

MACRAES PHASE III PROJECT
ASSESSMENT OF ECONOMIC IMPACTS

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1. INTRODUCTION

- 1.1** Macraes Gold Project commenced operations in 1990 following the granting of initial consents in 1988. In 1992, 1997, 2000, 2001, 2002, 2004 and 2006 further consents were issued in relation to various expansions in both the rate of production and physical elements of the mine (pits, waste rock stacks and storage facilities for tailings and process water). In 2002 consent was granted for the development of a heritage and art park (HAP) on the site as part of the land rehabilitation package instead of the land reverting to pasture as initially intended.
- 1.2** OceanaGold (New Zealand) Limited is now seeking an extension to the consented life of the Macraes Gold Project. The extension called the Macraes Phase III Project will take the consented mine life through to 2020 or potentially longer, instead of the mine closing in 2012. The processing rate and intensity of operations on the site will be slightly higher than current levels, although production at the Fraser's underground mine is expected to cease at the end of 2014 and current planning is for the Macraes opencast mining operations to be scaled back towards the end of the mine's life (i.e. in 2019 and 2020). Should the mine no longer be operating after 2020 there will still be employment at the mine site for up to 18 months as rehabilitation works are undertaken. Environmental monitoring work would still be required on an intermittent basis.
- 1.3** Also it is now proposed to implement a new closure strategy to replace the Heritage and Art Park. The strategy will comprise: two lakes formed from pit excavations; bike trails and tracks; formation of a Community Development Trust; gifting Stanley's Hotel to the Trust and provision of a significant fund to the Trust to support local community initiatives and encourage business development. Such initiatives could include upgrading Stanley's Hotel and upgrading the town water supply, but ultimately that will be at the discretion of the Trust.

- 1.4** Therefore even if the mine does cease production in 2020, rehabilitation works at the site and initiatives funded by the Community Trust Fund are expected to cushion the reduction in employment and economic activity generally as a consequence of the mine closure (see Section 8 of this report). Of course prior to 2020, successful exploration work at the site may provide opportunities to extend the life of the Macraes Gold Project beyond 2020.
- 1.5** The purpose of this report is to consider the economic impacts of the proposed extension of the mine's life at the national, regional and local levels.
- 1.6** This report is divided into 8 parts (in addition to this introductory section). These cover:
- (a) A summary of results from past studies which have been undertaken regarding the economic impacts of the Macraes Gold Project;
 - (b) A description of the key economic drivers of the Waitaki District economy;
 - (c) A consideration of the relevance of economic effects under the Resource Management Act (RMA);
 - (d) The national, regional and local economic benefits of the mine's current operations;
 - (e) The additional national, regional and local economic benefits of extending the life of the mine;
 - (f) Potential economic costs of extending the life of the mine;
 - (g) The economic implications of the revised mine closure strategy; and
 - (h) Some overall conclusions.
- 1.7** This report considers only the economic impacts of extending the life of the mine out to 2020. The economic and (non economic) impacts of further extending the life of the mine will need to be assessed if and when consents are sought for any such further extension.

2. PREVIOUS STUDIES OF MACRAES GOLD PROJECT'S ECONOMIC IMPACTS

Brent Wheeler & Co. Ltd (1996)

- 2.1** In its 1996 study¹, Brent Wheeler & Co. Ltd estimated the direct output, employment and income impacts for the Otago region of the Macraes Gold Project for the year 1995 and made projections for these impacts over the period 1996 to 2000. The report identifies both direct effects (i.e. the output, employment and income generated by the mine itself) and the indirect (or 'multiplier') effects, which are generated through the rest of the regional economy as a result of the mine and its staff purchasing goods and services from businesses within the Otago region.
- 2.2** In 1995, the value of output from the mine was \$88 million², there were 220 full time equivalent (FTE) employees and subcontractors engaged by the project and their earnings totalled \$12 million. Using a set of Otago regional multipliers³ the report estimated the direct plus indirect effects as \$198 million for the value of output, 800 jobs and \$32 million of income.
- 2.3** For each of the next five years (i.e. 1996 to 2000 inclusive) direct output was projected to average \$140 million, direct employment 510 jobs and direct income \$21 million. This included the output, employment and income effects of additional construction activity at the site to facilitate the mine's expansion as well as the ongoing mining operation itself. The average annual direct plus indirect effects were projected to be \$346 million for the value of output, 1,880 jobs and \$63 million of income.⁴
- 2.4** The amount of gold produced by the mine in 1995 is recorded as 116,365 ounces, up from 81,635 ounces in 1991, the first full year of the mine's operation. In each of 1996 and 1997 production was expected to be 130,000 ounces, rising to

¹ The Economic Impacts of the Macraes Gold Project; Brent Wheeler & Co. Ltd; December 1996.

