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TECHNICAL REPORT
MARTHA MINERAL ZONE PLAN CHANGE – ECONOMICS IMPACTS
GENERAL AREA 000

Martha Mineral Zone Plan Change

Economic impacts

Final Report - Updated in Response to Further Information Request
15 July 2022

SENSE PARTNERS
DATA LOGIC ACTION

1. Introduction

OceanaGold New Zealand Limited (OGNZL) has asked Sense Partners to quantify the economic impacts of rezoning a series of properties around the township of Waihi from Residential, Low Density Residential and Town Centre to Martha Mineral Zone.

OGNZL is lodging a private plan change to the Hauraki District Plan (HDP) that primarily seeks to increase the size of the Martha Mineral Zone (MMZ) in order to provide for the potential future expansion of surface mining in the Martha Pit, Waihi by way of a resource consent application. The area subject to the proposed extension of the MMZ comprises land owned by OGNZL and is generally to the north, west and south of the Martha Pit as described in more detail in the plan change application prepared by Mitchell Daysh. The proposed rezoning will allow OGNZL to apply for resource consent as a discretionary activity in future to enable the potential expansion of the Martha Pit so that further economic deposits of gold and silver can be extracted.

Economic impacts

We found that the expansion of the Martha Pit, facilitated by the proposed plan change, will lengthen mine life by 6 years, given the mine closure (in conjunction with other OGNZL life of mine extension projects)[1] would be delayed from 2030 to 2036. During this period of extended life, well documented benefits from the Waihi Gold mine will continue.

At a national level, the mine will support 101 full time equivalent (FTE) well-paid jobs over 2025-2036 (476 jobs including indirect effects), will increase gold and silver exports by $1.2b and boost the national economy by an additional $741m cumulatively. The majority of the economic benefits will be felt in New Zealand, as we estimate 90% of the purchases by the Waihi Gold Mine would be from New Zealand. However, the total economic impact will be smaller than the GDP contribution, as profits will accrue to international owners.

The economic benefits for the Hauraki District will be meaningful, due to employment at the mine, additional economic activity for suppliers and additional induced economic activity due to higher employment and average incomes due to increased volume and duration of mining at Waihi. We estimate the additional activity will equate to $127m of additional wages over the 2025-2036 production period, and local purchases from suppliers of $144m. This additional local expenditure in wages and purchases from suppliers in the district is equivalent to 3% of HDC GDP per year. We estimate 101 additional jobs per year directly in the mine (237 jobs including indirect effects).

We do not quantify costs and benefits of potential social and cultural externalities as these are covered in separate expert evidence prepared in relation to the proposed plan change application.

[1] Lodged as separate resource consent applications.

Land use impact

The extension of the MMZ will enable a change in the land use of selected properties given the change to the underlying zoning, and therefore, the land use activities that can be undertaken within that zone. However, the Land Supply Assessment prepared by Mr John Polkinghorne of RCP (commissioned by OGNZL) in relation to the plan change application (RCP 2022), finds that Waihi has sufficient capacity for all land use types, which also accounts for those properties proposed to be rezoned to MMZ.

RCP 2022 found that the rezoning of residential zoned land would affect 28 homes, and the rezoning of Town Centre zoned land would affect up to 7,200 m^2 of commercial or industrial space (equivalent to 7 typical commercial or industrial buildings) and would result in no loss of commercial zoned space.

The Hauraki Growth Strategy 2050 found Waihi has residential development capacity of 863 lots and industrial capacity of 70 lots. The proposed rezoning land is a small proportion of this capacity. Consequently, the rezoning of these selected residential properties will not have a detrimental economic impact by materially reducing zoned land supply, however, could require construction of new commercial space that might otherwise not take place.

New commercial space is likely to be more efficient. Industry sources suggest new commercial space should be around 33% more efficient, or we would need 67% of the current floor area. The typical cost of commercial construction in Hauraki District is $2,500/$m^2$ according to building consents data. We estimate the additional cost of new commercial space (which does not include the cost of land, as it would transfer money within the local economy) would be around $12m.

