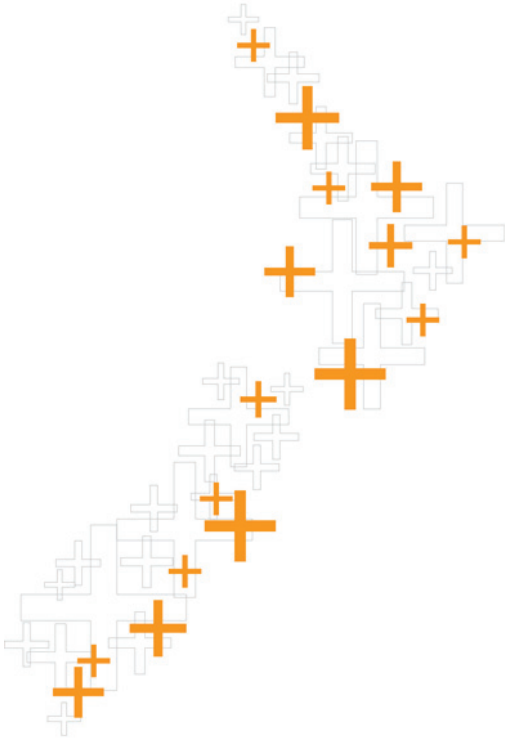




**APPENDIX X**

Property Valuations  
(Telfer Young)





# Assessment of Market Effects

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**Project Martha, Waihi**

**Hauraki District**

**Client:** Oceanagold Corporation

**Valuation Date:** 25 May 2018

**TelferYoung (Waikato) Limited**



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Appendix A: Project Martha - Project Description

Appendix B: Graphs of Market Sales Activity

Appendix C: Short Description of Major Property Market influences and Property Effects

Global Financial Crisis & Positive Net Migration

Appendix D: Correnso Market Case Study

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Appendix H: Assessment of vibration effects on property values

Appendix I: Location of Martha and Rex Underground mines

Appendix J: Location of property relating to Project Martha "Proximity Locations"

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## 1.0 Introduction

- 1.1 The existing mining operation associated with the Correnso underground mine consent is scheduled to be completed in 2019. OceanaGold New Zealand Limited (OGNZL) has investigated other opportunities to extend the mining operation beyond 2019. Project Martha will seek consent to mine two areas mainly associated with past mining activity.
- 1.2 This report considers the potential influence on property values of future mining provided for by Project Martha that includes Martha Phase 4 (MP4) being the recovery of the remaining Martha pit reserve and the Martha Underground which will include the Rex lode.
- 1.3 The proposed mining activity is mostly located within or under the existing Martha pit but will require an extension of the northern face and on the southern side a relatively small part of the underground (the Rex lode) will be located under an area of residential development, sports fields and part of the town centre commercial development.

## 2.0 Executive Summary

- 2.1 The existing mining activity associated with Correnso is scheduled to complete in 2019.
- 2.2 The proposal through Project Martha will extend the mining activity from 2020 to 2030.
- 2.3 Project Martha will include two components being open pit and underground mining.
- 2.4 Most of the mining will be within or below the existing Martha Open Pit although there will be a small extension to the pit rim on the northern side and part of the underground mining (the Rex lode) will extend beyond the existing pit rim on the southern side beneath residential and reserve land in private ownership and adjacent to commercial property of the town centre in private ownership.
- 2.5 Based on our analysis of changes in property values in Waihi over time, and relating them to different phases in the progression of open pit and underground mining in the town, we have determined the following impacts on property values in Waihi are likely as a result of the Project Martha development;
  - a) Commercial property; there will be no reduction in the market value of commercial property arising from the announcement of the consent application through to actual mining. Potentially there could be a reduction in value of any residential component of a commercial property, however this is likely to be limited (if any) and could be alleviated by application of the Amenity Effect Programme (AEP).

- b) Residential “Above” (property directly above the Rex mining activity). Noticeable and easily recognised reduction in market value in the short term, measurable but not definitive in the medium term and nil impact in the long term
- c) Residential “Fringe” (where the property fringes the Rex underground mining activity). Noticeable and easily recognised reduction in market value reducing to measurable but not definitive in the short term and to nil impact in the medium and long term
- d) Residential “Outer” (property beyond the “fringe” and within the predicted 3mm/s vibration contour) Measurable but not definitive reduction in market value reducing quickly to nil impact.
- e) Active Reserve; “Above” Noticeable and easily recognised reduction in market value in the short term, measurable but not definitive in the medium term and nil impact in the long term

**2.6** The most identifiable potential effect on property value from underground mining is the property’s proximity to the mining underneath. A fear of the unknown is likely to create a perception of risk relating to the property and the mining activity beneath. The depth of the risk perception will be greatest immediately above the known area of mining and disseminate outward from this.

**2.7** Despite the actual location of the mining relative to individual property being public knowledge, a wider area is likely to be drawn into the perception of risk by the awareness of the activity felt through vibration as it occurs. Therefore while vibration in isolation has not been seen to impact on property value, we think it is likely there is an association of vibration relative the location of the underground mining beneath and the perception of risk linked to proximity.

**2.8** For the Correnso proposal we identified those properties that would be “above” mine stopes or development where the perception of risk would be the greatest.

**2.9** We then identified properties that bordered those properties where it was realistic to expect owners might feel close enough to be impacted and therefore the perception of risk was less but still real. We have referred to these properties as “fringe” property.

**2.10** Lastly we identified property where there would be an awareness, through vibration felt or simply being part of the locality geographically, of mining under the area and from this a wariness or low level of risk perception. The level of vibration above which vibration appears to draw recognition has been noted as 2mm/sec. We adopted an “outer” boundary of potentially impacted property using a vibration level of 3mm/sec.

The following summarises our influenced localities

- a. Above: directly above mining or development



- b. Fringe: adjacent to the “above” property or geographically or perceptually close to “above” property to feel impacted
- c. Outer: Extending beyond the “fringe” property to a point where the perception of risk associated with proximity to underground mining is not measurable

**2.11** Time frames have been referred to and while not specific or absolute we take these to be;

- a) Short term – up to three years
- b) Medium term - three years up to eight years
- c) Long Term – eight years and beyond

**2.12** Our conclusion is that commercial property values will benefit more from the extended mining activity in the Town and whilst there is likely to be a dip in property values in the short term, once mining is in place residential property values will tend to recover.

## 3.0 Scope of Report

**3.1** We have been requested to provide an assessment of the likely impact on Waihi property values in relation to the proposed Project Martha. This report covers:

- A. An overview of Project Martha and a description of the locality of the project;
- B. A discussion about the market history in Waihi; and
- C. A discussion about the potential influence on property values of Project Martha including:
  - a) what will be the market reaction after the announcement;
  - b) how long that reaction may last; and
  - c) if there is a detrimental change to property values, how long it may take for the market to recover to its relative existing levels.

## 4.0 Background

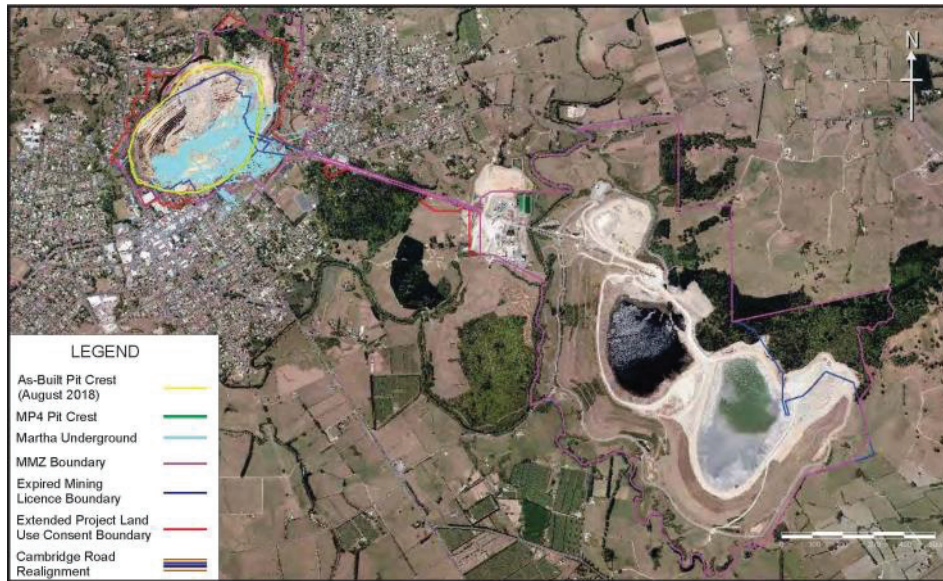
### 4.1 Project Martha

- 4.1.1** The project will include several mining areas using both open pit and underground mining methods within and adjacent to the southern perimeter of the existing Martha Pit and in the area of the North Wall. Existing mining infrastructure will be utilised including processing plant, tailings storage facilities, water treatment plant and mine accesses.
- 4.1.2** The project is summarised in Appendix A. Of particular relevance to our conclusions is the prospect that properties above or in the vicinity of earthworks associated with Project Martha (both surface and underground activities) may experience effects associated with ground surface stability, dust, noise and vibration. As we discuss later in our report, we consider that based on previous mining proposals in Waihi these matters will be of primary concern to residents and commercial property owners and tenants, and may affect perceptions of the amenity values of such properties, and as a consequence their market values.
- 4.1.3** The technical reports that accompany the resource consent applications for Project Martha demonstrate that;
- a) in terms of ground surface stability, underground mining as part of Project Martha will be able to be designed and managed so as to ensure there is no ground surface instability;
  - b) ground settlement will not exceed a pre-specified range and there will be no associated property damage from tilt/differential movement;
  - c) in terms of vibration, the application seeks to limit underground blasting to no more than three blast events per day of no more than 5mm/s in magnitude, and in his report Dr Heilig demonstrates that the predicted vibration effects at the surface of the closest properties will be no greater than the levels of vibration that occurred on those houses closest to Correnso.

### 4.2 The Locality

- 4.2.1** Project Martha encompasses the existing Martha Pit with a small extension to the northern rim and expansion of mining underneath an area on the southern side together with the existing processing, water treat and tailings storage areas.
- 4.2.2** Diagram 1 outlines Project Martha area on the basis of the consent being sought. The position of the Martha Underground mine (blue) is shown together with the area of proposed works on the north wall of the Martha pit (grey).





*Diagram 1*

- 4.2.3** Development on the northern side of the Martha Pit includes primarily single residential homes to within 400m distance with rural small holdings and farmland beyond that distance.
- 4.2.4** Development adjoining the southern side of Martha Pit includes the commercial town centre, community assets including churches and sports fields and mixed residential development of primarily single residential nature although there are also some medium density residential units.
- 4.2.5** The Town centre is developed to either side of Seddon Street and is bounded to the southern side by State Highway 25 (Kenny Street) being the main traffic route to the eastern side of the Coromandel Peninsula from the south, and on the western side State Highway 2 (Seddon Street and Rosemont Road) being the main road between Tauranga and Auckland through Waihi and Paeroa.
- 4.2.6** The Town centre includes development typical of a provincial town including retail, office, service business and public amenity predominantly single level with only limited first floor development. This commercial development adjoins the southern rim of the existing Martha Pit and extends out some 400m although to the west and south west this is approximately 600m. Beyond this, the development is predominantly residential in nature.

## 5.0 Market History

### 5.1 Long Term Market Activity (1980 – 2017)

- 5.1.1 TelferYoung (Robertson Young Telfer) has over the years undertaken a review of market activity within Waihi relative to the similar markets of Te Aroha and Paeroa (refer Appendix B).
- 5.1.2 Te Aroha and Paeroa, like Waihi, are rural service towns. Each has a similar population based on the most recent published census data (2013) recording their populations as 3,903 (Te Aroha), 3,885 (Paeroa) and 4,527 (Waihi). Paeroa and Waihi have the benefit of being on State Highway 2 (Auckland – Tauranga) as well as having connecting State Highways from the Waikato (Paeroa) and the eastern Coromandel (Waihi).
- 5.1.3 While Te Aroha and Paeroa both have local meat works as major employers, the mining activity in Waihi is singularly larger than any source of employment in either of the other towns and contributes some 40% of the local Waihi economy.
- 5.1.4 Prior to mining recommencing in 1987, Waihi residential values tracked below Paeroa and Te Aroha in terms of average sale price of houses and sections. Subsequent to this date Waihi has typically tracked above Paeroa and has been consistent with Te Aroha for both property types.
- 5.1.5 Te Aroha had a higher peak following the strong market activity of the mid 2000s which we believe was as a result of demand by out of town retirees buying in Te Aroha as an affordable and attractive community.
- 5.1.6 Each of the three towns has followed the national trend and they are otherwise consistent with each other in market behaviour through the peak in the mid-2000s and in responding to the negative effect of the Global Financial Crisis (GFC), a short description of which is attached to as Appendix C. Subsequently the national property market, including these three towns, has been subject to a migration-driven uplift through 2015/2016; This market activity plateaued through 2017.
- 5.1.7 The past study of the Waihi residential market by Mr RP Young concluded (Environment Court - Evidence of RP Young 16 August 1998 paragraph 28 page 10) that while the market value of some property located immediately adjacent to existing mining activity had generally increased at a lower rate than prices paid for similar properties in streets only a short distance away. Those properties immediately adjacent to existing mining activity had nevertheless increased in value above the level that would have pertained had mining activity never taken place in Waihi.

**5.1.8** We would expect a similar market reaction to continue to occur after an initial period of market uncertainty, which we address later in our report.

**5.1.9** To ensure the Waihi market trend is not influenced by purchases of property by Oceanagold (and previously purchased by its predecessors), Oceanagold purchases have been excluded from the data in the following graphs showing market activity from 1980 - 2017.

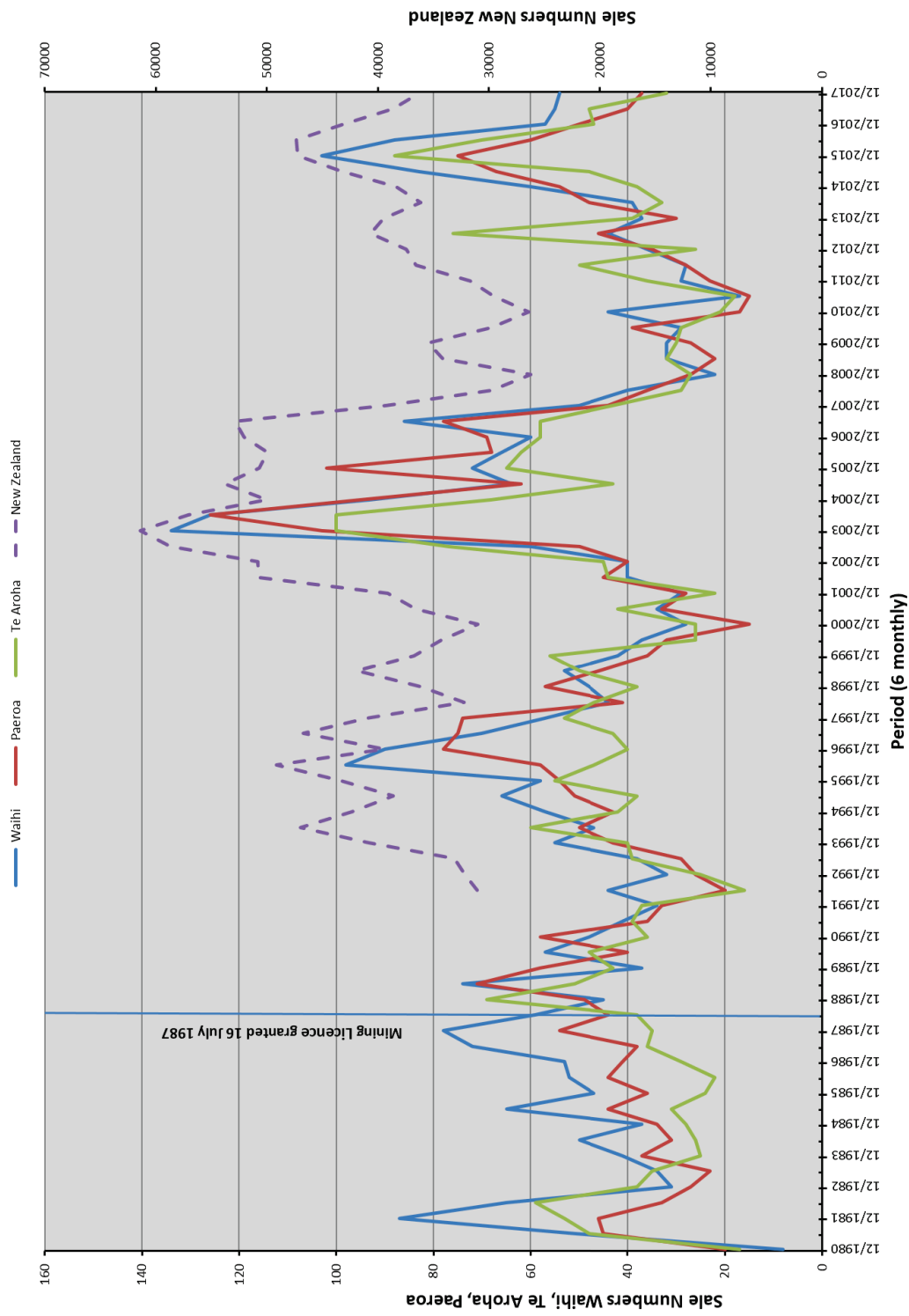
## **5.2 Short Term Market Activity (2008 – 2017)**