² Assumed to be 1995 price terms.

³ The regional multipliers used were 2.24 for output, 3.66 for employment and 2.67 for income.

⁴ Since the future activities involved a combination of construction and mining separate regional multipliers were applied to the construction activity – 3.10 for output, 3.79 for employment and 4.08 for income.

230,000 ounces in 1998 and then increasing to 350,000 ounces in each of 1999 and 2000.

- 2.5** The report notes that the company paid rates of \$120,000 on its 1,500 hectare site. This was equivalent to 1% of the total rates income of the Waitaki District Council in 1995. As part of the Brent Wheeler & Co. Ltd study a survey of local businesses in the Palmerston and Waikouaiti was undertaken. The key conclusions from the survey were (i) the Macraes Gold Project was an active purchaser from local Palmerston and Waikouaiti businesses; (ii) the contribution from the mine to business turnover was widely spread throughout local businesses, having a minor effect on a substantial proportion of businesses while few businesses relied substantially on the mine for their turnover; (iii) employees of the mine were regular purchasers of goods and services from local businesses making a significant positive impact on their turnover; and (iv) the mine had bought people to the area offsetting the loss of people which occurred after closure of the Cherry Farm hospital at Waikouaiti.

Brent Wheeler & Co Ltd (2001)

- 2.6** In May 2001 the data from the Brent Wheeler & Co. Ltd report was updated.⁵ For the Otago region over the 10 year period 1990 to 1999 the updated report estimated that the mine had produced 1 million ounces of gold worth \$768 million⁶ and 56,000 ounces of silver worth \$392,000; the mine had made purchasers from Otago businesses worth \$463 million; created 297 jobs; and paid \$47.2 million in wages and salaries. Using multipliers of 1.67 for expenditure, 2.45 for employment and 2.71⁷ for income the direct plus indirect economic impacts of the mine were estimated to be \$773 million of expenditure, 728 jobs and \$128 million of income.

⁵ See Post-Mining Landuse/Rehabilitation (Macraes Heritage and Art Park) Assessment of Environmental Effects; Anderson, Lloyd, Caudwell; May 2001).

⁶ It is not clear what price basis has been used for the monetary amounts quoted in this report.

⁷ The income multiplier is surprisingly higher than the employment multiplier. Given the relatively high wage and salary levels for mine employees it would be expected that the income multiplier would be lower than the employment multiplier.

NZ Institute of Economic Research (2003)

2.7 In July 2003 the NZ Institute of Economic Research (NZIER) undertook a study⁸ of the economic impacts of the Macraes Gold Project at the national level. The study looked at the economic impacts of the mine over the 13 year period 1990 to 2002. In 1990 it had produced 8,455 ounces of gold, rising to 162,078 ounces in 2002. The total produced over the period was 1,492,058 ounces earning \$1,492 million in revenues. Of this revenue 2.4% (\$26 million) was paid to the Government as royalties and 6% (\$63 million) was paid to the Government as direct taxes. Going forward NZIER predicted over the next 10 years (2003-2012 inclusive) production would average of 161,558 ounces of gold per annum, revenues would average \$117 million per annum, royalty payments would average \$1 million per annum and direct tax payments would average \$4 million per annum. Forecast royalties were 1% of revenues and direct tax payments 3.1% of revenues.

2.8 The NZIER report records in 2001, the Macraes Gold Project contributed 0.05% of New Zealand's GDP and over the period 1990 to 2001 it contributed 0.06% of New Zealand's GDP. In 2001 the value of exports of gold from the mine was 0.27% of national exports. Also in 2001 direct tax and royalty payments totalled 0.4% of the New Zealand Government's total tax revenue. The report states:

“Although these figures may appear small in the national economy, there are few individual site operations in New Zealand that would register much larger contributions to the national aggregate measures.”

2.9 NZIER also used an economic model to test the impacts for the New Zealand economy if the mine was to increase production by 20%, 40% and 60%. These increases in production levels were estimated to lead to increases in national GDP of 0.03%, 0.05% and 0.06% respectively.