2. Site description

Mining has been a major part of the development of Waihi, with the town's fortunes closely tied to the fortunes of the generations of miners who worked the resource of the Hauraki Goldfield. Open pit mining (Martha Pit) has been a feature of life in, and around, Waihi since 1987.

Mining plays an important economic role in Waihi, the local district, region and nationally. The mine is an exporter of high value products (gold and silver), supported by high paying jobs and purchases from local, national, and international suppliers.

The national contribution is large, however, is more visible at a local level. The mine creates higher paid jobs than is usually available in the provinces. For example, in Waihi the average wage in Hauraki District is around $55,000 a year, while mine employees earn on average more than $100,000 a year.

Figure 1 summarises the key metrics that we look at to describe the Waihi gold mine's economic contribution in 2019, before Covid-19 pandemic disruptions, completion of mining at Correnso Underground and transition to development of the Martha Underground Mine ("MUG"). 2020 is thus a period of mine development and not a good base comparison for the mine running at 'normal' operations. We have also supplied 2020 data for completeness.

FIGURE 1: KEY ECONOMIC CONTRIBUTIONS OF THE WAIHI GOLD MINE

Economic contribution to NZ metrics by Waihi Gold Mining

		2019	2020
		Waihi	
Input indicators	**Metric**		
Life of mine	**Years**	n/a	**n/a**
Revenue/exports	**$m, 2019, cumulative**	**150**	**26**
All merchandise exports	$m, 2019	58,628	**59,933**
Share of 2019 total exports	%, pa	0.3%	**0.0%**
Employees - Direct	**#, pa**	**268**	**257**
Indirectly in suppliers	#, pa	992	950
Total: Direct & Indirect	#, pa	1,260	1,207
Capital expenditure	**$m, 2019, cumulative**	34	**102**
Purchases from suppliers	**$m, 2019**	**47**	**24**
Of which from:			
Hauraki Distrcit	$m, 2019	14	8
Rest of NZ	$m, 2019	26	12
International	$m, 2019	7	4
Contribution to GDP		**2019**	**2020**
Compensation of employees	$m, 2019, cumulative	31	30
Gross operating surplus	$m, 2019, cumulative	70	26
Estimated royalties paid	$m, 2019, cumulative	2	2
Gross value added	$m, 2019, cumulative	**103**	**59**
Share of economy:			
Waihi area	%	33.8%	21.9%
Hauraki District	%	14.1%	7.7%
Waikato Region	%	0.36%	0.2%
New Zealand	%	0.03%	0.02%
Context, Mar-2019 year GDP ($m):		2,019	2,020
Waihi Ward		305	269
Hauraki District		731	761
Waikato Region		28,481	29,173
New Zealand		323,965	326,507

Source: Sense Partners estimates from company data, Statistics NZ, MBIE and NZPAM

The Waihi mine (the operations of OGNZL in Waihi) gross value added (or economic value) was $103m in 2019. This was equivalent to 33.8% of the Waihi Ward's estimated GDP, 14.1% of Hauraki District's GDP, 0.36% of Waikato Region's GDP and 0.03% of New Zealand GDP. Economic value created in a location, as noted elsewhere in the report, should not be equated to local economic effects, as production is exported and profits may flow to owners located elsewhere.

In 2020, reduced production meant economic activity of the mine reduced to $59m, although capital expenditure increased from $34m to $102m.

The economic contribution is significant at the Hauraki District level. Additional detail above show that local expenditure, through wages and purchases from local suppliers was $45m in 2019, equivalent to 6% of the Hauraki District GDP.

The operation, mining, processing, and distribution sectors of the mine employed 268 people in 2019. The average income at the mine is over $100,000 per year, compared to the national average of $62,000 per year, $30,000 per year in Waihi, and around $51,000 in the Hauraki District (which has increased to near $55,000 in 2021). This indicates that the mine creates well paid jobs.