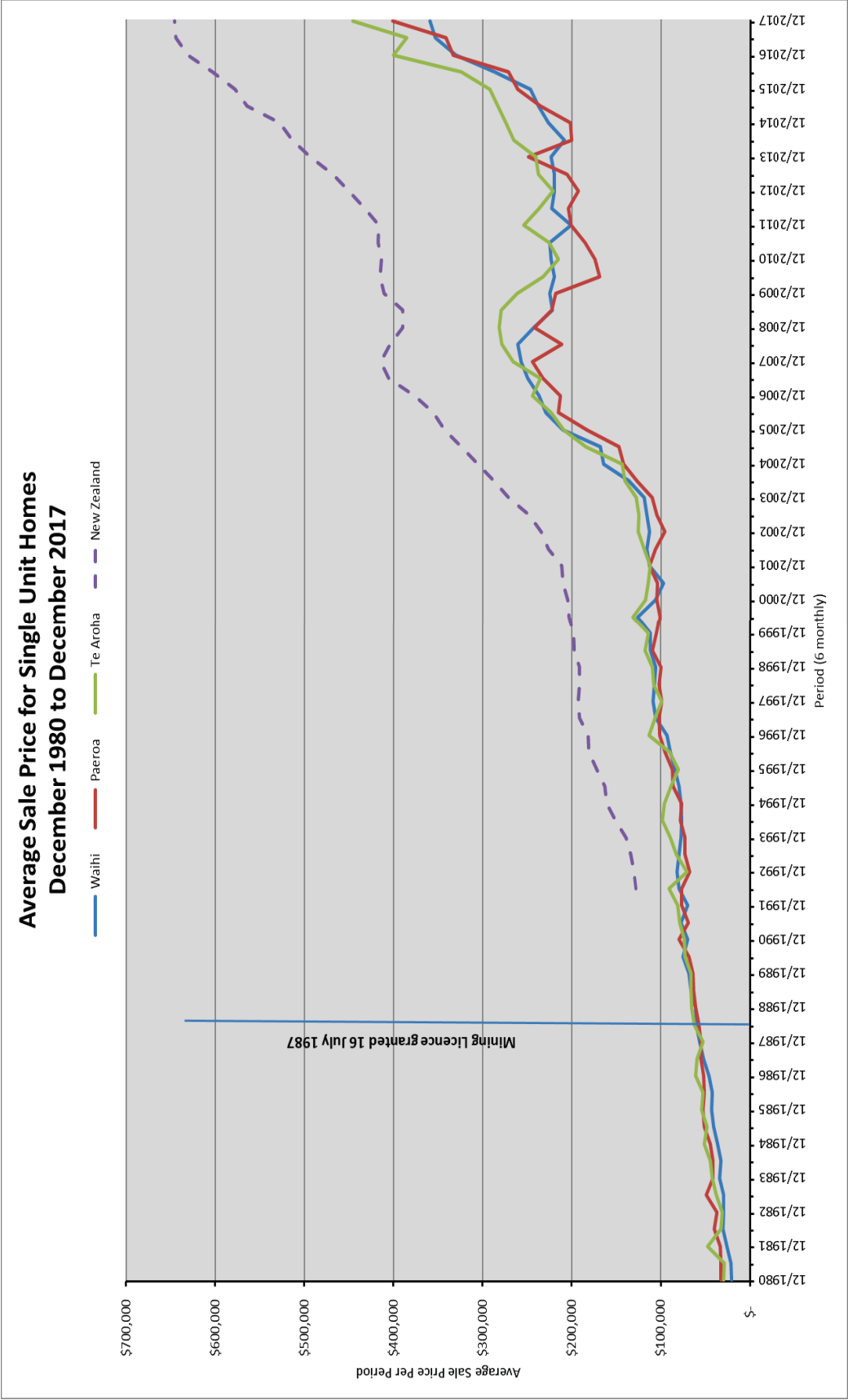
**5.2.1** Short Term Market Activity is the period since 2008 including the retraction of the property market that occurred nationally and that is clearly shown in the preceding Long Term Average Sale Price and Sale Volume graphs. The generally recognised peak in the property market was in mid to late 2007 followed by a period of recessionary market though to 2012 from which time the markets started to recover. The most recent upturn in the property markets has been driven by positive net migration over four years to date. This has flowed out of the main centres, in particular Auckland, Hamilton and Tauranga into the provincial towns as the relativity of pricing re-establishes. .

**5.2.2** Our investigation of the Waihi market covers the period from 2008 to 2017. We have tracked the sales activity over six-month periods from January 2008 to December 2017 recorded from Real Estate Institute of New Zealand residential sales statistics. This data base tends to be more up to date and excludes non-market transactions that are recorded by the Territorial Local Authority and accessed through RP Data and Terralink data providers.

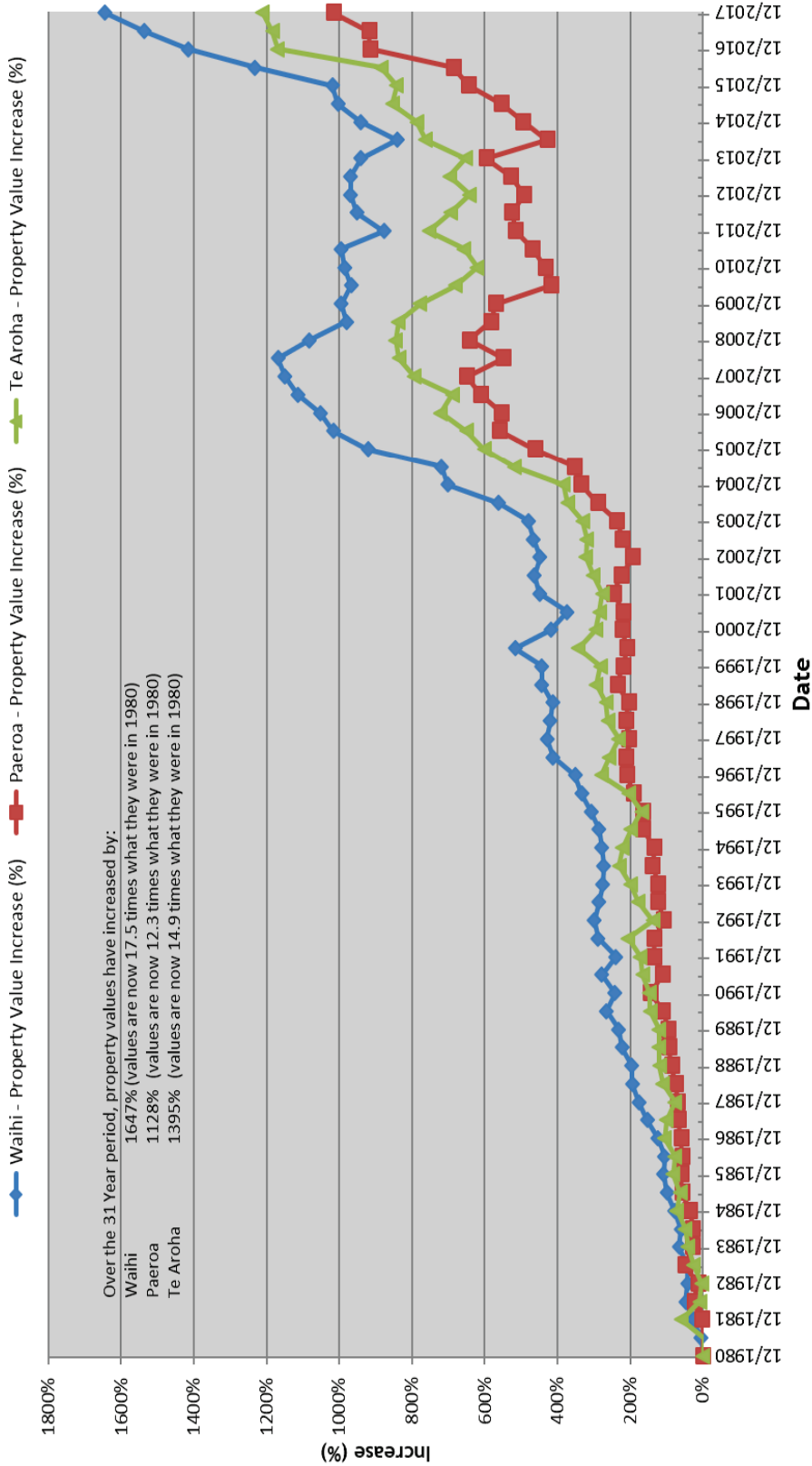
**5.2.3** In particular, we reviewed and compared the residential market activity in Waihi East, being the area most affected by the Correnso underground mine and publicly announced in August 2011, with the residential market activity in Waihi generally and in Waihi West, the latter being remote from and not directly affected by Correnso

Sale Numbers for Single Unit Homes  
December 1980 to December 2017





Property Value Increases for Waihi, Paeroa and Te Aroha over the Past Thirty Eight Years





**5.2.4** The table shows the volume of sales within Waihi and then Waihi East (as a percentage) together with the average sale price for Waihi overall and then for Waihi East and Waihi West. As noted above, the sales referred to through our evidence as “Market Sales” exclude OGNZL’s property purchases.

Sale Period	Total No. of Sales	Waihi East Sales	Waihi East as a Percentage of Total	Waihi Overall Avge Sale Price	Waihi West Avge Sale Price	Waihi East Avge Sale Price
Jan 2008 - Jun 2008	25	2	8.0%	\$ 258,900	\$ 288,611	\$ 192,000
Jul 2008 - Dec 2008	16	1	6.3%	\$ 246,906	\$ 272,000	\$ 210,000
Jan 2009 - Jun 2009	27	7	25.9%	\$ 216,778	\$ 224,750	\$ 194,357
Jul 2009 - Dec 2009	23	6	26.1%	\$ 201,883	\$ 170,400	\$ 227,300
Jan 2010 - Jun 2010	25	6	24.0%	\$ 236,200	\$ 232,500	\$ 224,583
Jul 2010 - Dec 2010	21	3	14.3%	\$ 216,262	\$ 238,800	\$ 257,500
Jan 2011 - Jun 2011	19	8	42.1%	\$ 225,237	\$ 252,438	\$ 224,875
Jul 2011 - Dec 2011	29	4	13.8%	\$ 197,900	\$ 222,000	\$ 230,625
Jan 2012 - Jun 2012	27	4	14.8%	\$ 200,759	\$ 184,192	\$ 221,625
Jul 2012 - Dec 2012	41	14	34.1%	\$ 216,195	\$ 228,667	\$ 219,143
Jan 2013 - June 2013	56	15	26.8%	\$ 212,732	\$ 220,132	\$ 255,767
Jul 2013 - Dec 2013	41	9	21.9%	\$ 211,805	\$ 231,409	\$ 173,444
Jan 2014 - June 2014	43	5	11.6%	\$ 200,384	\$ 196,917	\$ 237,300
Jul 2014 - Dec 2014	72	7	9.7%	\$ 205,540	\$ 227,212	\$ 180,357
Jan 2015 - June 2015	96	10	10.4%	\$ 234,606	\$ 232,824	\$ 222,550
July 2015 - Dec 2015	113	31	27.4%	\$ 226,974	\$ 244,076	\$ 233,629
Jan 2016 - June 2016	105	11	10.5%	\$ 262,228	\$ 282,189	\$ 231,045
July 2016 - Dec 2016	56	2	3.6%	\$ 312,661	\$ 334,421	\$ 255,000
Jan 2017 - June 2017	64	4	6.3%	\$ 342,939	\$ 350,795	\$ 296,250
July 2017 - Dec 2017	64	8	12.5%	\$ 340,392	\$ 340,854	\$ 296,875

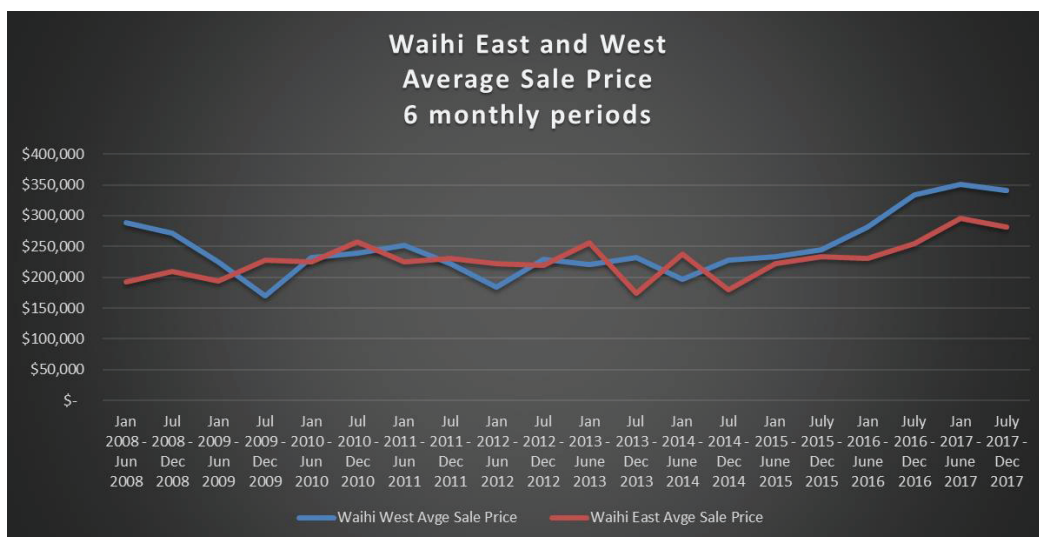


- 5.2.5** The sales of single residential homes on sites of less than 1200m<sup>2</sup> over this period of nine years indicate a consistent level of total sales within the town of between 20 and 30 sales per six-month period up to the start of the recovery in 2012. From this time, the six-monthly volume of sales for the Town has averaged 65 of which the Waihi East locality could be seen to account on average of 15.8% (ranging from 3.6% to 34.1%). This includes the sales to which Oceanagold's Top Up policy applied between 2011 and 2016. The market share for Waihi East was closer to the pre-announcement market share (21%) until the Top Up policy was pulled back (late 2013) in terms of the quantum covered by the Top Up to allow the market to re-establish and then later stopped in March 2016, averaging 11.5% since mid-2014.
- 5.2.6** A Property and Community Investment Program (PCIP) was implemented subsequent to the August 2011 announcement of the Golden Link Project (which resulted in the granting of consents for and the subsequent development of the Correnso underground mine). In Waihi East this included a "Top Up" policy. Top Up involves paying the purchaser of a property the difference between the fair price offered by a purchaser and a market value not influenced by mining activity to ensure market value for the vendor within the Golden Link Project Area (GLPA).
- 5.2.7** The GLPA locality incorporates 519 residential properties equating to 19% of the total Waihi housing stock (approx. 2750). The sales over the period from 2008 to 2013 (22.8%) which included the Top Up policy subsequent to the announcement in 2011 are therefore approximately proportionate to the total stock for the town. This indicates that during this period the locality did not suffer any abnormal market supply or demand from external factors such as the current mining activity relative to other areas of the town.
- 5.2.8** The amount of money spent by the mining company as part of the Top Up policy quantified the influence of the Correnso mining relative to current values and generally fell in line with the impact predicted. The sales do represent confidence in the market to buy into the locality above the Correnso mine which has been active since December 2013. It also reflects the success of the PCIP in terms of its aim to maintain market sales activity through the announcement and initial mining phase then allow for usual unsupported market activity to restore in the medium to long term.



**5.2.9** Since the commencement of development (December 2013) and then mining (June 2015) and with the initial reduction in Top Up support (2013) and then cessation in March 2016, the volume of sales in Waihi East as a % share of the total market has dropped. The average sale price in Waihi East has since 2008 typically been slightly below both the Waihi Town overall average and the Waihi West average. Since July 2015 the average sale price in Waihi East has been lower than expected as measured against the Town average and Waihi West average. However, the relatively low volume of sales in that period can cause distortions. Separate analysis of market sales in Waihi East since 2016, after the Top Up was removed, has shown the sales to be comparable with values in Waihi West. Any disparity shown by these sales would lie within the predicted range of between 5% - 10% in the short-term mining period of 0 – 2 years post commencement and 5% in the medium term mining period of 3 – 7 years post commencement. We refer to Appendix D.

**5.2.10** The following graph relates to this market activity.



### 5.3 Waihi Market Activity – Concluding Comments

**5.3.1** Activity prior to the August 2011 announcement dispelled any suggestion that property values in Waihi East have been adversely affected by the mining activity as compared to Waihi West and the town as a whole. Subsequent to this the market reaction has been as predicted and was redressed by the “Top Up” policy, now removed, in Waihi East as the market is allowed to re-establish under its own dynamics

- 5.3.2** As part of a case study of the Waihi East market through the GLP and Correnso activity we have shown that data on the sales of property in Waihi East, post the removal of the Top Up policy, have indicated the sale prices to be at or within 5% of an expected market value relative to sales of other property in Waihi. The details of this are contained within Appendix D.
- 5.3.3** The pre-announcement trend was also reflected in a study undertaken by Mr R P Young of TelferYoung in 2003 whereby the re-sale prices of homes in Waihi East and West were compared three years before and then three years after the Martha Extended project in 1999 (1996 to 2002). This work showed that contrary to the perception held, sales prices for homes in Waihi East increased on average more than homes in Waihi West, even though the latter were perceived to not be affected by the mine activity.
- 5.3.4** Mr Young's study (attached as Appendix E) concludes that there was no evidence that property values in Waihi East were being adversely affected with resale values being retained or possibly slightly improved compared with resale values elsewhere in Waihi.
- 5.3.5** In conclusion in our opinion market sales indicate that the mining operations in Waihi have continued to have a positive effect on property values as compared to the neighbouring provincial towns of Te Aroha and Paeroa which can be generally considered comparable to Waihi, except there is no mining activity. Market activity in Waihi East has moved as predicted.

## 6.0 Project Martha and Effects on Property Values

### 6.1 Case Studies

**6.1.1** For the purpose of completing this assessment, we carried out a search of case studies that relate to property and in particular residential property values located above mining activity. A summary of this research has been included in Appendix F.

**6.1.2** For the Correnso proposal the assessment of likely effects on property value relied on our past visit to Stawell, Australia and the report by Mr Zala relating to the Stawell experience. We have now had the opportunity to review the market activity in Waihi in response to the Corenso mining. This gives us a New Zealand relevant case study directly linked to the Waihi market that forms a strong basis upon which to make assessment of the potential effects on property value from the Martha Project.

**6.1.3** Other than our own study relating to Correnso, we have found no similar study relating to the effect of active underground mining on residential property values nor case law describing the nature and significance of changes in property values as a consequence of an activity in New Zealand. We note that Environment Court decisions are unlikely to contain such evidence as the effect of an activity on property values is not a relevant effect under the Resource Management Act.

**6.1.4** A short précis of the key research that we considered as a basis for our assessment is as follows;

- (a) "Gold mining – Environmental stigma or property value enhancement" Evan Gamby and Pamela Reid of Telfer Young Ltd presented to the 11<sup>th</sup> Annual Conference Pacific-Rim Real Estate Society (PRRES) Conference January 2005.

The study concluded that there was no support for the null hypothesis, "environment stigma has occurred at Waihi as a result of gold mining activities as measured by an adverse effect on residential property values" and suggested that the opposite was in fact inferred by the statistical evidence that mining activity had positively impacted on property values.

- (b) Waihi Market Research. Studies of market data by Mr R P Young (TelferYoung) and Mr J Cullen (Townsend Cullen) have continued to establish that property values in Waihi have been positively influenced by the mining activity since 1987 as compared to the equivalent rural towns of Paeroa and Te Aroha.

- (c) Visits to Ballarat and Stawell, Victoria, Australia to review the property value impacts of underground mining beneath residential areas (December 2011).

Stawell is a rural town similar to Waihi having been originally established during the Australian gold rush in 1853, and being of a similar size (population around 6,000 of Waihi's 4,500). It has limited other economic drivers. The mining activity supports the local economy and property values are positively influenced as a consequence.

The current mining has been occurring for the last 30 years under the northern and north eastern side of the town's residential development. There is no apparent locational factor reflected in reduced property value relative to the underground mining with new residential development occurring evenly, as infill, throughout the town and in areas above mine development. Ballarat is a city of approximately 94,000 people that has long been a mining town with extensive underground mining taking place under the residential and commercial development. The local valuers report no effect on property value relative to mining occurring beneath the surface; a similar market reaction as found in Stawell.