⁸ The Value of Gold. The National Economic Benefit of GRD Macraes Gold Mining in New Zealand; NZ Institute of Economic Research; 15 July, 2003.

Infometrics Ltd (2010)

2.10 In 2010 Infometrics Ltd (Infometrics) prepared a report⁹ on the contribution to the New Zealand economy of OceanaGold total operations in New Zealand over the period 2007 to 2009. This includes both the Macraes Gold Project as well as OceanaGold's mining operations at Reefton on the West Coast.¹⁰ The company's contribution to New Zealand's GDP was estimated at 0.13% over the period 2007 to 2009, or 0.17% over the period 2008-09, since 2007 was an abnormal year due to significant development costs being incurred in that year.

2.11 Specifically, with respect to the mine at Macraes Flat, the Infometrics report records that around 100 tonnes (3.5 million ounces) of gold has been produced since production began in 1990. This had a value of \$2.9 billion in 2009 prices. On the basis of 970 hectares of the mine's 1,500 hectare site having been "disturbed", the report states that the value of production equates to \$3 million per hectare. Infometrics compared this to an estimate of dairy farming export values of \$3,900 per hectare per annum and noted that on the assumption that dairy prices remained at their recent levels it would take 767 years of dairy production on the land to match the revenue earned by the mine over the past two decades. In terms of contribution to GDP¹¹ the comparative figures are \$2.4 million per hectare for the Macraes Gold Project versus \$4,160 per hectare per annum for dairy farming.

3. THE WAITAKI DISTRICT¹² AND OTAGO REGIONAL ECONOMIES

⁹ Contribution of OceanaGold to the New Zealand Economy; Infometrics Ltd; August 2010.

¹⁰ OceanaGold's Reefton mine is reliant on the processing plant at Macraes Flat for the processing of the ore produced. Should the Macraes Flat operations cease, it is likely gold mining operations at Reefton will also cease, since it would be uneconomic to build a processing plant at the Reefton mine for only its ore production.

¹¹ Or value added.

¹² Macraes Flat, the site of the Macraes Gold Project is located within the Waitaki District. However the local economy influenced by the mining operations extends beyond the Waitaki District boundaries since a number of mine employees and contractors' staff reside in the north Dunedin City towns of Waikouaiti, Hyde and Middlemarch. Also the Project makes purchases from these centres. Later in this report the local economic impacts are assessed for an area identified as north-east Otago, which includes the Waitaki District and these north Dunedin City towns.

Population¹³

- 3.1** Data from Statistics New Zealand show that the population of the Waitaki District has shown little growth over the past 10 years. In 2001, Waitaki's population was estimated at 20,500 and by 2010 this has grown to only 20,800 – i.e. an increase of only 1.5%. Over this same period Otago's population has grown from 188,300 to 207,400, an increase of 10.1%, whilst New Zealand's population has grown by 12.6%.
- 3.2** Statistics New Zealand is forecasting the Waitaki District population to fall over the next 20 years. Its 'medium'¹⁴ population projections have the Waitaki District's population falling to 18,500 by 2031 – i.e., a drop of 2,300 or 11.1% from the Statistics New Zealand's estimated 2010 population. For Otago, population is projected to grow to 225,900 – i.e. a gain of 18,500 or 8.9% on estimated 2010 population. The comparative figures for New Zealand show a projected increase in population of 17.9% over the same 21-year period.

Employment

- 3.3** November 2010¹⁵ industry employment data highlight the Waitaki District's reliance on the primary sector. The agriculture (forestry and fishing)¹⁶ industry group accounted for 13.6% of the labour force against a national percentage share for this industry group of only 5.7%. This reliance on the agricultural sector is further illustrated by 1,480 jobs (15.7% of the Waitaki District labour force) in the manufacturing sector being in the food manufacturing industry group¹⁷.

¹³ Data in this section from Statistics New Zealand.

¹⁴ Statistics New Zealand produces high, medium and low projections corresponding to different assumptions about fertility, morbidity and migration. The projections also incorporate information about the existing age structure of the population within each district. The projections do not incorporate assumptions about the likely economic performance of different industries within each sector.

¹⁵ Source: Department of Labour.

¹⁶ The forestry and fishing labour force within the Waitaki District is estimated to be only about 15 employees.

¹⁷ Source: Department of Labour.