Employees tend to live and commute from various locations around the mine, meaning the benefits of highly paid jobs are dispersed across a wider area, rather than just where the mine is located. At the margin, this increases local consumption, demand for products and encourages spending within the local area. Half of the Waihi mine workers live in the Waihi township, about a quarter in Waihi Beach and Katikati, and the remaining quarter spread around the region.

The mine purchases goods and services from suppliers. The purchases tend to be split roughly a third in the Hauraki District ($14m), about half national and the remainder to international suppliers, meaning the majority (90%) is attributed to New Zealand, benefiting the national economy. This indirectly supports employment in various parts of the economy. The largest impacts tend to be on road transport and fuel retail, services such as repair and maintenance, engineering, construction, labour hire, fabricated metal manufacturing, and machinery and equipment wholesaling. The list is long and diverse because the requirements from suppliers is wide ranging. We estimate that if gold mining stopped in New Zealand, for every job directly in gold mining, 3.7 jobs elsewhere would be at risk.

2.1. Our approach to estimating the economic effects

We use a consistent approach to evaluate the MMZ expansion, as we have done for other consent applications and the 2016 Social Impact Management Plan. Although we present additional local data in the project impact assessment in Figure 3.

We measure a range of economic value indicators created by the mine for each year of production from the project, from best estimates of production, revenue, royalties, employment, investment, and purchases from suppliers.

To quantify the impact of the MMZ expansion, and potential future pit extensions, we look at the *additional* economic gains from our current projections.

Interpreting economic data at a district level

Our interest is in the Hauraki District Council area, which is the relevant consenting authority. Location specific GDP estimates should be used with care because of what they measure.

National and Regional Council GDP statistics are published by Statistics New Zealand and Territorial Authority GDP estimates are published by MBIE.

These estimates are based on the location of the business, largely made up of incomes of workers and owners of the business. However, a location of an economic entity does not necessarily mean that all economic benefits of that business accrue to the district or region. This is because workers may commute across political boundaries and the owners of the business, to whom the profits accrue, may live out of the district or offshore.

This is important for the HDC. MBIE estimates HDC GDP was $761m in 2020. This refers to economic activity generated by businesses and jobs located in HDC.

Wages earnt by HDC residents was $356m in the same period, and around $383m including self-employed. However, nearly 30% of HDC residents work outside the HDC (that is they live in HDC but commute elsewhere for work). The economic benefits of these commuting workers naturally span across territorial authority boundaries, and the local economic benefits should be seen in this context.

Similarly gross profits generated by businesses usually make up around half of estimated GDP. At a district level, the profits could rightly be considered to be generated in the district, but those profits may not be used locally, which accrue to owners of the business who may be located elsewhere, including offshore.

For Hauraki District context we also look at local purchases, which gives us a measure of total local expenditure and thus the injection of additional spending in the local economy.

2.2. Multiplier effects

We report the direct economic effects of the mine. We also supply indirect and induced effects of the mine's activity on employment (also known as multiplier analysis) but advise caution in their interpretation.

Multiplier analysis does not take into the account the potential flexibility of the economy and the isolation of some sectors and economic resources. Flexibility would mean that idle resources are quickly deployed for new opportunities. Isolation would mean that some parts of the economy will not respond to economic changes in mining, because their job, income and other economic connections are not related to the mine.

For example, retired people or those currently unemployed and without the necessary skills and attributes to work in the mining sector do not experience much direct effect from the mine, although they may receive indirect economic gains from spending in the local economy, as well as additional amenities and services available in a larger population related to the presence of the mine.

We estimated the multiplier effects from the 2013 Input-Output tables published by Statistics New Zealand. We have updated this analysis based on the extraction method, where we analyse the Input-Output tables and estimate how many jobs would be affected if an industry were to shut.[2] We estimate that if the gold mining industry were to close, for each gold mining job, 3.7 jobs in other parts of the economy would be lost.

