reverse sensitivities with the surrounding environment and is it likely to prevent future growth?</p>	<p>The location of industrial land in relation to other land use is important to protect that other land and the existing land use environment. As industrial activity may generate obnoxious odour, noise, light, soot / smoke, etc. it is important that these activities are contained to areas where they do not impact existing areas.</p> <p>Ideally, industrial zones will be set away from residential and amenity driven commercial areas as well as natural landscapes and aesthetic land features and may form part of a gradient to the rural environment. This is to shelter these areas from the externalities generated by common industrial activity.</p>