- 3.4** The only other industry groups in which the Waitaki labour force is “over represented” as compared to the national labour force is in the mining industry group (4.3% of the workforce as compared to 0.3% nationally), as a consequence of the Macraes Gold Project, construction (6.2% of the workforce as compared to 6.0% nationally) and accommodation, cafes and restaurants (7.7% of the workforce as compared to 6.9% nationally). As would be expected for a non-metropolitan area, the Waitaki District is “under represented” in the wholesale trade, education and training, professional, scientific and technical services, transport, postal and warehousing, arts and recreation services, information, media and telecommunications, finance and insurance services, property and business services, government administration and defence, and other services industry groups. Total employment in the Waitaki District grew by 4.2% over the period 2006 to 2010, as compared to employment growth for the whole of New Zealand of 0.04%.
- 3.5** For the Otago region as a whole employment data suggest the most significant sectors are healthcare and social assistance (11.3% of the region’s workforce compared to 10.8% for the country as a whole), retail trade (11.0% of the region’s workforce compared to 10.3% for the country as a whole), accommodation and food services (10.3% of the region’s workforce compared to 6.9% for the country as a whole), education and training (10.3% of the region’s work force compared to 8.7% for the country as a whole) manufacturing (10.1% of the region’s workforce compared to 11.5% for the country as a whole),and agriculture forestry and fishing (8.3% of the region’s workforce compared to 5.7% for the country as a whole). Mining makes up just 0.6% of Otago’s workforce but this is still greater than the 0.3% for the country as a whole.
- 3.6** Therefore the Macraes Gold Project has helped to diversify the Otago regional economy and especially the Waitaki District economy, which remains heavily dependent upon agriculture and the processing of agricultural products. The ability of the mine to help offset periodic downturns in the agricultural sector was

identified in the 1996 Brent Wheeler & Co. Ltd survey of local businesses in Palmerston and Waikouaiti.

4. ECONOMICS AND THE RMA

Community Economic Wellbeing

4.1 Economic considerations are intertwined with the concept of the sustainable management of natural and physical resources, which is embodied in the RMA. In particular, Part II section 5(2) refers to enabling “*people and communities to provide for their ... economic ... well being*” as a part of the meaning of “*sustainable management*”, the promotion of which is the purpose of the RMA.

4.2 As well as indicating the relevance of economic effects in considerations under the RMA, this section also refers to “*people and communities*” (emphasis added), which highlights that in assessing the impacts of a proposal it is the impacts on the community and not just the applicant or particular individuals or organisations, that must be taken into account. This is underpinned by the definition of “*environment*” which also extends to include people and communities.

Economic Efficiency

4.3 Part II section 7(b) of the RMA notes that in achieving the purpose of the Act, all persons “*shall have particular regard to ... the efficient use and development of natural and physical resources*” which include the economic concept of efficiency¹⁸. Economic efficiency can be defined as:

“the effectiveness of resource allocation in the economy as a whole such that outputs of goods and services fully reflect consumer preferences for these goods and services as

¹⁸ See, for example, in *Marlborough Ridge Ltd v Marlborough District Council* [1998] NZRMA 73, the Court noted that all aspects of efficiency are “*economic*” by definition because economics is about the use of resources generally.

*well as individual goods and services being produced at minimum cost through appropriate mixes of factor inputs*¹⁹.

- 4.4** More generally economic efficiency can be considered in terms of:
- Maximising the value of outputs divided by the cost of inputs;
 - Maximising the value of outputs for a given cost of inputs;
 - Minimising the cost of inputs for a given value of outputs;
 - Improving the utilisation of existing assets; and
 - Minimising waste.

Viewpoint

- 4.5** An essential first step in carrying out an evaluation of the positive and negative economic effects of a development project is to define the appropriate viewpoint that is to be adopted. This helps to define which economic effects are relevant to the analysis. Typically a district or wider regional viewpoint is adopted and sometimes even a nationwide viewpoint might be considered appropriate²⁰.
- 4.6** For the proposed extension to the life of the Macraes Gold Project and revised land rehabilitation plan it is appropriate to consider the north-east Otago economic impacts given the likely economic impacts for local residents and businesses, where north-east Otago is defined to include the Waitaki District (including Macraes Flat, Oamaru, Dunback and Palmerston) and the northern part of Dunedin City (including Waikouaiti, Hyde and Middlemarch).²¹ It is also appropriate to consider wider Otago regional and national level economic impacts.