We sense checked our estimates for the local effects of gold mining employment changes in other sectors. We observe very strong correlation between jobs across the Hauraki District and local mining jobs over the last two decades, displaying different patterns to national and neighbouring district trends – supporting our analysis that gold mining activity supports a wide range of businesses and jobs in the region, far in multiple of the direct employment in the mine.

2.3. Economic effects for the Hauraki District

Many provincial centres are small and specialised. This means their economies can be affected by shocks, usually weather related or from global economic shocks, and currently the Covid-19 pandemic. New investments and sources of growth will play a crucial role in creating stable and long term economic contributors.

Mining is already a significant economic contributor to the Hauraki District. A potential future expansion of the Martha Pit would inject new investment into the economy and sustain robust levels of economic activity and employment (directly and indirectly). This will provide an insulating effect.

As noted earlier, around 30% of the wider benefits are likely to be in the local district, around 45% in the wider region, around 15% in the rest of the country and around 10% outside the country.

Presence of mining attracts highly skilled and well-paid staff into the region, with both economic and non-economic spill-overs from this. The mine's suppliers benefit from transacting with a large business, which often has better systems and processes than small and medium-sized enterprises (SMEs). This can lead to improved performance of the mine's suppliers, either through procurement activities, or through osmosis.

[2] Erik Dietzenbacher & Michael L. Lahr (2013) "Expanding Extractions", Economic Systems Research, 25:3, 341-360, DOI: 10.1080/09535314.2013.774266

3. THE PLAN CHANGE

The proposed plan change (indicated in Figure 2 below) will extend the current MMZ to include a series of additional OGNZL-owned properties generally to the north, west and south of the Martha Pit periphery. Rezoning of these land parcels is required to remove the prohibited activity status that currently relates to surface mining applicable to the underlying zoning and is, therefore, necessary to facilitate a potential future pit expansion (undertaken through a conventional discretionary activity resource consenting pathway). The areas shown in Figure 2 comprise of 2.95 hectares of Low Density Residential zoned land; 4.63 hectares of Residential zoned land; and 2.39 hectares of Town Centre zoned land, with the MMZ increasing by approximately 9.9 hectares to approximately 100.6 hectares overall.

FIGURE 2: LAND PARCELS PROPOSED TO BE REZONED TO MMZ

4. ASSESSMENT OF EFFECTS OF THE PLAN CHANGE

The proposed plan change will have two key impacts. First, it will remove some land from existing and planned use due to the change in underlying zoning (noting that where land uses are already lawfully established they will be able to continue even though the underlying zoning may change). Second, the plan change will facilitate a future expansion of the Martha Pit, achieved through a conventional discretionary activity resource consenting pathway, which will increase mine output and extend the life of the mine.

4.1. Land use change

The extension of the MMZ will change the underlying zoning of selected properties, and therefore the possible land use of those properties. RCP (2021) finds that Waihi has sufficient capacity for all land use types, which also accounts for those properties proposed to be rezoned to MMZ.

RCP (2022) found that the plan change would affect approximately 20 - 25 homes, up to 7,200 m^2 of commercial / industrial space (equivalent to 7 commercial / industrial buildings) and would result in no loss of commercial zoned land. The Hauraki Growth Strategy 2050 found Waihi has residential development capacity of 863 lots and industrial capacity of 70 lots. The rezoned land is a small proportion of this capacity. Consequently, the rezoning of these selected properties will not have a large detrimental economic impact by reducing supply.

For residential housing, the scale of the loss of supply is small relative to both existing and planned capacity, and the number of homes typically built per year. However, the loss of commercial space would be significant enough to warrant replacement to meet expected future demand. This is because limited new commercial space has been provided in Waihi in recent years, therefore, any loss would likely mean additional construction to cater for the loss of this space that would otherwise not occur. There is however ample zoned land to construct any commercial space lost as a result of any potential future Martha Pit expansion. We estimate any new commercial space would be at least 33% more efficient (from discussion with industry experts). This would mean construction of new commercial space of 4,825m^2 would have a net additional monetary cost of $12m (assuming build cost[3] of $2,500/$m^2$).