- (d) Report by Mr Peter Zala Certified Valuer on the Stawell market and the effects of mining on residential property values (Appendix F). His summary conclusion states:

*"In both Ballarat and Stawell there is no community perceptions of any deleterious effects to property and property values over the lifespan of underground mining activities. This view is also unanimously held by all real estate agents operating in both Ballarat and Stawell, the property valuers responsible for the municipal rating valuations make no allowances for the underground mining activities whatsoever in the absence of any market evidence that would suggest otherwise."*

- (e) A case study of the market activity before and through the mining activity associated with Correnso in Waihi East. The findings of this research confirm that Waihi has continued to parallel the residential market activity of Te Aroha and Paeroa being similar towns isolated from mining activity. The market activity in Waihi East has been in line with our predicted assessment of impact on value completed as part of the consent application for the Golden Links Project. This work identified that the greatest impact would be during the period from the announcement of the project through the planning and consent process until mining commenced. The most impacted property were anticipated to be those directly above the mining and those immediately fringing these properties. The impact would be a reduction in value of between 10% to 20% on these properties. Following the commencement of mining it was anticipated that this initial impact on values would start to reduce and follow a path over the medium to long term period of three to seven years of returning to unaffected market value. The predictions and the resulting findings of our market research include the use of both the AEP and Top Up policies in the market around Waihi East.

**6.1.5** Other research included I our assessment includes the following;

- (a) The market reaction to an “unpopular use”, such as schools, churches, service stations, prisons, landfills, and race tracks being established in an area and the influence on adjoining property values.
- (b) Tunnels through residential areas for traffic and public services including Waterview in Auckland.
- (c) The impact on market value of residential properties located above an interstate traffic tunnel through Mt Baker in Seattle.
- (d) A study by TelferYoung (Waikato) Ltd of house sales in the Huntly subsidence area where the properties were subject to a Crown guarantee of market value on sale.

**6.2 Potential Influences on Market Perceptions**

For the purpose of considering the potential changes to property values associated with the proposed Project Martha we have identified the potential effects of particular concern to the community. These initially relate to residential property given the availability of data on past and current mining activity relative to residential property.

## 6.2.1 Residential

**6.2.1.1** We have in the past reviewed the six-monthly reports prepared by Newmont Waihi Gold and Oceanagold of complaints raised by the community as a snapshot of issues of concern to the community and in particular property owners and occupiers. This includes complaints received during the operation of the Martha Pit before it closed after the north wall slip.

**6.2.1.2** The reports offer a similar pattern of complaint over each six-month period and therefore assist in identifying matters that could potentially generate changes to property value.

### (i) MP4

We more specifically had regard to the complaints relative to the Martha Open Pit operation as being more comparable to the proposed MP4 mining of Project Martha.

The complaints received relative to the Martha Open Pit operation during 2014 included;

- a) Vibration (135 complaints from 18 individuals and of that total 121 were from 3 individuals)
- b) Noise (39 complaints from 17 individuals evenly spread)
- c) Property (1 complaints)
- d) Dust (8 complaints with 4 being from one individual)

In summary, based on the complaints received for the Martha Open Pit, we consider the matters that may influence residential property values from the proposed MP4 will be;

- a) vibration
- b) noise
- c) dust

### (ii) Martha Underground

We more specifically had regard to the complaints relative to the Favona and Correnso underground mining activity as being more comparable to the proposed underground component of Project Martha.

Notably, although there are numerous complaints, as discussed below the majority of the complaints received are made by a small number of residents.

The complaints received during that period 2016 – 2017 from Correnso mining activity are summarised as follows:

- a) Vibration (110 complaints from 20 individuals and of that total 79 were from 4 individuals)
- b) Noise (76 complaints from 15 individuals and of that total 59 were from 4 individuals)
- c) Property (6 complaints)
- d) Dust (2 complaints)

Previous complaints received with regard to the Favona mine (six months July – December 2010) are summarised as follows:

*Favona Underground Project*

- a) Vibration (97 complaints from 13 individuals and of that total, 67 were from 3 individuals)
- b) Property Damage (3 complaints from 3 properties)
- c) Noise (2 complaints from 2 individuals)

The Correnso complaints summary includes separate Vibration and Noise sources, nearly all of the noise complaints were listed as “Felt & Heard” with the exception of 8 complaints directly about noise. Of these 8, 3 were non-blast related.

We are advised that the association of noise with vibration relates in part to regenerated noise, which was dealt with by Mr Hegley in his evidence associated with GLP. For our assessment, we have not separated the two issues and have combined regenerated noise and vibration.

An important difference with the Correnso Underground Mine, as evidence of market factors, is its location beneath existing residential property as compared to both Favona and Trio Underground Mines

In summary, based on the complaints received for the Correnso Underground Mine, we consider the matters that may influence residential property values from the proposed Martha Underground, and specifically the mining of the Rex lode, are:

- a) concerns surrounding the proximity of residential properties above mining activity;
- b) vibration/noise from blasting; and
- c) fears of property damage.

## **6.2.2 Commercial Property**

- 6.2.2.1** The above matters relate to residential property based on experience to date. In this section we consider the potential impact of Project Martha on commercial property values.

**6.2.2.2** A review of the complaints register for mining activity associated with Martha open pit mining through January – December 2014 records no complaints from commercially occupied/owned property.

**6.2.2.3** Analysis of vibration monitoring at locations closest to the Town Centre commercial development from 2008 to the present time record the following:

Martha Pit Vibration monitored 2008 - 2016			
Location	Average	Max	Min
Pensioner Flats, east end Seddon Street	1.8mm/sec	7.8mm/sec	0.6mm/sec
Salvation Army, eastern side mid Seddon Street	0.8mm/sec	4.4mm/sec	0.3mm/sec
South School, west side Moresby Avenue	1.5mm/sec	5.9mm/sec	0.0mm/sec

**6.2.2.4** This would indicate that the town centre has experienced either noise or vibration from the Martha Pit mining.

**6.2.2.5** The value of commercial property is typically driven by investment criteria which include deriving a market return (or yield) based on the sustainable cashflow expected from the property. If the quantum (amount of rent), quality (nature of improvements, location, tenant strength) or durability (term of lease, suitability of property for highest and best use) of the cashflow is impacted or is likely to be impacted negatively then the return sought is likely to be higher reflecting greater risk of maintaining the cashflow. The requirement by the market for a higher return on the cashflow or a reduction in rent or combination of both will decrease the value of the property.

**6.2.2.6** Factors, outside of usual market dynamics, that may negatively impact on an expected return on the cashflow or the rent paid by a tenant include;

- a) Reduction in the number of customers visiting/using the commercial centre
- b) Higher maintenance costs
- c) Uncertainty around the continuance of mining activity that boosts the local economy
- d) Something that makes the premise not suitable for purpose or creates risk around maintain existing use

**6.2.2.7** Matters that may influence commercial property values based on these factors and the proposed Martha Underground mine:

- a) Concerns surrounding the proximity of commercial property above mining activity
- b) Vibration/noise
- c) Fears of property damage



d) Traffic congestion or interruption

**6.2.2.8** In addition, submissions previously received cover a broad spectrum of concern. Two matters that they raise in addition to the matters listed above and that, if valid, could potentially influence changes in property value, are the ability to obtain effective insurance of property, and dust. Our investigation as part of preparing this evidence is confined to the proposed underground and open pit mining in Project Martha and we understand that dust has been assessed as not being an issue from any part of the operation. Therefore, we do not believe that dust will impact on property values. Our conclusions are based on effective property insurance being able to be obtained throughout the period of mining in Project Martha.

**6.2.3 Reserve (Active) zone**

**6.2.3.1** There is an area of Reserve (Active) zone under which part of the Martha Underground will take place. This land is privately owned by the Waihi Rugby Football Union Incorporated.

**6.2.3.2** We do not consider that the Martha Underground would influence the value of the land under the current use and within the Reserve zoning. However, the value of the land would be determined by sale for the highest and best use. The value to the owners is therefore not the property and its current use but the alternative use should they wish to sell.

**6.2.3.3** The highest and best use would be for the land to be re-zoned, most likely for residential purposes. While a large part of the land is impacted by being noted as High and Medium underground workings hazard (shafts and stopes) zone the underlying potential is residential subject to rezoning.

**6.2.3.4** We would see the value of the land, subject to the above limitations and costs associated with re-zoning, being affected in a similar manner as the Residential “Above” category.

**6.3 Location and Number of Properties Affected**

**6.3.1** There is no defined area for Project Martha and the area or quantum of properties potentially affected can be best determined by the perimeters of the potential effects.

**6.3.2** We have identified the properties that potentially may be subject to value change as a consequence of the concerns noted and the market perceptions that are likely to arise from those concerns.

**6.3.3** In our opinion, of the issues listed above in paragraphs 6.16 and 6.23, the physical proximity to the mining activity is the most likely matter to influence market perceptions.

**6.3.4** Using the location diagrams in Appendix J which show the location of development and stoping for the Martha Underground Mine on an aerial plan of the town centre locality, we have classified individual properties relative to the Rex lode as follows:

- a) Above – proposed development or stoping.
- b) Fringe - property fringing proposed development and stoping areas.
- c) Outer – property beyond the fringe and within the 3mm/s vibration contour



Northern Area of Martha Project





Southern Area of Martha Project

### Key

Red "Above" property

Blue "Fringe" as relates to residential property effects

Orange "Outer" is the approximate perimeter of 3mm/s vibration for Project Martha underground over its 11-year life

**6.3.5** "Fringe" property includes those properties situated adjacent to the actual underground activity. The extent or distance from the "above" property has been based on our experience with the Correnso underground mine and the successful application of the Top Up policy that related to identified bands.

**6.3.6** The following table is a summary of the number of properties I have classified in the "Above" and "Fringe" categories:

	Above	Fringe Residential	Fringe Commercial
Number of properties	22	58	31

**6.3.7** We have not counted the property in the Outer area; these are shown within the geographic area around the Underground Mine together with the Above and Fringe categories in Appendix J.

#### **6.4 Assessment - Residential**

**6.4.1** We now assess the potential for change in market value caused by each of the matters listed above in paragraphs 6.12, and 6.20. It is important to note at the outset that the change in property value is notional only – that is, any reduction in property value is only realised should a person decide to sell their property during the period of potential influence.

**6.4.2** On the basis that dust and noise will be maintained within levels set by the consent, we do not anticipate there to be any impact on values from these factors relative to the MP4 operation of Project Martha.

**6.4.3** We have therefore considered the following;

- a) Fears of Property Damage
- b) Concerns about vibration
- c) Proximity to mining activity

#### **6.4.4 Fears of Property Damage**

**6.4.4.1** People's perception of the potential for property damage is most likely to be related to concerns about vibration from blasting causing cracking and ground movement with resultant damage of existing improvements.

**6.4.4.2** In our opinion, the area where these fears may be held will be about the same as that in which people may be concerned about vibration.

**6.4.4.3** We are advised that there has been one incidence of property damage from a specific technical mining fault, that event relating to an improperly grouted exploration borehole. Otherwise, to date there has been no actual damage to property as a consequence of the modern mining activity (this excludes the subsidence events due to the unfilled voids left by historical underground mining). We also note that the evidence on ground stability and vibration demonstrates that there will be no damage to property.

**6.4.4.4** Further, Oceanagold in its Project Martha property programme has confirmed that it will be responsible for the cost of remedying any property damage linked directly with its mining activity.

**6.4.4.5** On the basis of the evidence that the one instance of property damage was as a result of a technical fault in the exploration process, and that there has been no other damage or damage likely to be caused to property by either the open pit or underground mining in Project Martha, as well as Oceanagold's public acknowledgment of its responsibility in the unlikely event that there is damage caused by its activities, we are of the opinion that the market has not, and will continue to not, discount property values for the risk of property damage outside of those properties potentially impacted by proximity to underground mining and as discussed later.

#### **6.4.5 Concerns about Vibration**

**6.4.5.1** Vibration from either open pit or underground blasting has generated the greatest number of the complaints in the six-monthly summaries recorded by Oceanagold. In assessing the potential for vibration to influence property values we have been able to draw on the reports and experience gained over the life of Correnso (to date) and Favona underground mines.

**6.4.5.2** Favona was located under unoccupied rural land. It is comparable to a large part of the proposed Martha Underground where the mining is largely under the existing pit, sports fields and land owned by Oceanagold. The vibration experienced at the closest residential property – whether it be adjacent to the mine or above it – will essentially be the same (limited by the Favona consent to 6mm/s while the proposal for Project Martha is to adopt a limit of 5mm/s).

**6.4.5.3** Correnso provides experience of mining being undertaken directly beneath residential property. As with the market evidence from Favona, it has been difficult to isolate any material effect on the market value of residential property sales from vibration either when the Top Up was in place and now subsequent to Top Up being stopped.

**6.4.5.4** It is apparent that vibration impacts on different people in different ways. Of the 110 vibration complaints received in 2016, 71.8% (79) were received from just 4 people (Oceanagold Complaints/Concern Summary Report January 2016 to December 2016). This is consistent with past complaint records.

**6.4.5.5** Dr Heilig stated in his previous evidence that there is a weak correlation between complaints and vibration that exceeds 2.0mm/s. His most recent evidence associated with the Martha project identifies 1 – 2.5mm as being distinctly perceptible and 2.5 – 5.0mm/sec being strongly perceptible. We have maintained a slightly higher vibration level, 3.0mm/s, as a benchmark to people's awareness and hence a level that could potentially create a market reaction, this has regard to our past analysis of sales relative to vibration contours.

- 6.4.5.6** The location of property potentially affected by differing levels of vibration and more importantly frequency of vibration has been based on our experience with Correnso and data provided by Dr Heilig that shows the location of each vibration contour between 2mm/s and 5mm/s.
- 6.4.5.7** We have categorised “Above”, “Fringe” and “Outer” locations. This data covers the life of Project Martha (2020 – 2030) on a year by year basis and cumulatively for its two mining components.
- 6.4.5.8** Of note is that the number of blast events and levels of vibration felt at individual properties during this period 2020 - 2030 will change as the mining activity moves from and to different areas either at the surface or beneath the surface.
- 6.4.5.9** What has been shown with the Correnso development and mining to date is that the levels of vibration at the properties closest to Correnso, the “Above” category, were similar to those experienced by the properties closest to Favona.
- 6.4.5.10** A study of the market activity from the announcement of Correnso to date incorporating the active mining has shown that the market behaviour has fallen in line with the predicted levels of impact on value relative to the defined areas “Above” and “Fringe”. More particularly the most recent sales activity since the withdrawal of the Top Up policy has shown consistency with market values of property in other parts of Waihi. Details of these analyses are attached as Appendix D.
- 6.4.5.11** This evidence is supported by early analysis of property values adjacent to Favona. Details of the analysis is attached as Appendix H.
- 6.4.5.12** This would suggest that vibration, at the levels and frequency experienced from Correnso, is not influencing property values within the area where vibration levels trigger complaint. In the same way, we are of the opinion that vibration associated with Project Martha will have little to no quantitative influence on property values.
- 6.4.5.13** The predicted effect on property value in relation to Correnso was primarily from proximity to mining. However, we anticipated that there may be a market perception held on those properties closet to Correnso that they would experience effect from vibration (despite evidence to the contrary) on account of their position above the mine and not fringe/adjacent. There is some indication from the market activity to date that this might be the case.

- 6.4.5.14** The six-monthly AEP Payment tabulated below is used as indicative of the vibration experienced at each of the sale properties. Each sale property was considered relative to sales of similar property not in the Correnso (East) locality. The estimated value thereby excluding any influence of mining, was compared to the actual sale price. The relationship of the sales in each AEP zone were compared to the estimated values in each AEP zone. For example, in the table, where no AEP payment was received by the sale property, the four sales averaged 2.4% above the value estimated without any mine influence with a median above the estimated values of 2.3%.
- 6.4.5.15** At 100% or above, this would indicate that the sale of the property was not negatively influenced by mining.
- 6.4.5.16** In the AEP zone of \$500 - \$1,000 there is one sale of the six that appears as an outlier. If excluded the evidence would suggest an average of 98.6%.
- 6.4.5.17** The one property in the \$2,000-\$3,000 AEP is in the “above” location as was one of the two properties in the \$1,000 - \$2,000 AEP.

Market Sales to TY estimates			
AEP Payment (6mthly)	Average	Number of Sales	Median
Nil	102.4%	4	102.3%
\$250-\$500	100.6%	16	100.6%
\$500-\$1000	93.0%	6	95.7%
\$1000-\$2000	99.0%	2	99.0%
\$2000-\$3000	95.3%	1	95.3%
		29	

Appendix D Correnso Case Study

- 6.4.5.18** Potentially vibration is part of an effect on property value where located “above” proposed mining activity. Caution is required as to any conclusion drawn, given the small sample size and any impact shown on these sales maybe from vibration and/or proximity.
- 6.4.5.19** We would expect this effect, if present, on “above” property to dissipate over time as predicted with Correnso.



**6.4.5.20** Based on the above comments, we do not anticipate there being any effect on residential property value as a consequence of vibration within the consented levels associated with Project Martha, either MP4 or the underground mining.

#### **6.4.6 Proximity to Mining Activity**

**6.4.6.1** The market research addressing the influence of mining activity on property values has in the past concluded that the positive effects of the mining activity outweigh any negative effects and that the impact on market value is positive rather than negative in Waihi. This overall positive impact on property values in Waihi relates to mining activity that has to date been adjacent to or distant to residential and rural property in Waihi. The same positive effect on property values has been observed in Stawell (Australia) where the mining activity is of an underground nature beneath the residential areas of the town and similarly underpins the local economy.

**6.4.6.2** Before Correnso, the modern underground mining activity in Waihi had not been beneath privately owned residential property.

**6.4.6.3** In our opinion, the occurrence of underground mining beneath privately owned property, as proposed with Correnso, was likely to generate an initial negative market reaction relating to the perceived concerns around an industrial activity occurring beneath the properties.

**6.4.6.4** On that basis, we considered that it would be the proximity to the proposed Correnso mine, rather than concerns about property damage or vibration, that would influence the property market in Waihi East.

**6.4.6.5** The expected market reaction was likely to be as a consequence of a general fear of the unknown as mining having not occurred, in recent times at least, under privately owned property in Waihi. The reaction would be similar to the market behaviour of an “unpopular use” being established in an urban area.

**6.4.6.6** It is widely regarded that the greatest influence on property value where an unfavourable event or development is to take place is at the time of announcement and that any discount to property value generally diminishes with time and the presence of the activity within the conditions of consent. Any discount relates to the fear of the unknown and the inability of the market to price something it can't tangibly see and therefore measure in its absence.