¹⁹ Pass, Christopher and Lowes, Bryan, 1993, *Collins Dictionary of Economics* (2nd edition), Harper Collins, page 148.

²⁰ For example, there was an inference that the consideration of "Project Aqua" and other Waitaki River water allocation cases by a central government appointed body was to broaden the viewpoint from a local district or regional level to a wider national level.

²¹ OceanaGold data on the residence of their own staff (i.e. excluding contractors engaged on site at Macraes Flat) shows 32.7% reside in Dunedin, 27.5% reside in Palmerston, 19.4% reside in Waikouaiti, 8.8% reside in Oamaru, 3.1% reside in Waitaiti and Warrington, 1.7% reside in Dunback and 6.5% reside elsewhere within Wataki District and Dunedin City. This indicates that at least 57.4% reside in Waitaki District or Waikouaiti.

4.7 There are also private or financial costs and benefits associated with the Project. If consents are granted, and OceanaGold gives effect to those consents by proceeding with the proposed Macraes Phase III Project, then it can be assumed that these private or financial costs and benefits have been responsibly and properly analysed and that from the viewpoint of those with money at risk, the expected financial benefits exceed the expected costs. Accountability for accuracy of the financial analysis clearly rests with OceanaGold and ultimately the net financial benefits OceanaGold might receive from the Project are not directly relevant to the assessment of effects under the RMA. The focus of this report is therefore on the wider economic effects on parties other than OceanaGold and its customers. Economists refer to such effects as “externalities”²².

5. ECONOMIC BENEFITS OF MACRAES GOLD PROJECT’S CURRENT OPERATIONS²³

Increased Employment, Wages and Salaries and Other Expenditure

5.1 The Macraes Gold Project currently involves gold production from the Macraes opencast mine and Frasers underground mine as well as the processing of ore from the Reefton mine on the West Coast. In 2010, 268,602 ounces of gold were produced with an estimated value of \$423 million, whilst production is estimated to be 270,000 ounces in 2011, with an estimated value of \$488.5 million²⁴.

5.2 Employees and contractors engaged at the site in 2010 total 563, with a further 28 engaged in the Dunedin head office. In other words for the Otago region (including Macraes Flat and Dunedin) there are 591 jobs directly created by the Macraes Gold Project. Wage and salary payments for 2010 are estimated at \$41.2 million for the Otago region - \$2.04 million for Dunedin staff and \$39.2 million for those employed at Macraes Flat.

²² Defined as the side effects of the production or use of a good or service, which affects third parties, other than just the buyer and seller.

²³ Data in this section provided by OceanaGold unless otherwise stated.

²⁴ Assumes average gold price of US\$1375 per ounce and exchange rate of NZ\$1 = US\$0.76.

- 5.3** Expenditure in 2010 by the Macraes Gold Project for goods and services other than labour is estimated to total \$153.8 million. Of this other expenditure, it is estimated 6% (\$9.2 million) is spent in north-east Otago - i.e. the Waitaki District (including Macraes Flat, Oamaru, Dunback and Palmerston) and the northern part of Dunedin City (including Waikouaiti, Hyde and Middlemarch). An estimated 29% (\$44.6 million) is spent in Dunedin City itself, and 1% (\$1.5 million) in the rest of Otago implying a total of 36% (\$55.3 million) for the whole Otago region.²⁵ The types of industry groups to benefit include those involving lime production; automotive equipment supply, maintenance and repairs; electrical equipment installation, maintenance and repairs; and building contractors.
- 5.4** In addition to these direct economic impacts there are indirect impacts arising from:
- The effects on suppliers of goods and services provided to the Macraes Gold Project (i.e. the “forward and backward linkage” effects); and
 - The supply of goods and services to employees of OceanaGold and its contractors and to those engaged in supplying goods and services to OceanaGold and its contractors (i.e. the “induced” effects). For example, there will be additional jobs and incomes for employees of supermarkets, restaurants and bars as a consequence of the additional expenditure by these employees.
- 5.5** District and regional multipliers can be estimated to gauge the size of these indirect effects. The size of the multipliers is a function of the extent to which a district or regional economy is self-sufficient in the provision of a full range of goods and services and the district’s proximity to alternative sources of supply.