4.2. Enabling additional mining activity

The plan change will enable future resource consent applications to be made for the expansion of the Martha Pit. The economic benefits of a Martha Pit expansion, if granted consent, would be substantial; Figure 3 summarises the key economic metrics of a future pit expansion.

[3] The average cost of commercial construction building consents in Hauraki District in 2020.

On current plans, mine life will end in 2030 (10 years of mine life), with a future expansion of the Martha Pit further extending mine life to 2036 (meaning the economic benefits identified earlier in this report would continue until this time).

The economic impacts can be thought of in two contexts: nationally; and locally for HDC.

National context

For the national context, we are interested in the economic contribution to national GDP, which includes wages and profits generated, as well as royalties. This is a wider perspective, as the economic benefits do not necessarily show up as local jobs and spending. Profits may accrue to owners or invested elsewhere, and government royalties revenue may be spent in other regions.

Figure 3 summarises our estimates of economic contribution from the mining that will be enabled by the Martha Mineral Zone consent application. The first panel shows the national economic contribution. We estimate the project will, over the 2025-2036 period of production, add:

- $96m a year to exports ($1.2b over life of project)
- $62m a year to GDP
- 101 jobs a year directly, and 476 including indirect jobs supported.

Local HDC context

For the local context, the key economic impacts tend to be through local jobs and wages, and purchases of goods and services. We define the local area as the Hauraki District Council area.

Local economic contribution looks closely at local expenditure. We have identified the local spending on wages, purchases from suppliers (based on analysis of current mining operations) and rehabilitation spending, that is additional to current plans.

We estimate local expenditure will average $23m a year between 2025 and 2036, the production years. Mine life is extended from 2030 to 2036.

It will directly create an average of 101 jobs a year directly at the mine, at an average income of around $100,000, compared to Hauraki District average of $55,000. We estimate another 46 jobs on average will be supported directly through suppliers, and additional spillover benefits of around 90 jobs. We estimate the Hauraki District will benefit from 237 additional jobs, both directly and indirectly.

The timing of the additional employment and spending estimates are detailed in Figure 3.

FIGURE 3: ADDITIONAL ECONOMIC ACTIVITY ENABLED BY MMZ

2021$m	2025-2036 Sum	2025-2036 Average	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
National effects																		
Exports	1,158	96	-	-	-	-	-	-	2	40	48	50	170	205	148	218	262	17
Wages	127	11	-	-	-	-	25	20	8	8	8	8	8	8	8	8	8	8
Royalties/indirect taxes	45	4	1	4	4	3	4	4	4	4	5	4	3	4	3	4	5	0
GDP	741	62	-	-	-	-	25	20	10	33	-9	-2	90	118	75	153	211	18
Memo items:																		
Operating purchases	312	26	-	-	-	-	-	-	0	12	45	46	62	51	39	34	20	4
Capital expenditure	168	14	-	2	2	-	6	32	86	43	1	0	0	0	0	-	-	-
Jobs		476	-	5	6	-	530	604	733	529	463	468	576	505	423	389	300	195
Direct		101	-	-	-	-	234	189	79	79	79	79	79	79	79	79	79	79
Indirectly through purchases only		127	-	5	6	-	20	100	272	174	143	145	197	163	123	107	65	14
Other indirect jobs		248	-	-	-	-	276	315	383	276	242	244	300	263	220	203	157	102
Hauraki Distrcit effects																		
Revenue/exports	1,158	96	-	-	-	-	-	-	2	40	48	50	170	205	148	218	262	17
Wages	127	11	-	-	-	-	25	20	8	8	8	8	8	8	8	8	8	8
Local purchases	144	12	-	1	1	-	2	9	26	16	14	14	19	15	12	10	6	1
Total local expenditure	271	23	-	1	1	-	26	29	34	25	22	22	27	24	20	18	14	10
Jobs		237	-	2	2	-	341	339	316	242	218	220	259	233	204	191	159	121
Direct		101	-	-	-	-	234	189	79	79	79	79	79	79	79	79	79	79
Indirectly through purchases only		46	-	2	2	-	7	36	99	63	52	53	71	59	45	39	23	5
Other indirect jobs		90	-	-	-	-	100	114	139	100	88	88	109	95	80	74	57	37
Context																		
National GDP (2021)		327,755																
HDC GDP (2020)		761																
HDC jobs (2021)		7,207																
HDC average income ($pa, 2021)		54,836																