**6.4.6.7** To date the market behaviour in Waihi East has reasonably fallen in line with the predicted market reaction in terms of value. Actual volume of activity has been slower than predicted but this could be influenced by other factors such as the reduction in market supply caused by Oceanagold's acquisition of property in the area and possibly greater purchase of property in the area by investors who may have a longer term holding outlook, reducing turnover of property.

## **6.5 Assessment - Commercial Property**

**6.5.1** The case study outcomes from Correnso relate to residential property ownership or occupancy. Other than the example from Stawell and Ballarat where mining takes place under commercial property I am not aware of examples from which to draw comparison.

**6.5.2** The Australian examples were contained in evidence provided by Peter Zala, a Certified Practising Valuer in Ballarat, included in our evidence for the GLP consent application. While Mr Zala's evidence more closely reported on residential examples, part of the study reflected that there had been no objections to rating valuations in both Stawell and Ballarat stemming from the mining under the respective populations. This included the commercial centres.

**6.5.3** The impact on commercial property, if any, will be as a result of decline in rental income to the owner or a perception that there is more risk associated with maintaining that cashflow.

**6.5.4** Four factors were identified as potentially influencing the drivers of commercial value. These were;

- a) Vibration/noise
- b) Fears of property damage
- c) Concerns surrounding the proximity of commercial property above mining activity
- d) Traffic congestion or interruption

**6.5.5** Privately owned commercial property is not located above the proposed Martha underground mining.

**6.5.6** As with residential property there has not been and there is not expected to be any damage to property from the proposed mining activity.

**6.5.7** Traffic reports have shown that the town centre will not be impacted by any predicted change in traffic flow or road realignment requirements.

**6.5.8** The town centre as a whole will be exposed to vibration levels up to 3mm/s at different times throughout Project Martha 2020 – 2030. This being a level of vibration recognised as potentially drawing complaint,

- 6.5.9** The ability to draw rental income (cashflow) from a commercial property necessitates uninterrupted occupancy to carry out the highest and best use of the property subject to the location and nature of improvements on the property (ie a shop, office or workshop).
- 6.5.10** Vibration at the levels compliant with the consent sought, would in our opinion not stop customers/clients from visiting the town centre and therefore existing business would expect to be able to continue to conduct business as they do presently.
- 6.5.11** Certain business activity maybe susceptible to vibration such as precision engineering or manufacture, dental, medical practice and accommodation.
- 6.5.12** First floor accommodation is offered in two of the hotels in the town centre being the Golden Cross and the Rob Roy. Potentially the blast events proposed with the mining could lead some customers to choosing other accommodation. However, given the nature of the accommodation and target market together with the timing and duration of blasting in the morning and evening and level of vibration predicted, it is unlikely that vibration will cause a material difference to accommodation receipts at these establishments. Any potential concern could be addressed through including a residential component of commercial property in the AEP.
- 6.5.13** Concerns rather than complaint have been notified to Oceanagold from businesses in the past. Past and current systems include pre-notification of immediate blasting. We believe the limited instances of individual concern have been managed to the extent that the concern would not elevate to an effect on property value.
- 6.5.14** We are aware of two electronics businesses that have operated in close proximity to the Martha Open pit mining, one between 1992 to 2009 at 8 Haszard Street and the other for a period of some fifteen years at the former PYE factory on Moresby Avenue. The long-term operation of these two sensitive business operations can be seen as successful management of the potential vibration effect from mining.
- 6.5.15** Overriding the above consideration is the fact that most of the Town Centre lies within a parameter of the cumulative 3mm/s vibration contour through the life of Project Martha, i.e. the combined effect from open pit and underground blasting. Property market value can be impacted in a situation where one property is preferred over another. In this case tenancy or ownership of commercial property outside the referred 3mm/s vibration contour is limited so without choice all owners or tenants will be faced with the same level of influence and consequently we do not perceive commercial rentals will be affected nor do we see any greater perceived risk of commercial property ownership from Project Martha.

- 6.5.16** In fact, the opposite can be derived where an approved consent for Project Martha will extend the mining activity within the Town from 2019 to 2030. The economic benefits to Waihi of the mining activity are well documented, and the continuance of mining would be seen to de-risk commercial property ownership.

## 7.0 Assessment of Potential Change to Property Values

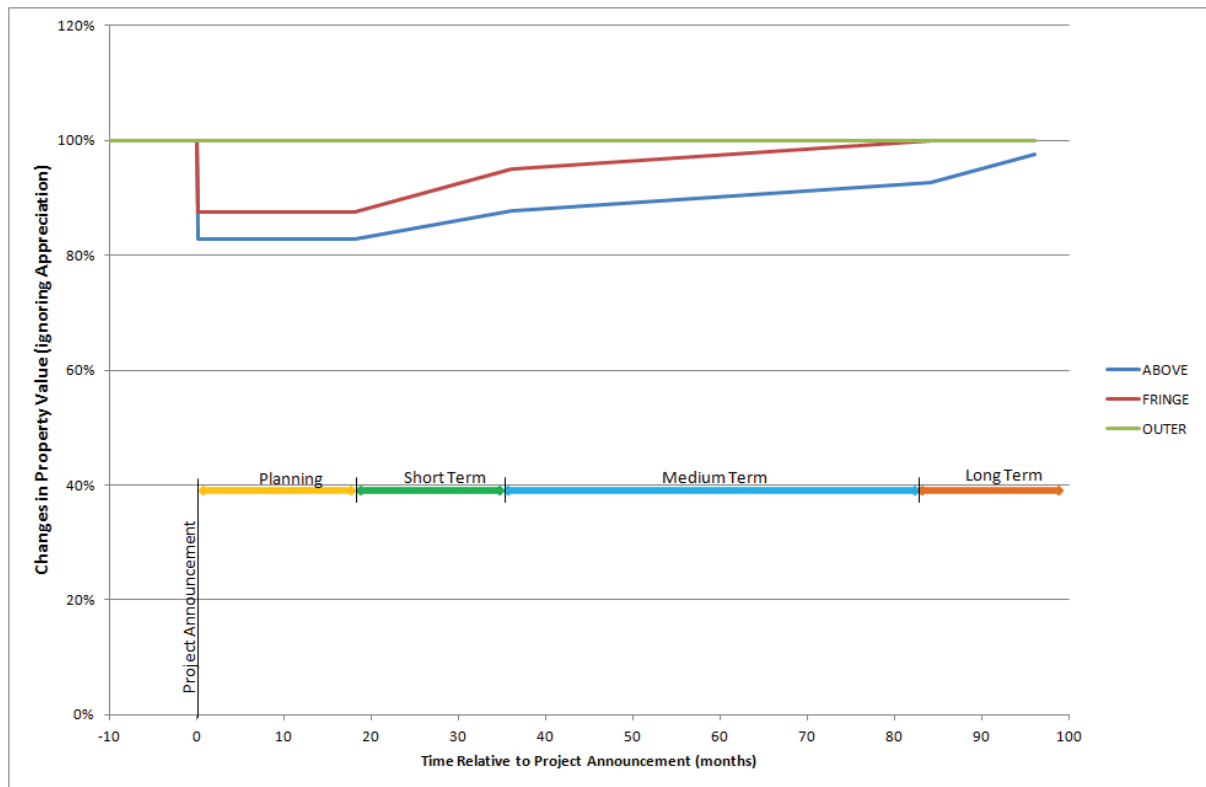
- 7.1** Based on our research and having considered all of the factors, in particular the findings from the Correnso case study, we would expect to see a similar graduated impact on property value from the announcement of the proposed Project Martha through planning/consent to its initial operation (2020) and the extended life of ten years (2030). The property value impact of the proximity of a property to the mining will be greatest at the beginning and will wane as people become accustomed to the activity over a period of time without it causing disruption by a breach of the usual amenity to surrounding property owners.
- 7.2** This impact could possibly be reduced from that experienced in Waihi East given that the Town (local market) has now experienced mining activity under a residential location. This could alleviate part of the “unknown” in that initial phase.
- 7.3** Our evidence submitted for the GLP consent application suggested that while there was likely to be an effect on values for those properties above and fringing the Correnso mine, any extensions of the underground mining in the GLP area after successful completion of Correnso mine would likely draw a reduced period of impact.
- 7.4** However, we anticipate the level of impact through the initial phase of Project Martha is likely to be similar to Correnso given the often referred to NIMBY (not in my back yard) effect where despite similar situations existing elsewhere, the reaction of a new market in a greenfield situation needs to progress along the same pathway to acceptance from a starting point of announcement to one where the “unpopular use” is able to be physically measured by the market and neutralised, leaving values to restore to pre announcement level.
- 7.5** The period over which the change in market reaction is expected to occur is broadly grouped as:
- a) Announcement phase (announcement to 6 months).
  - b) Planning/consent (6 months to 18 months).
  - c) Mining Short term (0 year to 2 years).
  - d) Mining Medium term (2 years – 7 years).
  - e) Mining Long term (8 years +).

- 7.6** The properties in the Project Martha area have been identified relative to MP4 and the Martha Underground. We do not expect property values to be impacted by MP4 for the reasons discussed in Section 6.3.
- 7.7** The assessment therefore relates to the underground mining component of Project Martha and particularly the Rex lode that underlies residential properties.
- 7.8** In measuring the influence of an “unpopular use” or negative effect it is often helpful to consider the following:
- a) A perception of little change, i.e. difficult to measure or separate from other market influences; +/- 2.5%.
  - b) A perception that the changes will be measurable but not definitive, usual valuation ranges suggest +/- 5% as being acceptable valuation tolerance. A variation attributable to a single factor could be identified if the influence on value was at or around this 5% limit.
  - c) A perception that the change will be noticeable and easily recognised ahead of other market influences on the property’s value, equivalent to a change of more than 10% i.e. an example using a positive expectation would be a reasonably well recognised or expected premium for an adjoining owner purchase being in the order of 10% above market value.
  - d) A perception that the change will be materially detrimental (or positive), equivalent to a change of more than 20% i.e. again an example of a positive expectation would be an adjoining owner with a distinct financial benefit from acquiring.
  - e) A perception that the market will need to be enticed to buy, equivalent to a change of more than 30%.
- 7.9** The following table is a summary of the approximate notional discount we have assessed as applicable to residential property in the three proximity locations relative to the Rex lode in particular and relative to the market periods from the announcement. This includes our opinion of the market reaction to proximity of property to the mining activity having determined that the market will not consider property damage or vibration as material influences on property value. It is important to note that quantifying the market reaction at each stage of the life of a project and for each group is subjective.

Property proximity category	Announcement Phase (0-2 months)	Planning & Consent (2 mths – 18mths)	Mining Short Term (0-2 yrs)	Mining Medium Term (3-7 yrs)	Mining Long Term (8 yrs +)
ABOVE	No sales activity.	15%-20%	10%	5%	0%
FRINGE	Limited sales activity.	10%-15%	5%	0%	0%
OUTER	Slow sales activity	0%	0%	0%	0%

**7.10** The assessment of influence on valuation is a holistic assessment for all of the property in each of the proximity categories. We would expect some variation around these amounts within each proximity.

**7.11** The following graph reflects our assessment of the potential change in the average sale price of residential property within each of the two proximity categories over the period from the announcement phase of the mining through to the long-term position after seven years.



- 7.12** The graph highlights the potential for a sudden decline in value for property “above” or residential “fringe” after the initial announcement through the planning and consent period (generally short term) to where property values re-establish over the following seven years.
- 7.13** Commercial property is likely to react differently. Commercial property ownership and occupancy is driven principally by visible or tangible factors (rent and required investment return or simply the suitability to carry out a business activity) and typically values are not driven by emotive market reactions associated with residential property.
- 7.14** With no privately owned commercial property being located in an “above” location we do not envisage the influence of proximity to mining will effect values.
- 7.15** We do not see the activities or outcomes from Project Martha affecting the highest and best use of the established commercial properties in the Town Centre and with the majority of supply of commercial property being located within the sphere of influence the market does not have a choice of property with which to price differentiate.

- 7.16** Potentially there could be some impact on a commercial property with a residential component. This impact is not anticipated to be any greater than that addressed for “fringe” residential property and is more likely to align with the “outer” category.
- 7.17** The prolonging of mining activity beyond the current intended closure of mining in 2019 would have a positive impact on commercial ownership.
- 7.18** The area of Reserve (Active) zone is likely to follow the same influence as residential land given that this is the most likely underlying use should the property not continue to be used as sports fields. Residential use would require re-zoning and addressing the issues associated with the hazard zones over old mine workings. But nevertheless, the value would be underpinned by the end use and therefore subject to similar market influences.
- 7.19** With no impact being assessed on commercial property, there is an anticipated nil effect on all property values in the long-term subject to usual market forces that may prevail at that time. This would include the continuation of mining activity, as without this, the market in Waihi could well be expected to act differently (decline) than it has since 1987 when the mining licence was granted. The potential temporary change in residential value does need to be seen in the context of the demonstrated increase in property values in Waihi as a result of mining, compared to property values without mining operations within the town. Further, as discussed above in paragraph 5.23, the research study of Mr R P Young has shown that while some property located immediately adjacent to existing mining activity has generally increased at a lower rate than prices paid in streets only a short distance away, those properties had nevertheless increased in value above the level that would have pertained had mining activity never taken place.
- 7.20** The market reaction to Project Martha and in particular the Rex lode of the Martha Underground Mine is summarised as follows:
- a) Commercial property will not be impacted.
  - b) Commercial property with a residential component may be impacted but we would expect any concern to be alleviated by the property being included in the AEP.
  - c) The matters of concern likely to be considered by the market as having the potential to influence property values will relate to residential property and primarily to the proximity of the individual property to the underground mining.
  - d) The potential influence on residential property values in the area of underground mining is as follows;
    - ABOVE (property directly above the Rex underground mine activity). Noticeable and easily recognised in the short term, measurable but not definitive in the medium term and nil impact in the long term

FRINGE (where residential property fringes the underground mining activity).

Noticeable and easily recognised reducing to measurable but not definitive in the short term and to nil impact in the medium and long term.

FRINGE (where a residential component of a commercial property fringes the underground mining activity).

Not definitive in the short term

- e) The location of an area of privately owned Reserve (Active) zone above a large part of the Martha Underground is likely to experience the same influence as the residential “Above” if it were to be sold for residential purposes during the duration of Project Martha. Noticeable and easily recognised in the short term, measurable but not definitive in the medium term and nil impact in the long term

- 7.21 Property values beyond the underground mine area will not be influenced by the proposed mining although the general conclusions relating to the positive influence of mining in Waihi would be expected to remain.

## 8.0 Conclusion

- 8.1 Past evidence produced by TelferYoung has established that property values in Waihi have increased more than would have occurred if mining had not taken place since 1987.
- 8.2 A reported perception or concern that Waihi East property values suffer from the closer proximity to mining activity is not borne out by the evidence.
- 8.3 Commercial property values will not be impacted by Project Martha.
- 8.4 The greatest potential changes in residential property values are anticipated through the period from the announcement of the project until the start-up and early part of the mining activity. Beyond that and with certainty around the earlier market perceptions of mining and its effects, normal market forces would be expected to take effect reflecting supply and demand pressures similar to other areas of the town.
- 8.5 The magnitude of change will also depend on the proximity of a given property to the mining activity, being initially greatest close to the mine and decreasing with increasing separation.
- 8.6 The conclusions are conditional upon:
  - + The terms of the Project Martha property programme, including AEP and Top Up being similar to those that have previously applied for Correnso.



- + Ground stability being unaffected by the underground mining.
- + No restrictions being introduced by external organisations such as the local authority in terms of building or subdivision consent.
- + Oceanagold carrying out the proposed development and mining in accordance with the information in support of the application and in full compliance with any resource consent granted.
- + Property in Project Martha area being able to maintain existing insurance cover at no additional premium or variation on cover.

**TelferYoung (Waikato) Limited**

Doug Saunders - B Com (VPM); FNZIV; FPINZ

Registered Valuer

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## Appendix A

### Project Martha - Project Description



## PROJECT MARTHA – PROJECT DESCRIPTION

The resource consent application will seek to provide for multiple mining areas using both open pit and underground mining methods, provide for sufficient rock and tailings disposal areas and set appropriate closure criteria. There is sufficient confidence around the geological resources to define the works required for this new mining opportunity, Project Martha.

The Project will use:

- + The existing processing plant in its current configuration for the processing of ore
- + The existing tailings storage facilities (TSF1A and TSF2) for the disposal of tailings
- + The existing tailings storage embankments and stockpiles for the permanent disposal of some rock
- + The existing underground development for access and ventilation
- + The existing water treatment plant and reverse osmosis plant in their current configurations for the treatment of mine water discharges
- + The existing mine accesses

The Project is made up of the following new components

- + Martha Underground, including the Rex lode
- + Martha Phase 4

## Martha Underground

Ore sources comprise previously unmined blocks (53%), remnant mining blocks either backfilled or skins on unfilled stopes (30%) and ore development (18%).

The area to be mined, excluding the Rex lode, sits predominantly below the existing Martha Pit but does extend outside this on the south eastern side beneath part of the Waihi rugby grounds and retired land beside the open pit access road.

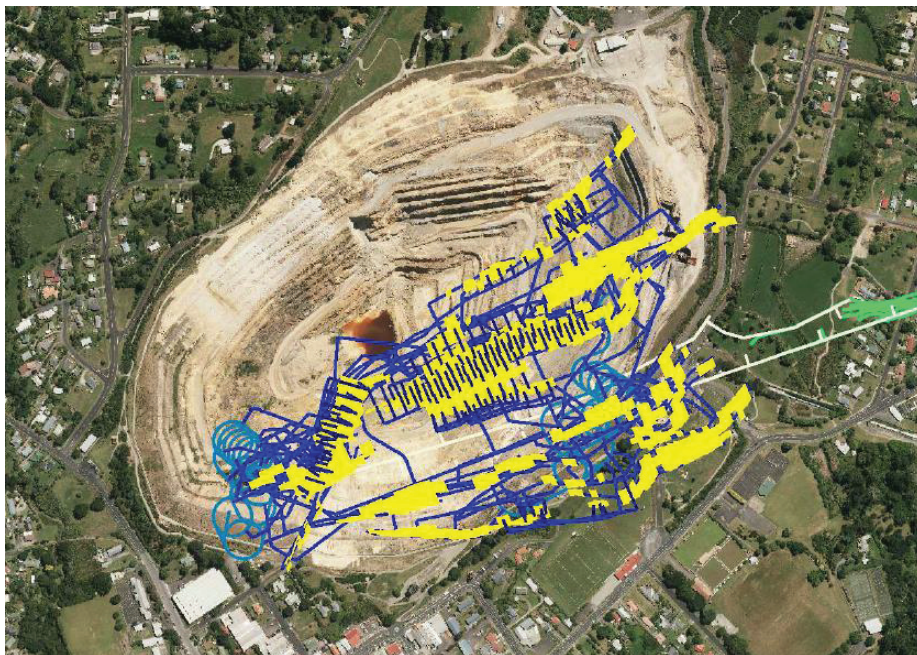


Diagram 1

Mining will include partially backfilled historical voids (approximately one third) and new mining areas located at depths of 150m to 620m below the existing ground level. All underground mining areas will be backfilled.