²⁵ The distribution of the remaining 64% of expenditure is Government 6% (\$9.2 million), other South Island 18% (\$27.7 million), North Island 15% (\$23.1 million) and overseas 25% (\$38.4 million). Payments to Government include royalties as well as payments to other Government agencies such as IRD, ACC, MAF and NZTA.

5.6 District multipliers typically fall in the range of 1.5 to 2.0²⁶ and conservatively taking the low point of 1.5 for incomes and other expenditure and 2.0 for employment²⁷, implies total north-east Otago economic impacts (i.e. direct plus indirect impacts) for the Macraes Gold Project of:

- 1,126 additional jobs;
- \$58.8 million per annum in additional wages and salaries; and
- Additional other expenditure of \$13.8 million per annum.

5.7 Regional multipliers are higher than district multipliers because a region is more self sufficient in the provision of goods and services. The 1996 Brent Wheeler & Co. Ltd report referred to earlier in this report, produced Otago regional multipliers for gold mining of 2.24 for expenditure, 3.66 for employment and 2.67 for wages and salaries. In 2001 updated multipliers of 1.67 for output, 2.45 for employment and 2.71 for wages and salaries were estimated. Using these more up-to-date multipliers in conjunction with the estimated 2010 direct employment, incomes and other expenditure of the Macraes Gold Project for the Otago region produces total regional economic impacts (i.e. direct plus indirect impacts) from the Macraes Gold Project of:

- 1,448 additional jobs;
- \$111.7 million per annum in additional wages and salaries; and
- Additional other expenditure of \$92.4 million per annum.

5.8 In addition the Government will receive an estimated \$6.1 million in royalty payments for gold production from the Macraes Gold Project in 2010.

²⁶ For example, employment and income multipliers estimated for the construction and operation of the proposed new Holcim cement plant at Weston in the Waitaki District ranged between 1.58 and 1.93 for employment and 1.46 and 1.58 for incomes. (See Environment Court Evidence of Michael Copeland in *Holcim New Zealand Limited v Waiareka Valley Preservation Society and others*, November 2008.)

²⁷ Given the relatively high wages of employees and contracting staff of the Macraes Gold Project, the income multiplier should be lower than the employment multiplier since many of the additional jobs created elsewhere in the local economy are likely to be at a lower wage level. Also this sort of relativity is found in the 1996 Brent Wheeler & Co. Ltd report multipliers for the whole Otago region. However these 2001 multipliers have been used in preference to the 1996 multipliers since they are more recent and the expenditure and employment multipliers are more conservative. If it was felt important the multipliers could be updated using more recent data. However the multipliers used provide reasonable order of magnitude estimates for the Macraes Gold Project expenditure, employment, and income effects.

Economic Benefits from Increased Economic Activity

5.9 As indicators of levels of economic activity, economic impacts in terms of increased expenditure, incomes and employment within north-east Otago and the Otago region are not in themselves measures of improvements in economic welfare or economic wellbeing. However, there are economic welfare enhancing benefits associated with increased levels of economic activity. These relate to one or more of:

- Increased economies of scale: Businesses and public sector agencies are able to provide increased amounts of outputs with lower unit costs, hence increasing profitability or lowering prices;
- Increased competition: Increases in the demand for goods and services allow a greater number of providers of goods and services to enter markets and there are efficiency benefits from increased levels of competition;
- Reduced unemployment and underemployment²⁸ of resources: To the extent resources (including labour) would be otherwise unemployed or underemployed, increases in economic activity can bring efficiency benefits when there is a reduction in unemployment and underemployment. The extent of such gains is of course a function of the extent of underutilised resources within the local economy at the time and the match of resource requirements and those resources unemployed or underemployed within the local economy; and
- Increased quality of central government provided services: Sometimes the quality of services provided by central government such as education and health care are a function of population levels and the quality of such services in a community can be

²⁸ Underemployment differs from unemployment in that resources are employed but not at their maximum worth; e.g. in the case of labour, it can be employed at a higher skill and/or productivity level, reflected in higher wage rates.

increased if increased economic activity maintains or enhances population levels.