FIGURE 4: GOLD AND SILVER EXPORTS WILL INCREASE BY $1.2B

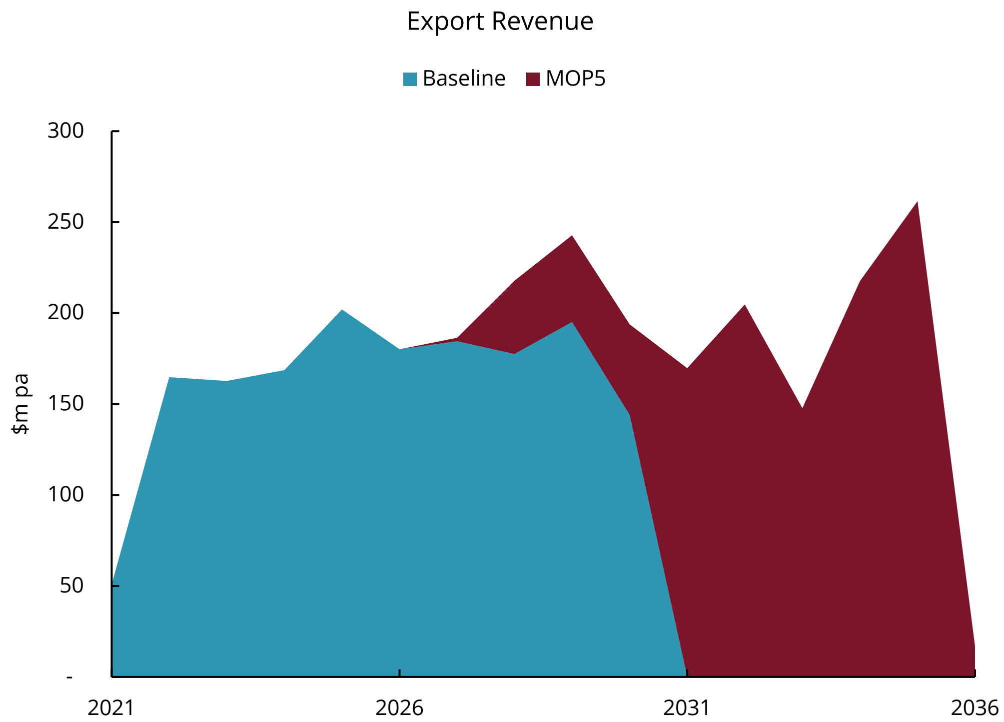


FIGURE 5: ROYALTIES PAYMENTS WILL INCREASE BY $23M

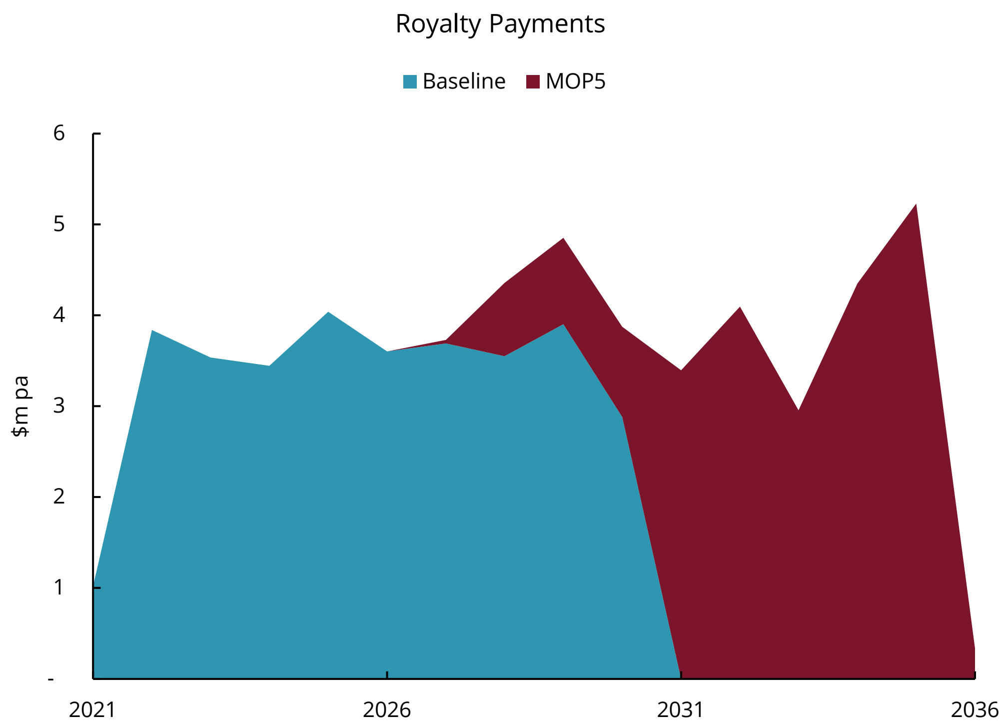


FIGURE 6: THE CAPITAL INVEST WILL BE LARGELY OVER 2025-2028

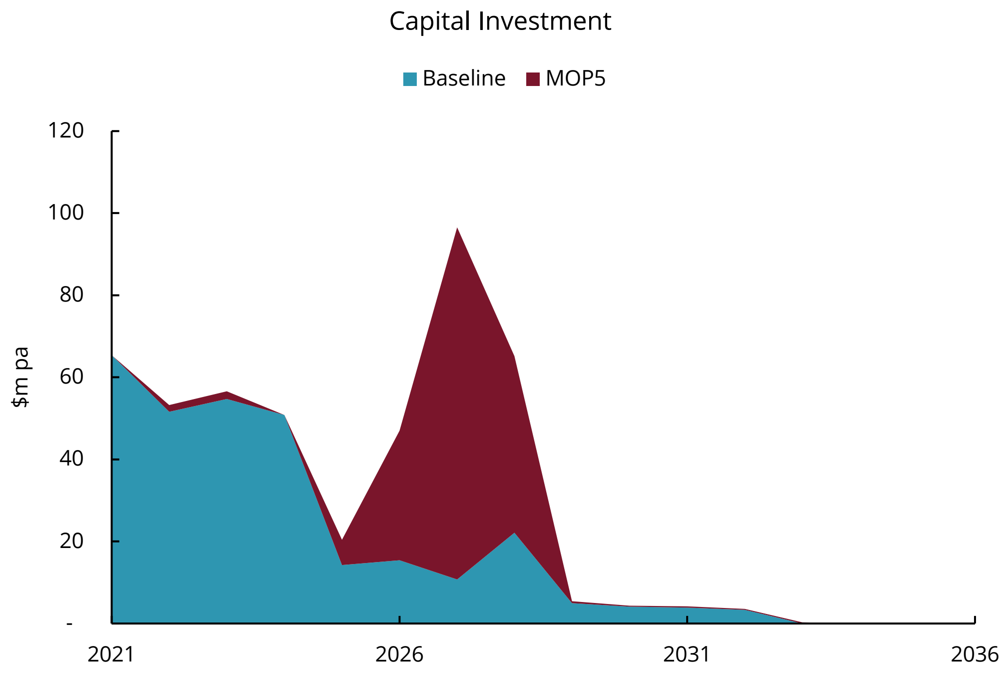
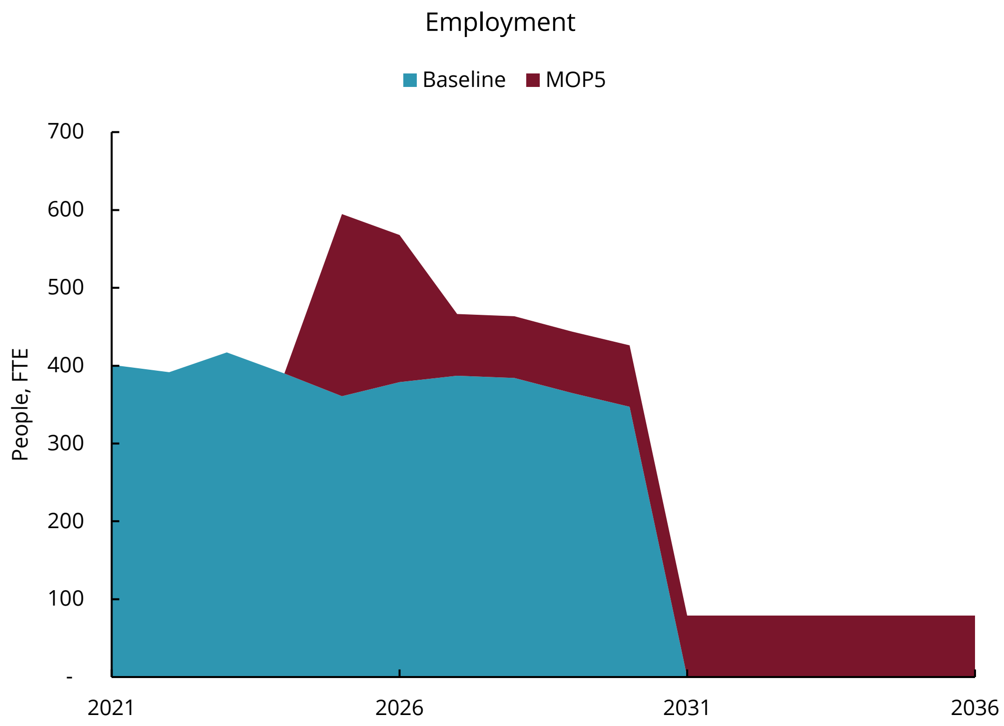


FIGURE 7: EMPLOYMENT WILL BE BOOSTED FOR A SUSTAINED PERIOD, BUT THE GAINS IN THE EXTENDED MINE LIFE PERIOD IS LIKELY TO BE SMALL



5. CONCLUSION

The proposed plan change will reduce commercial / industrial space. We estimate this will require $12m of additional new commercial space to be constructed, as there is no ready alternative space. However, we note there is no constraint from zoned and planned land supply.

The plan change will enable further consent applications to extend open pit mining at the Martha Pit. Assuming consents are granted and given effect to it will increase mine life by an additional 6 years to 2036. We estimate the additional mining activity over 2025-2036 will generate $1.2b of additional exports and $741m of additional GDP for the national economy, the benefits of which will be felt locally through sustained well-paid jobs for a longer period.

For the Hauraki District, the most tangible benefits will be through increased local jobs, wages and purchases from suppliers. We estimate local expenditure on wages and suppliers will average $23m a year over 2025-2036, equivalent to 3% of the Hauraki District GDP. We estimate this will directly employ 101 people (per year on average) in Hauraki District (237 including indirectly supported jobs).

The proposed plan change will impose a small but manageable cost of increasing commercial space in Waihi. Any disruption can be minimised if planned in advance – as is likely to be the case given mining activity requires further consents and is not planned for some years. The economic benefits on the other hand are well proven. The Waihi gold mine is a significant economic contributor to the district. The plan change will extend this known benefit for an additional 6 years to 2036.

SENSE PARTNERS

DATA LOGIC ACTION