The development of the mine and actual mining will take place through 2020 to 2030.

## Rex Lode

The Rex lode is accessed off the currently-consented Martha Drill Drive Project and is located beneath residential and commercial areas at a depth of between 80m and 250m below the existing surface.



Diagram 2

The project including development and mining will cover the period from 2020 to 2022



## Martha Phase 4

This application would seek land use consent to cover open pit mining and rehabilitation of the land including but not limited to;

- a) Noise bunding and screening
- b) Relocation of a district road
- c) Demolition or relocation of three domestic residential dwellings
- d) Construction of a noise bund
- e) Open pit mining
- f) Pit wall stabilisation
- g) Rehabilitation of the pit surrounds and formation of a recreational lake within the remnant pit

The top of a portion of the existing open pit will be required to move northward to accommodate the batter required to stabilise the failed area of the north wall and to reinstate pit access. The extension of the north wall pit rim will require the removal of two residential dwellings to facilitate the realignment of Bulltown Road at that point and a third, currently unoccupied dwelling above the pit rim.

Because of the work at the top of the pit, noise bunding will be provided to attenuate noise to the residential properties to the north and north west of the rim extension.



The balance of the mining associated with MP4 will be in the Pit.





## Appendx B

### Graphs of Market Sales Activity

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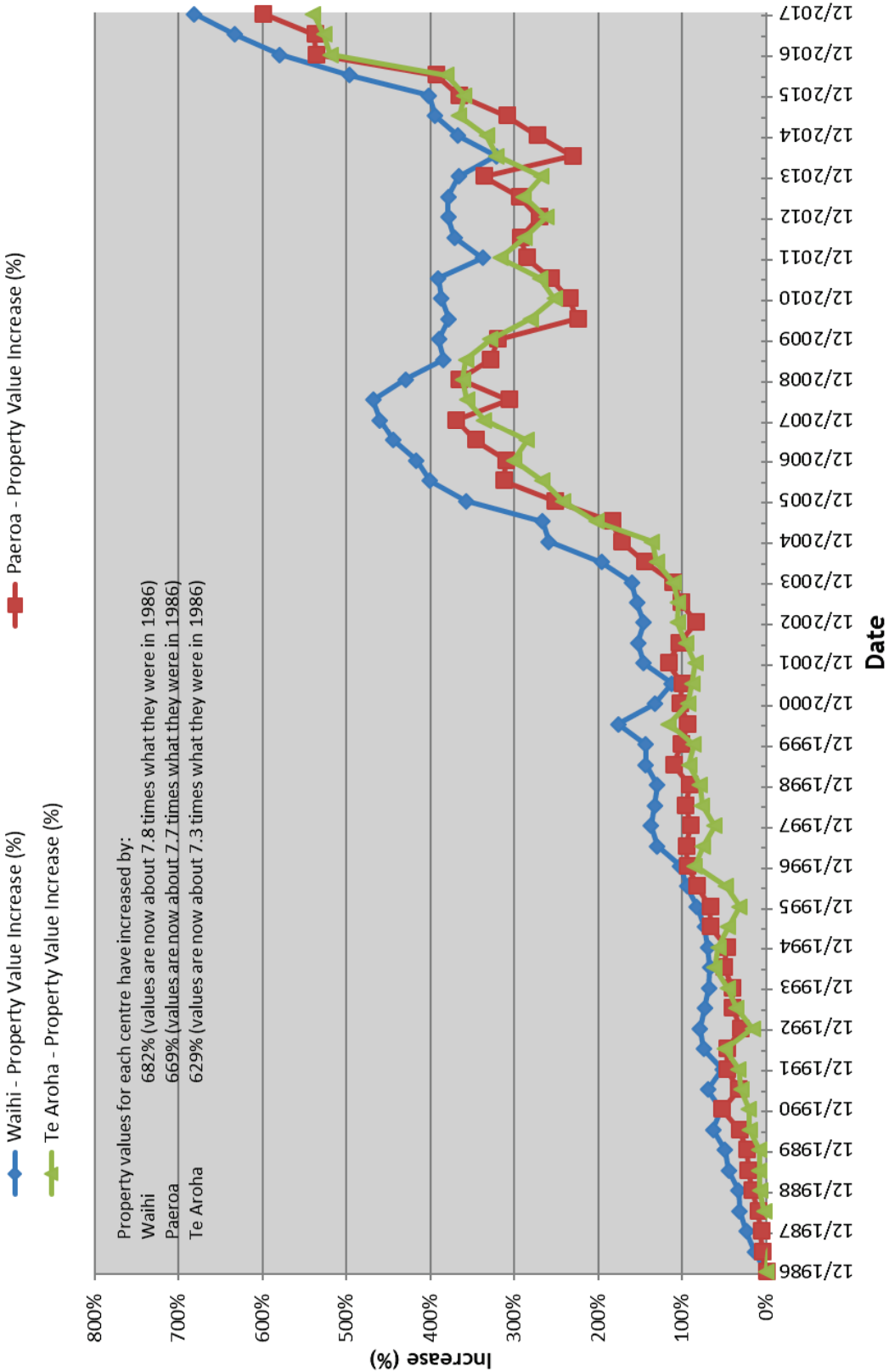
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**++ Local Knowledge, National Coverage**

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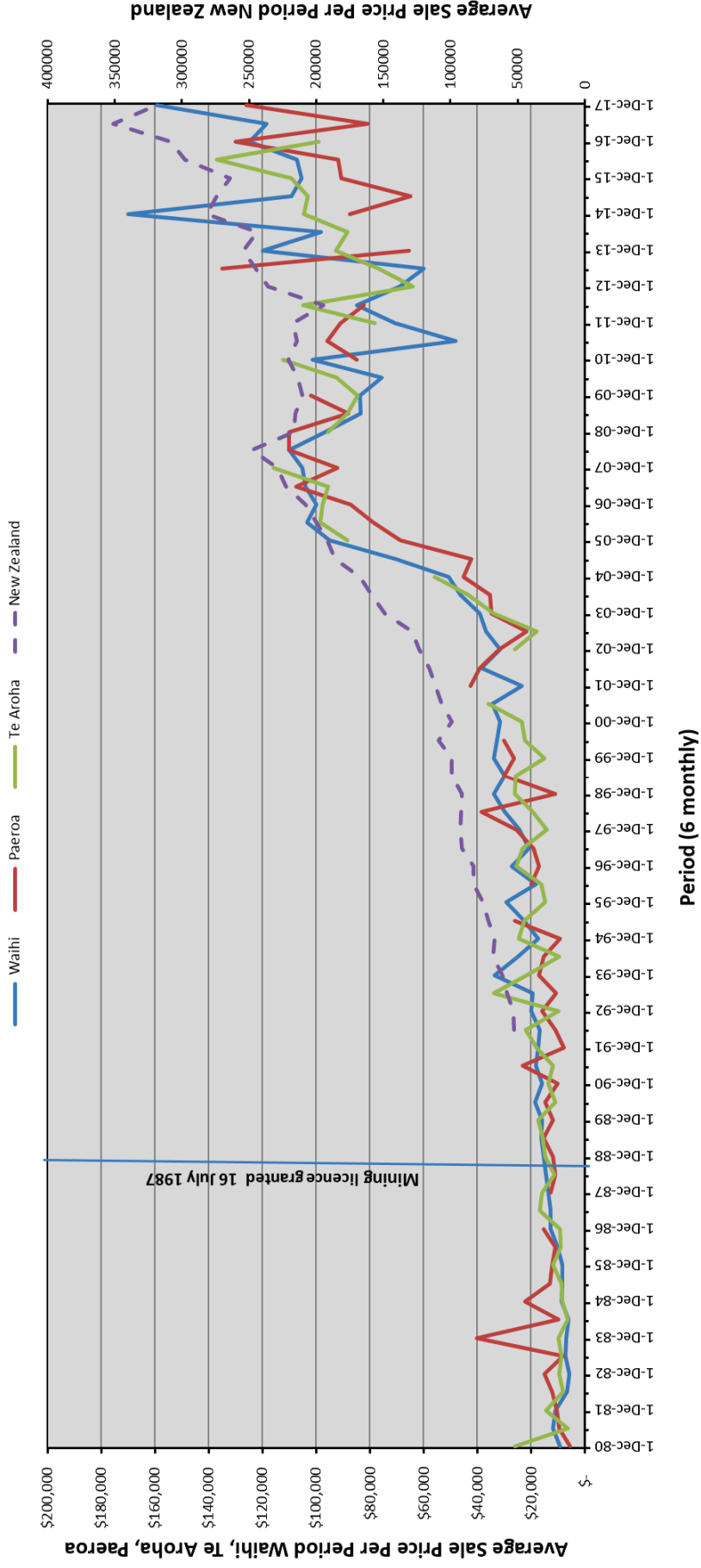


Property Value Increases for Waihi, Paeroa and Te Aroha over the Past Thirty Two Years





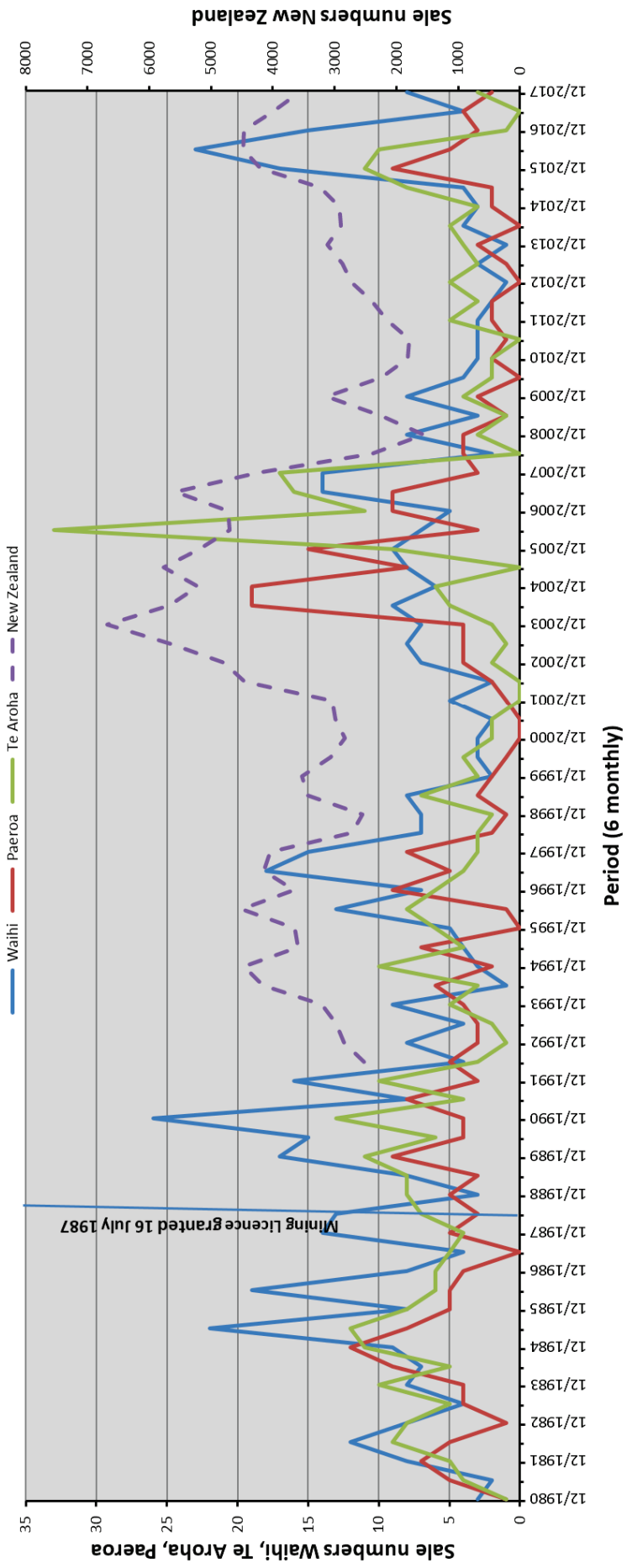
# Average Sale Price of Vacant Residential Sites December 1980 to December 2017



Our Ref: WAI-124130



### Sale Numbers for Vacant Residential Sites December 1980 to December 2017



Our Ref: WAI-124130

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## Appendix C

### Short Description of Major Property Market Influences and Property Effects

#### Global Financial Crisis & Positive Net Migration



### SHORT DESCRIPTION OF THE GLOBAL FINANCIAL CRISIS

The failure during late 2007 of a large number of finance companies nationally and in America where Trading Banks also failed, was followed by the Global Financial Crisis of 2008. This led to a significant down turn in property value throughout New Zealand (and much of the developed world) during that year.

The markets rallied slightly toward the mid and later part of 2009 as some confidence returned to the New Zealand economy as a consequence of the relatively strong position of our principal trading banks and measures taken by central government to stimulate economic activity.

However the weakness of the world economy continued to undermine national confidence and some further decline in property value and sale volumes was experienced during 2010.

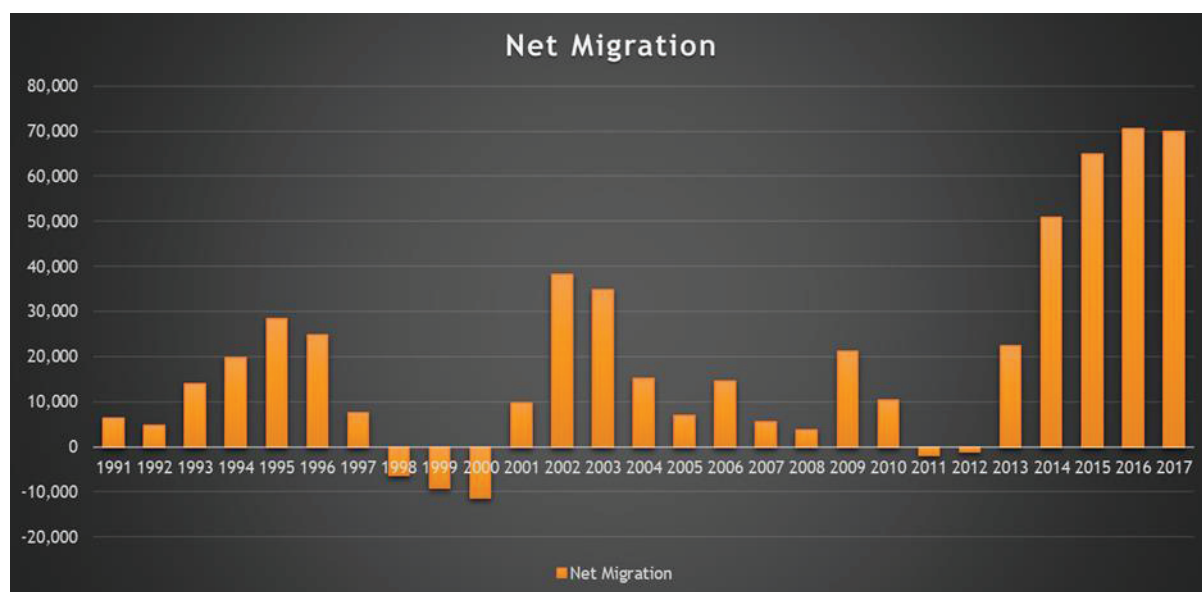
In 2011 a degree of confidence re-emerged but this was weak and did not impact on prices or sale volumes to any material extent. The overall trends have been shown to be very similar throughout the country as a whole.

### SHORT DESCRIPTION OF THE NEW ZEALAND POSITIVE NET MIGRATION

New Zealand has experienced the longest and highest period of positive net migration over the last four years that has impacted property markets throughout New Zealand. This is shown in the graph below. The extent of the migration from 2013 to 2017 far exceeds the previous positive net migration that preceded the property booms of the mid 1990's and mid 2000's.

The strong increase in population has created demand for housing and while reportedly approximately 50% of new migrants settle in the Auckland market the balance dissipates throughout New Zealand creating demand in each of the local markets.

Adding to the impact of the increase in new migrants is a drift of Auckland population to provincial locations given the sharp rise in Auckland housing prices and the impact of more people in the City on congestion.



The effects of the continued strong net migration can be seen in the property market indicators from 2014 onwards.



## Appendix D

### Waihi East Residential Property - Correnso Underground Mine Case Study



The Correnso underground mine forms part of what was named as the Golden Link Project Area which extends over some 519 properties (excluding those in mine company ownership) at the north eastern fringe of the town.

The Correnso mine sits underneath an area of residential development that also includes a primary school. There are 218 properties that are considered to be in the immediate location of the Correnso underground mine.

A public announcement was made in August 2011 that a consent to mine underneath the Waihi East area was to be sought.

The planning and consent period extended through to District Council hearing by independent commissioners in November 2012 and a decision in July 2013 to give consent to the Correnso mine. That decision was appealed and, through a Court-assisted mediation process, settled in October 2013.

Underground development, which preceded mining, took place through 2014.

Mining commenced in 2015 and continues to the present time with mining expected to be complete in 2019.

The following study includes our analysis and reporting of the likely market reactions as part of the consent hearing process, market monitoring of the Waihi East residential market since 2008 and analysis of market sales in the area post the removal of the Top Up scheme that was designed to maintain the property market activity.

#### **Initial Market Research before Consent and Mining**

There had been seven market sales of residential property in the Waihi East area subsequent to the announcement and before the consent hearings. These sales were compared to value estimates that TelferYoung had prepared before the announcement. The comparison is as follows;

Address	Type	Locality	Sale Date	Sale price	Value Estimate
Kitchener St	House	Outer	10/2011	\$307,000	\$299,000
Barry Rd	Section	Fringe	11/2011	\$55,000	\$55,000
Walmsley St	House	Outer	11/2011	\$215,000	\$225,000
Stafford St	House	Outer	1/2012	\$180,000	\$238,000
Walmsley St	House	Fringe	9/2011	\$110,000	\$219,000
Smith St	Section	Outer	2/2012	\$65,000	\$65,000
Wenlock	House	Outer	6/2012	\$282,000	\$277,000



The same conclusion was drawn by Quotable Value in their release of the rating valuations for Hauraki District as at 1 July 2012. I had spoken with the valuer, Mr Richard Allan, overseeing the valuations. He told me that the valuations of residential property in Waihi contained no differential in value between residential property in Waihi East and residential property in the rest of the Town. In his opinion this was as a consequence of the sales evidence available showing no differential. The rating valuations were made in the knowledge of the proposed GLP consent application.