5.10 It is reasonable to presume that increases in economic activity (i.e. employment, incomes and other expenditure) within north-east Otago and the Otago region as a consequence of the Macraes Gold Project would give rise to one or more of these four welfare enhancing economic benefits for the local and regional communities. For example, increases in population in north-east Otago help underpin local school rolls. Data provided by OceanaGold indicate that the children of OceanaGold staff and permanent contractors at Macraes Flat make up

- 39% of pupils at East Otago High School (79 out of 202);
- 43% of pupils at Palmerston Primary School (49 out of 104);
- 48% of pupils at Waikouaiti Primary School (39 out of 82);
- 33% of pupils at Flaggswamp Primary School (4 out of 12);
- 44% of pupils at Karitane Primary School (8 out of 18); and
- 28% of children at pre-school institutions in North-East Otago (74 out of 269).

5.11 The local community benefits from better quality educational services as a consequence of the Macraes Gold Project providing a workforce, whose dependants increase the roles at local schools and pre-schools.

Increased Diversity for the North-East Otago and Otago Regional Economies

5.12 As noted in Section 3 of this report, the Waitaki District economy is primarily driven by the agricultural sector and agricultural product processing and this is also the case for the north-east Otago area which includes the Waitaki District plus the towns of Waikouaiti, Hyde and Middlemarch and surrounding countryside.

5.13 The Macraes Gold Project, which provides jobs for 3.6% of Waitaki's workforce, helps provide greater diversity and balance to the north-east Otago economy, providing employment opportunities and incomes less dependent upon returns to

the agricultural sector and making the local economy more resilient to agricultural commodity price cycles. This greater diversity is reinforced by the contribution the Macraes Gold Project makes to tourism in north-east Otago (see next section).

- 5.14** This is also the case at the regional and national levels, although to a lesser extent because the Otago and New Zealand economies are more diversified and less dependent upon agriculture and agricultural product processing. Nevertheless the Macraes Gold Project leads to considerable additional expenditure, employment and incomes for businesses and residents of the Otago region and as indicated by the NZIER and Infometric studies, it also makes significant contributions to New Zealand's exports and GDP.

Contribution to Tourism

- 5.15** The Macraes Gold Project mine tour is a major reason why tourists visit Macraes Flat. Current (2010) visitor numbers are estimated at 5,000 per annum, made up of 2,300 taking part in an official OceanaGold Tour package, 700 free and independent travellers and 2,000 school group visitors.²⁹ Using the forecast 2010 average expenditure per visit in the Waitaki Regional Tourism Office area of \$69.1³⁰, this implies additional expenditure for the local north-east Otago area of \$0.3 million per annum. Associated with this additional expenditure is indirect (or "multiplier") expenditure, as well as direct plus indirect employment and wages and salaries.³¹

Increased Rates Revenue for Waitaki District Council

- 5.16** In 2009/2010 rates paid by OceanaGold to the Waitaki District Council totalled \$298,914 (excluding GST)³² representing about 1.25% of the Council's total rates

²⁹ Source: OceanaGold. Not included in these numbers are the visits by persons visiting the mine for businesses purposes – e.g. short-term contractors hired for mine maintenance work.

³⁰ Source: NZ Regional Forecast Pivot Tables 2010-2016; Ministry of Economic Development; August 2010.
³¹ To the extent visits to the Macraes Gold project are diverted from visits elsewhere within the north-east Otago area these economic impacts are overstated.

³² In addition farmers leasing land from OceanaGold pay a further \$36,468.

income in the financial year 2009/2010. Because of economies of scale it is likely that the rates paid by the Macraes Gold Project will be greater than the increase in Council's costs as a consequence of gold mining operations on the site as compared to pastoral farming. From the perspective of the Waitaki District Council and other ratepayers in the District, this broadening of the rating base provides the opportunity for a greater range of Council provided services or a reduction in the rates burden for other ratepayers.

Community Sponsorship Programmes

5.17 In recognition of the important role the community plays in helping the Macraes Gold Project realise its potential, the company provides financial support to a number of initiatives at the community level. Over the past 12 months (November 2009 to October 2010) more than \$200,000 has been distributed to community groups including grants to the Bannockburn Respite Home, the East Otago High School, the Flag Swamp Primary School, the Macraes Community Incorporated, the Middlemarch Play Centre, the Otago Life Education Trust, the Otago Medical Research Foundation, the Otago Nuggets Basketball Team, the Otago Rugby Football Union, the Progress of Waikouaiti Area Committee, the Waihemo Heritage Group, the Waikouaiti Primary School, and the Waikouaiti Volunteer Fire Brigade.