### **Anticipated Market Reaction**

Based on complaints received for the Favona and Trio Underground Mines and submissions received, we identified matters that may have influenced Waihi East property values from the then-proposed Correnso Underground Mine and any future mining in the GLPA:

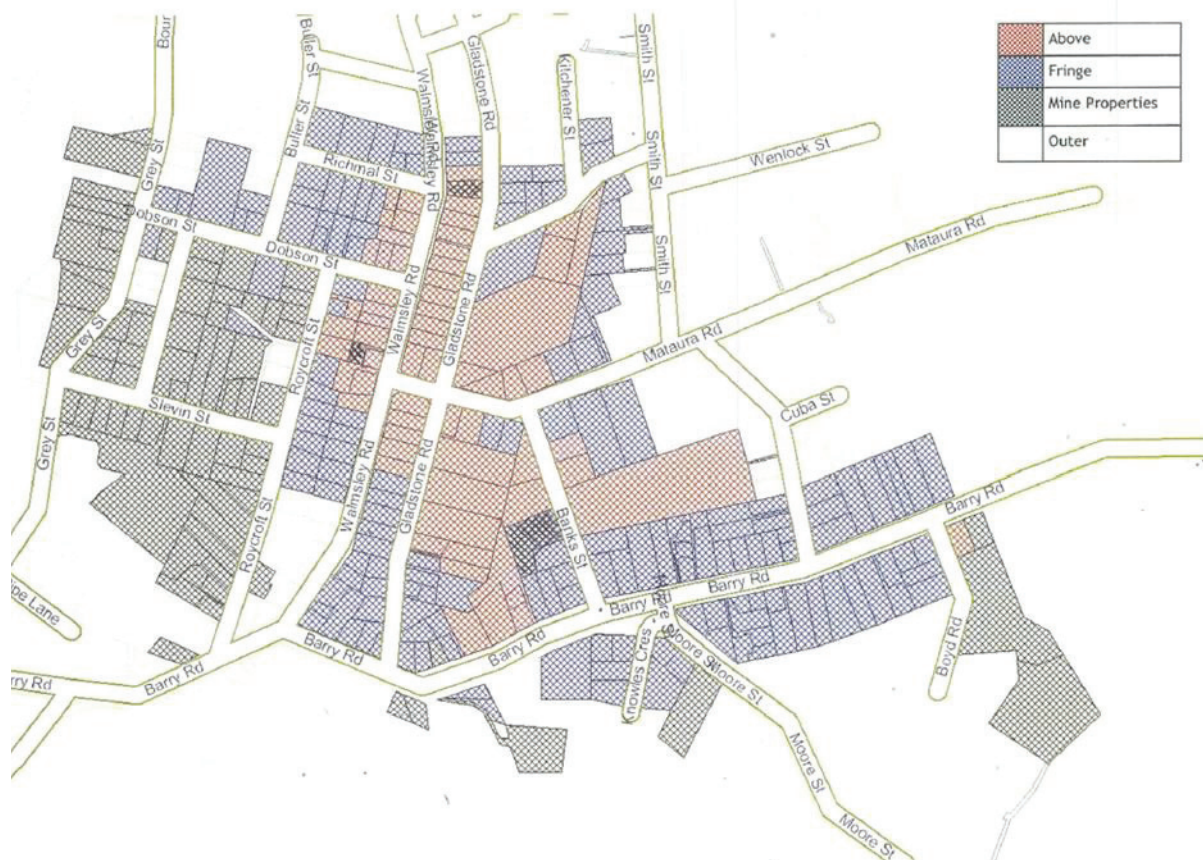
- (a) fears of property damage;
- (b) vibration/noise from blasting; and
- (c) concerns surrounding the proximity of residential properties above mining activity.

While 218 properties were identified as being in the immediate locality of the Correnso mine, there were 442 properties identified in a wider area of the Correnso mine that were considered as part of our study.

Of the three issues listed above, proximity to the mining activity was considered the most likely matter identified as influencing market perceptions.

Using the following location diagram, which shows the location of development and stoping for the Correnso Underground Mine on an aerial plan of the Waihi East locality, we classified individual properties relative to the Correnso Underground Mine as follows:

- (a) A – Above – proposed development or stoping.
- (b) B – Fringe - property fringing proposed development and stoping areas.
- (c) C – Outlying.



The “Outer” properties were in an area beyond the development areas of the mine but geographically were considered to be close to the Correnso Underground Mine.

The following table is a summary of the of the properties (442) we classified in each category:

	Above	Fringe	Outer
Number of properties	58	160	224

The perception of the potential for property damage from blasting causing cracking and ground movement with resultant damage of existing improvements was judged to be similar to the area where people may have been concerned about vibration.

There had been no evidence of damage to properties from underground mining at the time and on the basis there would not be damage caused to property by the Correnso underground mining (which has proved to be the case to date), together with Oceanagold's public acknowledgment of its responsibility in the unlikely event that there is damage caused due to underground mining, we were of the opinion that the market had not, and would continue to not discount property values on the basis of the risk of property damage.

Vibration from underground blasting generated the greatest number of the complaints in the six-monthly summaries recorded.

It was very apparent that vibration impacts on different people in different ways. Dr John Heilig of Heilig & Partners Pty Ltd has stated in evidence that there is a weak correlation between complaints



and vibration that exceeds 2.0mm/s. A slightly higher vibration level, 3.0mm/s, was adopted as a benchmark to people's awareness and hence a level that could potentially create a market reaction.

The Favona Underground Mine commenced full production in late 2006. Any influence of vibration on property values would have been felt from that time if it occurred.

The evidence relating to those properties near Favona between 2006 and 2012 was limited but it did reflect levels of value change (increase) similar to the increase in value experienced from re-sales of property outside of the area associated with vibration from Favona.

This would suggest that vibration, at the levels and frequency experienced from Favona, was not influencing property values within the area where vibration levels trigger complaint. In the same way, we were of the opinion that vibration associated with the Correnso Mine would have little to no direct or rational?? quantitative influence on property values.

However, we did believe that there could be a market perception held on those properties closest to Correnso, initially, that they would experience greater vibration (despite the evidence to the contrary) on account of their position above the mine rather than adjacent to it as was the case with Favona.

In our opinion, the occurrence of underground mining beneath privately owned property, as proposed, was likely to generate an initial negative market reaction relating to the perceived concerns around an industrial activity occurring beneath the properties.

On this basis, we considered that it would be the proximity to the proposed mine and a potential fear of the unknown, rather than direct or measurable concerns about property damage or vibration, that would have the potential to influence the property market in Waihi East.

The expected market reaction was, in our opinion, likely as a consequence of a general fear of the unknown as mining had not occurred in recent times under privately owned property in Waihi. The reaction would be similar to the market behaviour of an "unpopular use" being established in an urban area.

It is widely regarded that the greatest influence on property value where an unfavourable event or development is to take place is at the time of announcement and that any discount to property value generally diminishes with time and the presence of the activity within the conditions of consent. Any discount relates to the fear of the unknown and the inability of the market to price something it can't tangibly see and therefore measure in its absence.

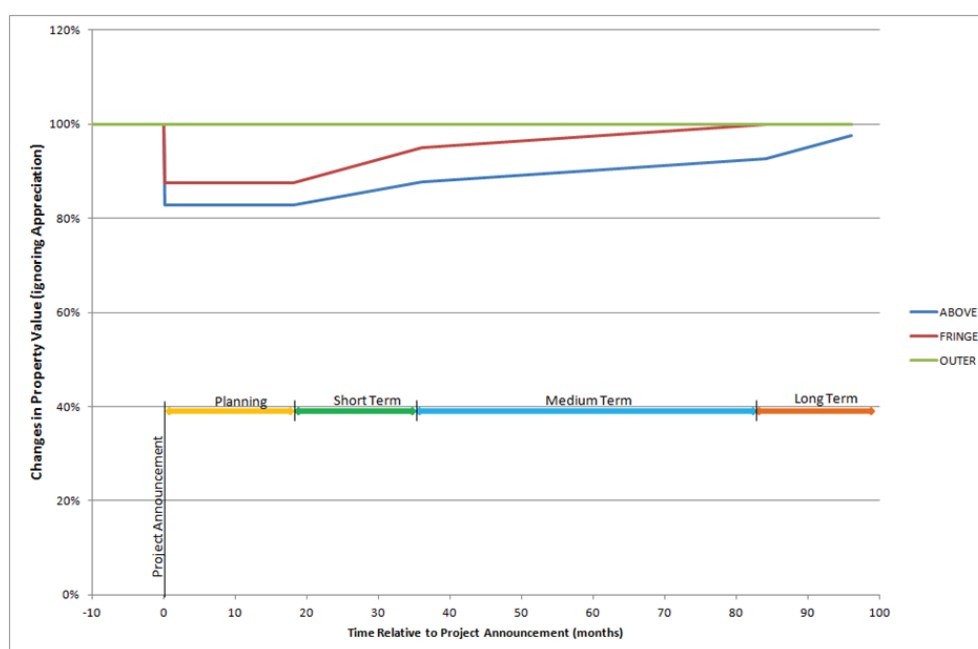
The period over which the change in market reaction was expected to occur was broadly grouped as:

- (a) Announcement phase (announcement to 6 months).
- (b) Planning/consent (6 months to 18 months).
- (c) Mining Short term (0 year to 2 years).
- (d) Mining Medium term (2 years – 7 years).
- (e) Mining Long term (8 years +).

The following table is a summary of the approximate notional discount we assessed as applicable to the various locations and relative to the market periods, in terms of time from the announcement. This includes our opinion of the market reaction to proximity of property to Correnso Mine having determined that the market will not consider property damage or vibration as material influences on property value. It is important to note that quantifying the market reaction at each stage of the life of a project and for each group was subjective

Property proximity category	Announcement Phase (0-6 months)	Planning & Consent (6 mths – 18mths)	Mining Short Term (0-2 yrs)	Mining Medium Term (3-7 yrs)	Mining Long Term (8 yrs +)
ABOVE	No sales activity.	15%-20%	10%	5%	0%
FRINGE	Limited sales activity.	10%-15%	5%	0%	0%
OUTER	Slow sales activity	0%	0%	0%	0%

Graphed as follows:



The conclusions were conditional upon:

- + The terms of the Property and Community Investment Programme as announced 17 March 2012.
- + Ground stability being unaffected by the underground mining.
- + No restrictions being introduced by external organisations such as the local authority in terms of building or subdivision consent.
- + OceanaGold carrying out the proposed development and mining in accordance with the information in support of the application and in full compliance with any resource consent granted.
- + Homes in the GLPA being able to maintain existing insurance cover at no additional premium or variation on cover.

### Market Analysis of Mining Impact

The Top Up policy ran from the announcement of the Golden Link Project in August 2011 through to 17 March 2016.

The Top Up policy involved OceanaGold meeting the difference between an offer for a property that had been marketed that was short of the vendors expectation based on comparison with residential sales in other parts of the town. The application of a Top Up and the quantum of the Top Up was

wholly at OceanaGold's discretion. The decision, made by the mining company as to the quantum of Top Up to approve and which properties were included was based on the identified and assessed areas of impact as contained in our evidence and as described above.

The intention of the Top Up policy was to maintain the volume and value of market activity in Waihi East at similar levels as had existed prior to the GLP announcement through the period of uncertainty that could affect values.

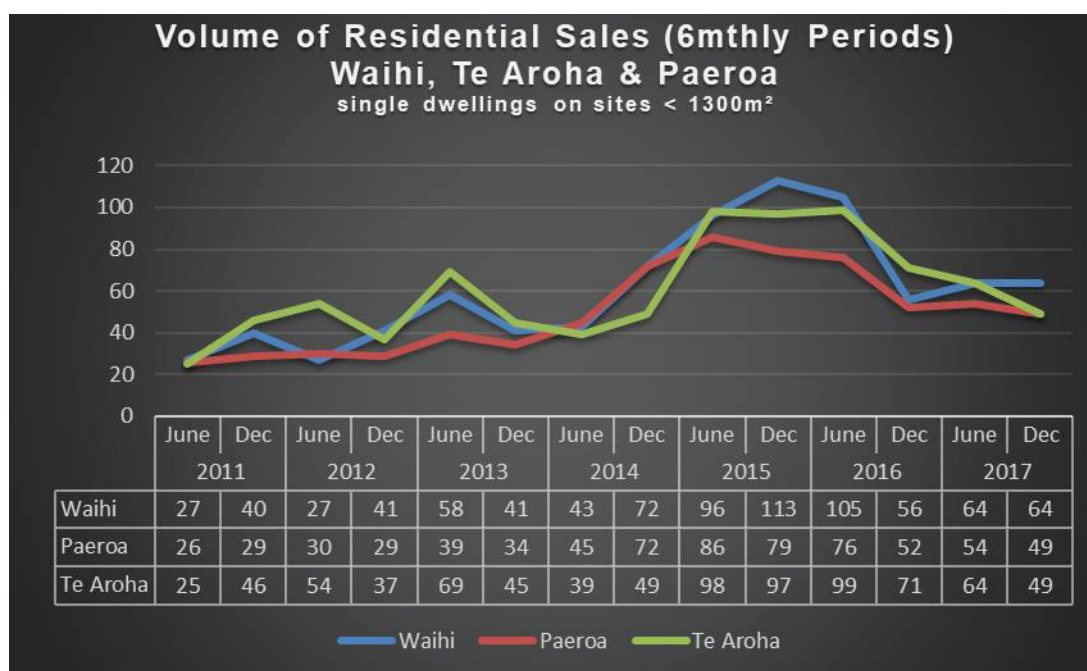
Analysis of market activity through six monthly surveys shows that the volume of sales relative to the rest of Waihi was maintained from August 2011 through to December 2013.

Period	Waihi East % Share of Total Waihi Sales
Pre Announcement	21.0%
Post Announcement – December 2013	22.3%
January 2014 to July 2016	13.9%
Post Top Up	7.4%

Given the level of sales being achieved during the initial period, a decision was made in late 2013 to pull back the extent of Top Up offered in terms of the quantum difference between offers being made and the vendor expectation for comparable market value.

From that point the market share dropped over the next two and half years to the average of 13.9% but within this period there was one six-month period (July 2015 to December 2015) where the market share was 27.4%.

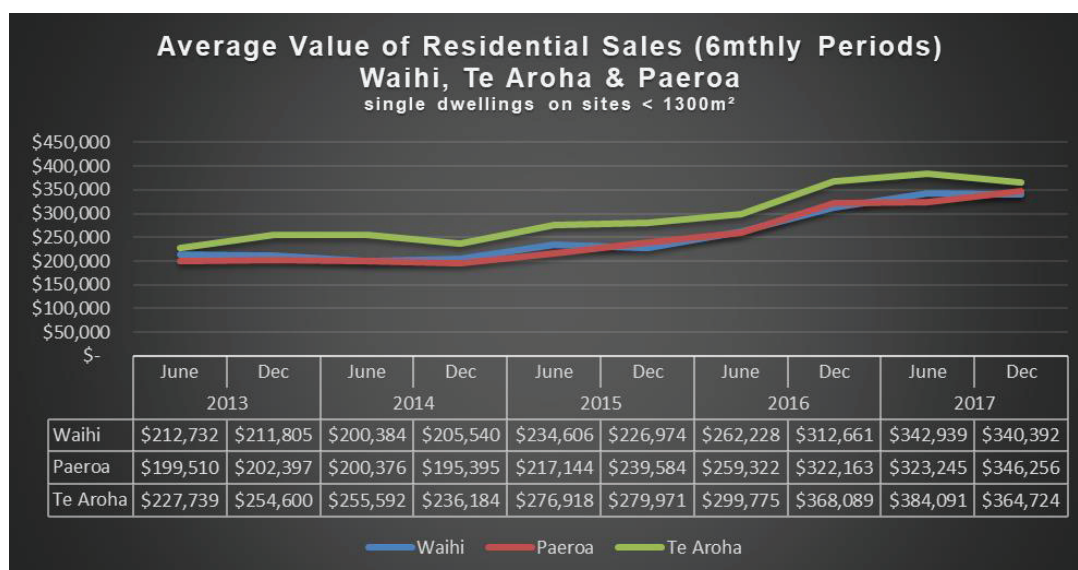
Overall, since 2011 the policy aided maintenance of a 15.8% share of total sales as compared to the pre-announcement average (2008 – 2011) of 21.0% which did range from 6.3% to 26.1%. While the market share dropped back after the Top Up Policy was removed in March 2016, the average currently being 7.4%, it has steadily increased over the three six-month periods through 3.6%, 6.3% and 12.5% for the last six month period ending December 2017.







In terms of value, the average sale price from Waihi East has grown overall at a similar rate as the Town as a whole and Waihi itself has followed the same value trends as Paeroa and Te Aroha as monitored since the August 2011 announcement and shown below from 2013.



We have undertaken drive by value estimates of sales of residential property in Waihi East (29) since the Top Up policy was stopped in March 2016. This has shown a comparable level of value to sales of similar matched property from other areas of the Town that would suggest that market levels have more or less re-established in line with our earlier predictions.

The following table shows the individual sales, the TelferYoung estimate based on the date of sale and the quantum of AEP.

Waihi East Sales Post Top Up Policy 16 March 2016										
NUMBER	ROAD NAME	Locality	AEP 6mths prior	BEDROOMS	FLOOR ARE	LAND AREA	SALE DATE	SALE PRICE	TY MARKET ESTIMATE	% Var SP/TY
81	Barry Rd	Fringe	0	4	137	809	28/07/2016	\$ 395,000	\$ 380,000	103.9%
5	Knowles St	Fringe	0	3	119	830	30/11/2017	\$ 375,000	\$ 350,000	107.1%
14	Wenlock St	Outer	0	3	100	525	7/07/2016	\$ 265,000	\$ 270,000	98.1%
265	Kenny St	Outer	0		85	584	25/05/2017	\$ 181,000	\$ 180,000	100.6%
54	Barry Rd	Fringe	250	3	0	908	2/05/2016	\$ 255,000	\$ 310,000	82.3%
75	Barry Rd	Fringe	250	3	120	809	10/05/2016	\$ 250,000	\$ 250,000	100.0%
23	Kitchener St	Outer	250		175	611	11/11/2016	\$ 499,000	\$ 480,000	104.0%
31	Kitchener St	Fringe	250	3	130	1212	19/05/2016	\$ 278,000	\$ 340,000	81.8%
48	Mataura Rd	Outer	250	3	189	623	10/08/2017	\$ 490,000	\$ 480,000	102.1%
41a	Mataura Rd	Outer	250	3	140	924	3/03/2017	\$ 345,000	\$ 350,000	98.6%
49B	Mataura Rd	Outer	250		155	660	1/04/2016	\$ 445,000	\$ 440,000	101.1%
56A	Mataura Rd	Outer	250	4	126	963	28/09/2017	\$ 475,000	\$ 430,000	110.5%
Unit 1 47	Mataura Rd	Outer	250	1	0	533	16/08/2017	\$ 310,000	\$ 310,000	100.0%
28B	Roycroft St	Fringe	250	2	75	530	12/08/2016	\$ 240,000	\$ 245,000	98.0%
26A	Stafford St	Fringe	250	2	0	354	7/08/2017	\$ 330,000	\$ 280,000	117.9%
49	Barry Rd	Fringe	250-500	4	158	1351	3/05/2017	\$ 448,000	\$ 420,000	106.7%
30	Mataura Rd	Outer	250-500		91	0	28/09/2017	\$ 245,000	\$ 240,000	102.1%
8	Smith St	Outer	250-500	2	83	801	14/03/2017	\$ 280,000	\$ 260,000	107.7%
69	Barry Rd	Fringe	250-500	2	120	600	7/11/2016	\$ 270,000	\$ 280,000	96.4%
179	Kenny St	Fringe	250-500	2	80	551	26/05/2017	\$ 280,000	\$ 280,000	100.0%
14	Buller St	Fringe	500-1000	4	105	1283	14/06/2016	\$ 308,000	\$ 305,000	101.0%
13A	Dobson St	Fringe	500-1000	2	54		10/08/2016	\$ 210,000	\$ 220,000	95.5%
50	Gladstone Rd	Fringe	500-1000	2	82	764	19/02/2016	\$ 220,000	\$ 230,000	95.7%
15	Mataura Rd	Fringe	500-1000	3	130	1089	28/06/2016	\$ 395,000	\$ 375,000	105.3%
247	Kenny St	Fringe	500-1000	3	96	948	12/07/2016	\$ 220,000	\$ 230,000	95.7%
21	Roycroft St	Fringe	500-1000		81	809	2/08/2017	\$ 130,000	\$ 200,000	65.0%
13	Dobson St	Fringe	1000-2000	3	107	503	16/10/2017	\$ 245,000	\$ 260,000	94.2%
7	Roycroft St	Above	1000-2000	3	94	1012	2/05/2017	\$ 280,000	\$ 270,000	103.7%
11A	Gladstone Rd	Above	2000-3000		74	lease	1/03/2016	\$ 205,000	\$ 215,000	95.3%
Overall Average										99.0%



Market Sales to TY estimates			
AEP Payment	Average	Number of Sales	Median
Nil	102.4%	4	102.3%
\$250-\$500	100.6%	16	100.6%
\$500-\$1000	93.0%	6	95.7%
\$1000-\$2000	99.0%	2	99.0%
\$2000-\$3000	95.3%	1	95.3%
		29	

The overall average shows a close correlation between the sale price and the market estimates.

As the amount of AEP payment increases or as more vibration is experienced in the locality of the sale property, some degree of variance to the market value estimates is seen although care must be taken that there is only one sale at the upper level.

Within the AEP band \$500-\$1000 there is one sale at 7 Roycroft Street that appears very low. We have not been able to ascertain whether this is a market or non-market sale. By excluding the sale this band of sales more closely aligns with the market estimates at 98.6% average or 95.7% median.

While this is an area close to the underground mining activity, there are two other sales in Roycroft Street that show no impact.

## Conclusion

The market activity of Waihi, Paeroa and Te Aroha have been recorded through the six monthly surveys since 2008. This has shown that the application of the AEP payments and the use of the Top Up policy through to December 2013 maintained the volume and similar level of activity as prior to the Correnso project announcement.

The scope and application of Top Up policy was reduced in late 2013 to allow the market to adjust and not become reliant on the Top Up support. While the level of value has been maintained, the volume of activity fell off excepting one six-month period.

Following the withdrawal of the Top Up policy altogether in March 2016 values have continued to be maintained and the volume of sales is improving but is still below the pre-announcement level of market share.

Overall the market activity since the announcement of the GLP project has closely followed the pattern we predicted during our study of the likely effect of the GLP on property values and has responded to the assessed levels of anticipated market reaction via the Top Up policy.

The market is now entering the medium-term mining phase of 3 – 7 years post the mining start date. We predicted that properties in the “above” locality may still sustain a 5% discount which maybe applicable however the impact could be a lower volume of sales with no actual price adjustment.

There are some aspects of the Waihi East market that should be considered relative to the reduction in sales volume. There has been a reduction of the overall stock through purchase by Oceanagold over the period. This equates to a reduction of around 8% of the 442 properties making up the stock in the area.

The town and Waihi East have continued to perform in line with the Te Aroha and Paeroa markets and it has had the same strong market activity through 2015 and 2016 as experienced throughout the country.



We would conclude from the recorded market activity that the impact of the prospect of mining underground is to those properties immediately above and that initially this is between 15% and 20%.

Property fringing the location of the underground mining will be impacted between 5% and 10%.

As the mining activity has become established, there has been a move toward usual market activity particularly price with the volume of sales activity lagging.

It would appear the occurrence of mining activity beneath the location will reduce the demand particularly where there is alternate supply of similar property.

These findings are similar to our original assessments and have been drawn from our study of the Waihi East market relative to the Correnso mine. The findings are supported by the subsequent sales data and the application of AEP and Top Policy for property in Waihi East.





## **Appendix E**

**Mr RP Young's evidence of property resales Waihi East and West**

**1996 - 2002**



17 March 2003

Mr Malcolm Lane

Waihi Gold Mining Company Ltd

P O Box 190

**WAIHI**

Dear Malcolm

### **Waihi Residential Property Study**

Further to our recent discussions and instructions received from Vivienne Bull, I provide the following report on property values within the Waihi East and Waihi West area. The Waihi East area is shown hatched yellow on the attached plan while the Waihi West area is shown hatched pink.

This study has been undertaken in order to shed some light on relative residential property value movements in Waihi from a period between January 1997 and December 2002. The exercise has been undertaken in order to ascertain the impact, if any, on Waihi residential property values resulting from the Martha Mine Extension Project.

I understand that among residents of Waihi East in particular there is a perception that residential property values in Waihi East have been detrimentally affected by the Martha Mine Extension Project. In other words, it is believed that residential property values in Waihi East have suffered relative to those in Waihi West because Waihi East is alleged to be subjected to noise, vibration and dust emanating from the Martha Mine Extension Project.

In order to study this question I have examined residential property re-sales within Waihi East and Waihi West so as to examine price movements both before and after January 1999 when the Martha Mine Extension Project commenced its construction phase.

Resale statistics have been examined so as to determine price movements for properties. In order to exclude properties where price movements have been influenced by major construction works, I have obtained from Hauraki District Council information on building consents issued. In general, only a few of these consents have been issued and then only for minor works, the most common being the installation of solid fuel heaters.

I attach separate schedules of resales for properties in Waihi East and Waihi West. Please note that I have confined our study to those properties which sold prior to January 1999 and resold after that date.

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The results of the survey are summarised as follows:

### **Waihi West**

An examination of the schedule of resales shows that there were 15 resales in the period January 1997 to December 2002. Of these, 60% showed a decline in price and 40% showed an increase in price.

### **Waihi East**

An examination of the schedule of resales shows that of 14 resales in the period January 1997 to December 2002 (spanning the period before and after January 1999) 5 properties or 36% showed a decline in price while 8 properties or 57% showed an increase in price. Three of the properties showing a price increase actually had solid fuel heaters installed between the sale dates which could have accounted for some of the price increase but probably not all of it. One property had no change in price.

### **Conclusions**

The record of resales in Waihi East ranging from before and after January 1999 (commencement of the Martha Mine Extension Project) does not support the conclusion that Waihi East residential values have suffered as a result of the Martha Mine Extension Project. Indeed, the majority of properties which have resold over the period in question actually show an increase in price. The comparison or benchmark is with Waihi West where the impact of the Martha Mine Extension Project is either not noticeable or not as noticeable. Here the majority of properties resold showed a price decline with only 40% showing a price increase.

If the Martha Mine Extension Project has had a detrimental effect on Waihi East residential property values then the above results would have been reversed. In other words, the record of resales in Waihi East would have shown more properties suffering a price decline than has been the experience in Waihi West.

Accordingly, the factual market evidence does not support the contention that Waihi East residential property values have suffered as a result of the Martha Mine Extension Project.

I know of no other empirical analysis which could be undertaken to quantify the impact of the Martha Mine Extension Project on residential property values. The study which I have undertaken is considered to be the most robust and conclusive of any examination of the question, which could be undertaken.

### **General Market Conditions**

In the period since January 1999 the Waihi residential market has been influenced by a series of mining related events which have been subject to intense public and media scrutiny. Events in addition to the Martha Mine Extension include:

- + The cracking in Seddon Street and closure of a section of that road in 1999.
- + The collapse around the Brickfield Road/Barry Road area in December 2001 and evacuation of houses.
- + The collapse of a capped shaft in a private driveway in Roycroft Street in March 2001.



- + The release of the Council Technical Report in August 2002 identifying further properties at risk, with their subsequent evacuation.

I am advised that these events have created uncertainty and nervousness in the market place. Some home lenders placed a moratorium on lending on Waihi residences but this was not across the board.

The release of the Council report in August 2002 appears to have restored a degree of confidence, now enabling the identification of risk areas. Throughout this period the market has continued on, with local buyers displaying greater confidence than outsiders.

The number of residential sales recorded in Waihi during 2002 are comparable with those in Paeroa and Te Aroha. Average prices during 2002 were greater than those in Paeroa and lower than those in Te Aroha, maintaining a pattern which has been experienced in recent years.

It appears that public discussion of a closure date for the Martha Mine may have stimulated purchaser interest in properties which will benefit from close proximity to the future lake and rehabilitated parklands surrounding the lake. Vacant section sales to the east of the mine appear to be starting to reflect some sentiment or interest along these lines.

Please communicate with the writer if you require additional information.

Yours faithfully

**TelferYoung (Auckland) Limited**

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**Appendix F**  
**Case Study Research**

The following is a more detailed summary of the market evidence relied on in our assessment.

**"Gold mining – Environmental stigma or property value enhancement" Evan Gamby and Pamela Reid of Telfer Young Ltd presented to the 11<sup>th</sup> Annual Conference Pacific-Rim Real Estate Society (PRRES) Conference January 2005.**

- + This was a study on Waihi and the mining activity of Waihi Gold Company testing the nul hypothesis "environment stigma has occurred at Waihi as a result of gold mining activities as measured by an adverse effect on residential property values."
- + The study concluded that there was no support for the nul hypothesis, and suggested that the opposite was in fact inferred by the statistical evidence that mining activity had positively impacted on property values.
- + This study was related to the open pit mining (where noise, dust and visual considerations have greater potential effect) and therefore does not enable a direct comparison with the proposed underground mining within the GLPA however it does reinforce the overall positive effect that mining has had on property values in Waihi and as may be expected to continue with extended mining activity.

**Waterview Connection – Auckland City.**

- + This is a planned motorway section which will form part of the western ring route through Auckland. The Waterview link will be 4.5kms long of which 2.5kms are to be in a mostly bored twin tunnel, with three lanes in each tunnel. By 2026 it is expected to carry 83,000 vehicles a day.
- + The acquisition of the land rights for constructing the tunnel below privately owned property is being undertaken. The statutory regime differs to that under the Crown Minerals Act. The public works for the Waterview Link require the purchase or obtaining other property rights to the subsurface through which the tunnel will be located.
- + Valuations have been completed for the land acquiring authority and for the private land owners by a number of independent valuers.
- + It is our understanding that agreements are being achieved for the acquisition of the sub-surface rights typically between a nominal amount and 10% of the surface property's value with those properties at the higher end of this range being those situated closest to the tunnel portals where the depth of the tunnel is the least, and the potential effect from traffic may be encountered or adjacent to ventilation shafts at the surface.
- + The settlements to date have been by agreement and are a reflection of the acquiring authority's desire to achieve the ownership rights in an efficient and expedient manner.
- + The compensation for reduction in property rights as a consequence of their acquisition for the tunnel is being made under the Public Works Act 1981, initially through agreement with the land owner, although compulsorily if required. The property rights acquired, for which compensation or payment is made, will be detailed as easements on the title of the land in perpetuity as opposed to the existence of the Correnso underground mine, which in terms of mining activity will be a finite period of seven years and any future underground mining within the GLPA confined to the 20 year term sought.

## Market trends associated with “Unpopular Use”

- + Following the announcement of an unpopular use in a locality the market generally reacts in a manner where the uncertainty of the effects from the proposed unpopular use result in a decline in property values through a fear of the unknown. Unpopular uses can include prisons, halfway houses, landfills, schools, churches, service stations etc.
- + As the use is integrated into the market and in more recent times subject to the constraints of the conditions of the consent the market readjusts and is able to measure more accurately the effects (if any). The pattern that generally emerges is a recovery of property values back to the comparable existing level or close to it.
- + This trend or pattern in market activity has been identified in the evidence given to various Environment Court decisions, and endorsed by the Court. For example:

### ***Land Air Water Association v Waikato Regional Council (Decision number A110/01) - Hampton Downs Landfill***

- + Two valuers Mr Smyth and Mr Henshaw provided evidence that property values in the locality of a proposed land fill had been detrimentally affected. Because of the small number of properties within the immediate locality there were few sales upon which to base their conclusion.
- + Two other valuers (Mr Dean and Mr Sporle) presented evidence that the perception of the negative influence from an unpopular use may impact values in the short term but that they would then recover after a period of time. In particular Mr Dean provided good analysis of market activity around the Redvale landfill which is a more predominately residential based market. In the court's eyes this evidence clearly showed that in the long term no reduction in price had been experienced by the adjoining market.
- + The Court in assessing the property valuation evidence in that case reflected para 377 page 99:  
*“Mr Smyth said that in his view the market retreats from a proposal such as this initially – this has already happened in Hampton Downs – but eventually and over time the market will return. Of the valuers who gave evidence no one was able to give us an opinion as to when the market would return. There was no analysis of market trends in the areas around other landfills in the country<sup>99</sup> other than the market analysis presented to us by Mr Dean relating to the Redvale landfill. Based on that evidence, which is the best evidence we have, we find that while property prices may well fall for a short while, this will not be sustained and that such fall will be of a temporary nature only. We find that the effect will be minor.”*

Mr Bill Bailey is a rural valuer in our office that works in this area advises that the market has restored and that the existence of the Landfill is no longer having a negative impact on the rural values of that locality.

### ***Department of Corrections v Gisborne District Council (Decision A057/99)***

- + This was an appeal relating to the application for a land use consent to establish a community service centre, a probation office and periodic detention centre on a site in Gisborne.

- + Concern was raised with regard to a decrease in property values and an adverse economic effect on business in the immediate locality.
- + Evidence was presented by two valuers appearing in support of the respondent's case who, without substantiating evidence, stated that in their opinion properties in this locality would suffer a loss in value as a consequence of the periodic detention centre being established. Both related this loss to being perception of the "unfriendly activity".
- + Neither valuer appeared at the hearing, their evidence was therefore not able to be tested by cross examination.
- + Evidence was presented by Ms Daly, a Registered Valuer on behalf of the Department of Corrections, which included comparable situations of similar use being established in residential areas with sales evidence in those localities before and after the establishment of the unpopular use clearly showing that no market change had been retained from the establishment of that use.
- + Ms Daly's conclusions were as a result of her investigations and were referred Para 41 page 11 of the decision (paras 9.3 & 9.4 Daly):

*"history has shown that effects on value resemble a trough shaped curve following the announcement of the location of an unpopular use. Initially, media publicity fuels concerns however once such a use has quietly persisted over a period of time without causing disruption by a breach of peaceful and quiet enjoyment to surrounding property owners, concerns seem to settle down.*

*Experience shows that usually, effects on property values are not sustained over the longer term."*

- + In assessing the evidence provided to it, the Environment Court found: Para 44, page 11  
*"We accept the evidence of Ms Daly and conclude that while property prices may well fall for a short while this will not be sustained and that after a matter of some months prices will return to normal. We thus hold that, on the evidence, the concerns of the submitters cannot be sustained."*



### Discussion

- + The trough curve referred to in the *Department of Corrections* case is likely to vary dependent upon the perceived effects that an unpopular use may have in a community.
- + The greater perception of effect or more negative the use is perceived the deeper and longer the curve.
- + Should effects from an unpopular activity be actual or maintain a “real perception” within the market it is possible that the curve will not return to a similar level as before the activity was announced.
- + In our opinion such effects would have to be quite real and measurable for this to occur. This is not the case in relation to the GLP.
- + I am not aware of any case law where evidence was given relating to the potential influence on property values of a mining or tunnelling activity under residential areas.
- + I also note that it is generally accepted law that any effect of a proposal on property values is not a relevant effect for the purposes of the Resource Management Act.

### Valuation study of the Waihi market

- + Over the life of the current mining activity various reports have been prepared by
  - + Mr R P Young (Robertson Young Telfer – now TelferYoung)
  - + Messrs Cullen and Porter – Townsend Cullen and Associates
- + The most recent reports by Mr Young - November 2003 statement of evidence on the Favona underground mine concluded: para 5 page 2
 

*“I conclude that mining has increased Waihi residential property values over and above those which would have pertained had the mining activity never occurred. The Favona project will extend this beneficial effect beyond the proposed closing date for the Martha Mine.”*
- + The most recent report by Mr Cullen – December 2010 Statement of Evidence on the Trio Underground Mine Project. In response to concerns over the loss of value and saleability of properties raised in submissions, Mr Cullen concluded: para 63 page 13
 

*“As discussed earlier in our evidence, the effect is really one of perception, which is exacerbated by the media and at times by the real estate industry. The greatest potential impact on property values is at the time of the notification of a proposal, however, as demonstrated by the overall sales data in Waihi in the medium and long term property values are still at a higher level than they would have otherwise be without mining activity.”*



And para 65 page 13

*"I consider that the concerns of submitters around the impact of the Trio Underground Mine Project on market value and saleability are generally perceived only. I have reviewed data available to me, the assessment of environmental effects and the Council plans report which support this view."*

- + Mr Cullen then referred to the only property transaction close to the proposed Trio Underground Mine Project that occurred in the period between the announcement of the Trio underground mine and the hearing on the application for land use consent, noting that the sale does not reflect any negative market influence in his opinion:para 66 page 14

*"I consider the sale prices are representative of market value with no impact of possible mining activity in the vicinity."*



**The impact of transit corridors on residential property values by J A Kilpatrick, R L Throupe, J I Carruthers and A Krouse. Reported 2007.**

- + The authors of this report considered literature on transit corridors such as super highways and tunnels and believed existing literature focussed on the positive externality of transit access (e.g. inter-state access, transit station) and failed to isolate the negative externality of the corridor itself. They carried out an empirical study examining two situations: one with both access benefits and negatives, and another without the access benefit. The findings revealed that proximity to the transit corridor alone without direct access conveys a negative impact on nearby housing.
- + Within the study was consideration of residential property values above the Mt Baker tunnel in Seattle, USA.
- + Part of the study determined that there was a 20% reduction in the value of the residential property located right on top of the Interstate 90 tunnel relative to a residential property 300 feet (91 metres) away.
- + The study noted areas for further research pointing out that the residential property in this location was high priced and in a high demand area. It asked the questions “would the findings be the same were the neighbourhoods of less demand” and while the transit corridor and the residential development in this locality were both long established, would similar results emerge as a result of a changing neighbourhood with a new transit corridor?
- + Both questions highlight the complexity of market forces that influence price and the difficulty of isolating a single factor and its resulting impact on property price.

**Underground gold mining Ballarat and Stawell, Victoria Australia**

- + In December 2011 I visited Ballarat and Stawell and was accompanied by Mr Peter Zala a Certified Practising Valuer (API) of Leader Property Practice based in Ballarat.
- + Mr Zala is an experienced valuer undertaking a wide range of valuation work throughout country Victoria out of Ballarat. Mr Zala was also the Municipal Valuer in Stawell between 1983 and 2000.
- + Stawell is a town of similar size to Waihi population 6000. It has limited other economic drivers. The overall impression I gained is that the mining activity supports the local economy and property values are positively influenced as a consequence. There is no apparent locational factor relative to the underground mining with new residential development occurring evenly, as in fill, throughout the town.
- + The current mining takes place along the north eastern and northern end of the Town adjacent to the commercial centre and beneath residential development. I am told that underground mining occurred as far as the railway that runs through the town in a south east-north west direction. Patrick Street is a main thoroughfare into the Town centre from the south east and parallel to this is Fisher Street, mining has occurred to levels of 180m below the surface in these areas. Around Ligar Street, west of current mining and in the northern part of the Town it was at depths of between 300m and 900m. Today much of the mining is at significant depths of 1000m to 1600m.
- + Ballarat is a City of some 94,000 population. Mining has been a big part of the City’s history and underground mining has taken and is taking place under the commercial and residential areas. The mining is deep beneath the City approximately 1000m and does not impact on property values as a consequence of the day to day mining activity. There is no blasting heard or felt through vibration. There is very little evidence of the mining in and around the developed areas, access into the mines is from outside the City development. I viewed one ventilation shaft



constructed in a residential area, this was screened by concrete walls and appeared more like an industrial improvement. From time to time there are collapses of very old mine shafts where the original timbers supporting the shaft rot out (after 100yrs plus) and there have been instances of property loss as a consequence. The old shafts are quite prolific around the town and unless specifically identified their existence throughout the city doesn't influence value. The City has a reasonable range of economic drivers and is not wholly reliant on the mining industry as Stawell is.

- + In response to discussions we had while visiting the two locations and questions raised by ourself, Mr Zala has provided a report dated 23 January 2012 which is appended to our evidence.
- + His report examines the impact, if any, on property values in Ballarat and especially Stawell, occasioned by underground gold mining activities and reflects the discussions we had and our own observations.
- + His report covers:
  - + The movement of median house prices in Stawell relative to three other similar towns in western and central Victoria without mining.
  - + The movement of residential property values located above mining activity as compared to residential property distant from mining activity and
  - + Objections to rating valuations in Ballarat and Stawell.
- + Mr Zala's conclusions are as follows:

*"In both Ballarat and Stawell there is no community perceptions of any deleterious effects to property and property values over the lifespan of underground mining activities. This view is also unanimously held by all real estate agents operating in both Ballarat and Stawell, the property valuers responsible for the municipal rating valuations make no allowances for the underground mining activities whatsoever in the absence of any market evidence that would suggest otherwise."*
- + During our visit I met with real estate agents at the firm Monaghans who handle 50% of the residential market sales in Stawell. The agents confirmed that there is no market reaction to the location of underground mining in Stawell.
- + I saw a new house being built on Fisher Street over the location of underground drives and alongside this, residential development that has taken place over the last ten years, suggesting little market concern for the mining activity beneath.
- + I also met with Mr Brian Myles who was the Environmental Officer for Stawell Gold Mines Pty Ltd from 1986 till recently when he retired.
- + Mr Myles relayed the following information based on his time as Environmental Officer:
  - + Mining activity while being some 1000m to 1600m below the surface at present has in the recent past been at levels 200m – 300m below the surface. The depth of the mining has varied over the years.
  - + The mine portal adjoins the processing area. This development is similar to Waihi as it is screened from the Town by Big Hill.
  - + Blasting causes audible noise and a pressure wave that is felt as vibration and movement of things on the surface.
  - + Homes have been monitored over time for damage but no damage as a consequence of mining activity has been determined.



- + Current underground mining is on the eastern side of the Town but there are old workings under other areas of the Town.
- + The information obtained from this visit to Stawell and Ballarat in conjunction with the report prepared from Mr Zala gives me confidence with the conclusions I have arrived at relative to the Waihi East market and the proposed Correnso underground mine .

### Study of the Huntly East Subsidence Area

- + Market evidence between 2009 and 2011 analysed by TelferYoung (Waikato) Ltd in Huntly East shows that a stigma still applies to a publicly known and documented area where subsidence occurred as a consequence of underground coal mining.
- + There has been no significant subsidence in this area over the last 15 – 20 years to the extent that some new homes have been built and some existing homes have been relocated into the area.

Despite this, the analysis by our Company shows a discount of 15% on the sale of homes, that have the Crown guarantee,(refer “Land Subsidence Policy – south section old workings, Huntly East” below) in the subsidence area relative to residential property outside the subsidence area. The discount is greater for those property sales without Crown guarantee.

- + This discount is a measure of the market perception or fear of the risk of subsidence occurring again.
  - + The “Land Subsidence Policy – south section old workings, Huntly East” amended in 1997, provides for either repair or purchase of properties which suffer the effects of subsidence.
  - + If any owner wishes to sell and is unable to sell at a reasonable price, the Crown will purchase the property at the current market value as if no subsidence had occurred or was expected to occur in the vicinity.
  - + Once a property had been purchased by the Crown under this policy, it may then be on-sold with an encumbrance on the title absolving the Crown from further responsibility for compensation.
  - + Properties in Huntly East therefore fall into three categories as follows:-
- + Properties outside of the Subsidence Policy Area, not considered to be at risk.
- + Properties within the subsidence area that are covered by the Crown Compensation Policy. It is noted that properties within the subsidence area require a geotechnical report from an engineer prior to granting of a building consent.
- + Properties within the subsidence area that are not covered by the Crown Compensation Policy, having been on-sold by the Crown. It can be difficult to get insurance on these properties, although it is understood that there is one insurer prepared to take on this risk.
- + The geotechnical report prepared by Mr Parrott, and the evidence of Dr Richards, demonstrates that the Correnso Underground Mine and any future underground mine within the GLPA will be able to be designed and managed to ensure that there is no ground surface stability effects.
- + As such there is no direct correlation of the market evidence from Huntly East where subsidence has occurred and is clearly identified to the market and Waihi East where no ground surface stability effects are anticipated as a consequence of the Correnso Underground Mine or any future underground mining proposal.



## **Appendix G**

### **Leader Property Practice Market Report January 2012**

**Ballarat & Stawell**

**Mr Peter Zala**







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Report to Doug Saunders  
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By Peter Zala  
Leader Property Practice, Ballarat.

This report examines the impact, if any, on property values in Ballarat and especially Stawell, occasioned by underground, gold mining activities. The Ballarat mine began in 1984 and has 18kms of underground development. The Stawell mine began in 1981 and has approximately 150kms and is approaching 1600 metres below ground level.

This report is in three parts,:-

- 1) an examination of Median House Prices in Stawell, and three other reasonably comparable cities in western and central Victoria
- 2) Residential Market Evidence in Stawell. This study examines the value growth in streets likely to be affected by underground mining operations as against streets not likely to be affected, and spans the period of underground mining activity; and
- 3) The experience of objections to rating valuations in both Ballarat and Stawell over the life of the respective underground gold mines.

**Part 1 Median House Prices in Stawell, Ararat, Hamilton and Maryborough –**  
refer map of Victoria appended.

The following table charts the percentage increases in Median House Prices in these cities.

These other cities Ararat, Hamilton, and Maryborough are fairly similar to Stawell as to land size and character, and each would have fairly similar demographic patterns. Only Stawell has an operating mine. Hamilton began as a regional hub for the wider agricultural and pastoral district, while Ararat was established and settled by alluvial gold prospectors and diggers in the mid nineteenth century. Stawell and Maryborough had similar beginnings to Ararat, however, both Stawell and Maryborough had substantial deep lead mining from the mid nineteenth century to about the outbreak of the First World War in 1914, whereas deep lead mining was nowhere near as extensive in Ararat.

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In general terms each of these centres experienced only lacklustre growth after the Second World War until the 1980's with stronger growth being mostly confined to the larger regional centres in Victoria such as Ballarat, Bendigo, Horsham, Mildura, Shepparton, Warrnambool etc. From the 1980's there has been limited growth in the smaller centres.

	Median House Price % increases			
	1986-1996	1996-2007	2007-2010	1986-2010
Ararat pop. 8,000	42.1%	170.3%	25.6%	382.4%
Hamilton pop 7,500	43.9%	190.8%	(0.7%)	315.3%
Maryborough Pop. 7,500	54.7%	95.5%	17.3%	254.7%
Stawell Pop. 7,000	72.4%	76.0%	13.6%	244.8%

- Development of the Magdala Decline (Stawell gold mine) began in May 1981
- The first gold was produced in 1984
- In the years 1986 – 1996 Stawell experienced the strongest growth in house prices, mostly due to the filip to the local economy, which had for some years been languishing, occasioned by the start up of the mine.
- From the mid 1990's to mid 2000's the Stawell non mine economy continued to contract, and thus the local economy tended towards a "two speed economy" with the local economy becoming more reliant on the mine. By contrast, over this period a number of existing commercial and industrial enterprises expanded in Ararat and Maryborough and a number of new ventures were commenced.
- During the 2000's, Stawell's non mining economy has continued to languish whereas there has been growth and development in the commercial and industrial bases of Ararat and Maryborough.
- It is our view that the Stawell economy is very much a "two speed" economy, and without the mine, median house prices would have been considerable lower than those of the other centres

## Part 2

### Stawell Residential Market Evidence

Growth in Residential Values in streets likely to be adversely affected by mining operations in Stawell compared with similar evidence in streets considered not to be affected.

The three most likely streets to be affected are:-

- Patrick Street
- Fisher Street, and
- Newington Road - total of 22 sales of the three streets

Six control streets were chosen, being

- Clifton Avenue
- Ligar Street
- Cooper Street
- Seaby Street
- Wimmera Street; and
- Houston Street – a total of 26 sales over the six streets.

### Methodology

I began with sales in the above streets over the past two years. Of those properties sold in that time, I then went back and researched all previous sales on each of those properties, *over the period covering the life span of the mine*. Between each sale I measured the percentage rate of increase, and then annualised the rate over the period between each sale in order to arrive at the annual average growth in value over the total period.

This exercise produced the following result:-

<b>Annual average property value growth in the pilot streets</b>	<b>7.6%</b>
<b>Annual average property value growth in the control streets</b>	<b>8.0%</b>

The conclusion, therefore, is that there has been no material difference in property value growth in streets likely to be affected as compared with those streets not affected.

It can also be noted that over the period of the life span of the mine to date, the construction of new houses has continued in the pilot streets some as recently as within the last six months. This development in the pilot streets has been on no noticeable less a scale than in the control streets.





### Part 3

#### **The experience of Objections to the Municipal Rating Valuations in both Stawell and Ballarat over the life span of underground , deep lead, mining in both cities.**

Objections to municipal valuations are always a litmus test as to any value problems in a neighbourhood.

I have spoken with the valuers responsible for rating valuations in the City of Ballarat as follows:-

Vince Braybrook 1983 – 1990

Adrian Doyle 1990 – 1995

Vince Braybrook 1995 - 2011

All report no objections lodged during their tenure.

Additionally I was responsible for the municipal valuations for some seventeen years in Stawell and I have spoken with my predecessor, Ian Wilson, and neither of us received any valuation objections over the following period:-

Myself 1983 – 2000

Ian Wilson 2000 – current

I did receive one objection during my period, but this related to a noise nuisance on the surface in relation to rock screening activities close to the mine head and not to underground activities.

It is of some interest to note that at both Ballarat and Stawell underground explosions and some minor vibration can be detected on the surface at numerous locations, both currently and over the life span of both mines.

### Conclusions

In both Ballarat and Stawell there is no community perceptions of any deleterious affects to property and property values over the lifespan of underground mining activities. This view is also unanimously held by all real estate agents operating in both Ballarat and Stawell, and the property valuers responsible for the municipal rating valuations make no allowances for underground mining activities whatsoever in the absence of any market evidence that would suggest otherwise.

It is a widely held view that the underground mining activities under Stawell have considerably lessened the affects of a deteriorating local economy.

Peter J Zala, FAPI  
Certified Practising Valuer  
for Leader Property Practice  
23 January, 2012

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23 January 2012







## Appendix H

### Assessment of Vibration effects on property values



## ASSESSMENT OF VIBRATION EFFECTS ON PROPERTY VALUES

An area of housing in Waihi East was identified on the basis of the levels of vibration as monitored from mining at the Favona Underground Mine.

This area was identified on the basis of the frequency of blasts and the level of vibration monitored at each property. A weighting based on NWG's Amenity Effect Programme (AEP) payment rates was assigned to each vibration level to produce a weighted average number of vibrations. The weighted average for each property was calculated as shown in the following example;

PPV >1.5mm/s - <3.5mm/s	30 blasts x 1	=30
PPV >3.5mm/s - <5mm/s	5 blasts x 3	=15
PPV >5mm/s - <6mm/s	1 blast x 10	=10
PPV >6mm/s	0 blasts x 20	= <u>0</u>
Weighted Number of blasts		55

Based on a distribution of the weighted vibration number we plotted the properties under the following categories.

- A – properties where the weighted number of vibration events was greater than or equal to 31 in the 6 month period.
- B – properties where the weighted number of vibration events was greater than 10 or less than or equal to 30 in the 6 month period.
- C – properties where the weighted number of vibration events was less than or equal to 10 in the 6 month period.

The location of the properties is shown at the end of this appendix.

We analysed sales of property from within the area covered by these properties that sold before mining at the Favona Underground Mine took place and then re-sold after the mine was in full production. This provides an average monthly change in property value for each property between the sale dates.

We analysed re-sales of property in Waihi East to assess a similar average monthly rate of value increase between the sale dates. These properties lie outside the area where Favona vibration may be perceptible.

Re-sales of property in Waihi West were also analysed to provide a further basis of comparison as discussed below

The evidence relating to those properties near Favona is limited but it does reflect levels of value change (increase) similar to the increase in value experienced from re-sales of property outside of the area associated with vibration from Favona.





This would suggest that vibration, at the levels and frequency experienced from Favona, is not influencing property values within the area where vibration levels trigger complaint. In the same way, we conclude that vibration associated with the Correnso Mine should have little to no influence on property values, including those properties closest to Correnso.

The resale evidence from the Favona monitored vibration area in Waihi East is tabled below:

Category	Address	Vibration category A - C	Sale Date	Gross Sale Price	Total Price % Change	Price % Change Per Month
RD197B	68 BARRY RD	C	1/05/1998	\$ 143,000		
RD197B	68 BARRY RD	C	9/01/2007	\$ 325,000	127%	1.20%
RD196B	20 STAFFORD ST	B	28/10/2002	\$ 132,000		
RD196B	20 STAFFORD ST	B	24/09/2007	\$ 279,000	111%	1.86%
RD191B	71 BARRY RD	C	2/09/1999	\$ 135,750		
RD191B	71 BARRY RD	C	15/12/2009	\$ 240,000	77%	0.61%
RD198B	18 SMITH ST	C	6/08/2002	\$ 152,000		
RD198B	18 SMITH ST	C	30/11/2009	\$ 317,500	100%	1.22%

The following table is a summary of re-sales of property outside the Favona monitored vibration area in Waihi East and from Waihi West.



Market Period	Average increase per month  Property re-sales beyond the identified area	Average increase per month  Property re-sales Waihi West
Long term 1997 – 2010	.90% per mth	.51% per mth
Short Term 2002 – 2010 (spanning the market peak)	1.1% per mth	.50% per mth
Short Term 2003 – 2007 (including market peak)	2.69% per mth	2.21% per mth

The varied resale periods account for external factors that materially impacted property values such as the GFC.

The re-sales of property from within the Favona area do not include any property within Category A, the properties experiencing the highest level of frequency and vibration magnitude. There are only a small total number of re-sales which means that the results need to be treated with some caution.

The proposed maximum level of vibration for the Correnso Underground Mine (5mm/s) is less than the current consent for the Favona (6mm/sec). The estimation of the number of blasts and in particular blasts creating vibration above 3mm/sec are similar for both mines.

The following table is a summary of the number of forecast blast events (ppv >3.0mm/s) at each of the test locations annually over the life of the Correnso mine.



Address	Year								Proximity
	Number of Blast Events (>3.0mm/sec) per year								
	2013	2014	2015	2016	2017	2018	2019	AVGE/Yr	
6 Stafford St	2	0	2	2	2	5	3	2	Outer
4 Dobson St	0	1	4	3	2	7	7	3	Fringe
68 Barry Rd 01	5	0	3	13	14	12	5	7	Fringe
68 Barry Rd 02	5	0	4	15	16	14	4	8	Fringe
67 Gladstone Rd	0	0	10	9	9	18	17	9	Fringe
East School 02	0	0	15	15	9	24	24	13	Above
17 Richmal St	0	0	13	13	12	28	25	13	Fringe
East School 03	0	1	19	19	10	27	30	15	Above
East School 01	0	1	18	19	10	28	31	15	Above
57 Barry Rd	7	1	15	34	32	29	18	19	Above
18 Gladstone Rd	1	1	24	36	25	28	27	20	Above
6 Mataura Rd	3	11	53	59	37	46	61	38	Above
31 Gladstone Rd	3	6	51	59	35	53	69	39	Above

Table summary of blasts >3.0mm/sec from Dr Heileg analysis 3 Sept 2012



The forecasting shows the majority of properties in the “Fringe” and “Outer” proximities will experience a low level of blasts above the 3.0mm/s threshold and that the higher level to be experienced will be those properties immediately above the current mining activity at the time.

The evidence from monitoring residential property adjacent to Favona and from Stawell would suggest the detraction to property value would be either nil or less than minor as a result of the effect of blast vibration.

The number of blast events forecast for the “above” Correnso properties is greater at the lower levels of vibration but less at the higher levels of vibration, when compared to the Favona historical vibration data of the Boyd Road and Barry Road locality. We do expect some initial market perception of greater vibration simply because of the location of the properties above the mining activity as compared to those properties in the Boyd Road and Barry Road locality that are slightly removed from the actual mine location.

Current records show that the majority of complaints about vibration are received from a small number of complainants. This would further support our conclusion that property values are unlikely to be affected by the proposed level and number of vibration events within the consent limits.



**Appendix I**

**Map of the Martha Underground Mine**





## Appendix J

### Location of property relating to Project Martha

#### “Proximity Locations”





### Key

Red “Above” property

Blue “Fringe” as relates to residential property effects

Orange “Outer” is the approximate perimeter of 3mm/s vibration for Project Martha underground over its 11-year life





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