Other Socioeconomic Benefits

5.18 The Macraes Gold Project also contributes to the "social fabric" of the north-east Otago community via staff, contractors and their families belonging to service clubs, sports clubs and other voluntary organizations. As well as fulfilling leadership roles and making other contributions within the community, the Project staff, contractors and their families help provide the critical mass to underpin these organizations' ongoing sustainability.

5.19 In addition the Macraes Gold Project has on-site 42 emergency response personnel, who respond to community emergencies as and when required. Included in the 42 are 2 qualified ambulance officers, 2 volunteer fire fighters from Palmerston and 2 volunteer fire fighters from Waikouaiti. The Macraes Gold Project emergency response team are also an official co-response unit (CRU) for St John Ambulance southern region. As such it is dispatched as a first response unit by the ambulance communications centre. In this capacity it is responsible for an area that includes all of the Macraes-Hyde road between SH85 and SH67, SH85 up to Morrisons and Dunback, the Nenthorn Valley, Middlemarch and Hyde. Since undertaking this role in the third quarter of 2010 the team has responded to 3 offsite incidents (i.e. up until the end of February 2011).

6. ECONOMIC BENEFITS OF MACRAES GOLD PROJECT FUTURE OPERATIONS - THE MACRAES PHASE III PROJECT³³

Retention of Employment, Wages and Salaries and Other Expenditure – North-East Otago and Otago

6.1 Without the Macraes Phase III Project, gold mining activity at the site will cease at the end of 2012 with reductions in production, employment, wages and salaries and other expenditure in 2011 and 2012 from current (2010) levels. With the Macraes Phase III Project, the life of the Fraser underground mine will be extended out to the end of 2014, whilst the opencast mining operations will be extended out until at least 2020.

6.2 OceanaGold has provided forecasts of annual gold production, employment, wages and salaries and other expenditure out to 2018 with and without the Phase III Project.

6.3 Without the Phase III Project, gold production (from the Macraes opencast mine and the Fraser underground mine) will reduce by 25% in 2011 from the 2010 level,

³³ Data in this section provided by OceanaGold unless otherwise stated.

by 37% in 2012 and then cease altogether. (The Reefton mine on the West Coast would also cease operations since it is dependent upon the Macraes Flat processing plant to process the ore it produces.) There will be commensurate reductions in employment, wage and salary payments and other expenditure in north-east Otago and the Otago region (and in Reefton and on the West Coast).

- 6.4** With the Phase III Project, gold production³⁴ is forecast to be around 270,000 ounces in 2011, around 273,000 ounces in 2012 and 2013, and then an average production level of around 195,000 ounces per annum over the period 2014 to 2018 as the Fraser underground mine and Reefton reduce production and close and eventually production at the Macraes opencast mine begins to reduce. After 2018, gold production will reduce again in 2019 and 2020 if it is decided to close the mine in 2020.
- 6.5** As a consequence employment at the mine site is expected to increase to around 612 jobs over the period 2011-2014 (from 563 jobs in 2010) with the retention of a further 28 jobs in Dunedin and then after 2014 fall to around 490 jobs at the mine site and 20 jobs in Dunedin with the closure of the Fraser underground mine. The Macraes Phase III Project will result in net additional jobs at the mine site of 126 in 2011, 247 in 2012, 613 in 2013 and 2014 and an average of 485 net additional jobs from 2015 onwards. The net additional jobs in Dunedin will be 2 in 2011, 10 in 2012, 28 in 2013 and 2014 and 20 from 2015 onwards. Therefore the net additional jobs for the Otago region as a whole are 128 in 2011, 257 in 2012, 641 in 2013 and 2014 and 505 from 2015 onwards. The net additional jobs largely result from the retention of employment over the extended life of the mine rather than the creation of new employment opportunities.
- 6.6** The net additional wages and salaries paid to employees and contractors at the Macraes Flat site will be \$8.8 million in 2011, \$17.0 million in 2012, \$41.7 million in 2013, \$38.5 million in 2014 and average \$27.8 million from 2015 onwards. The net additional wages and salaries paid to employees in Dunedin will be \$0.1

³⁴ From the ore taken from Macraes opencast mine, the Fraser underground mine and the Reefton mine.

million in 2011, \$0.7 million in 2012, \$1.9 million in 2013, \$1.8 million in 2014 and will average \$1.1 million from 2015 onwards. Therefore the net additional wages and salaries for the Otago region as a whole are \$8.9 million in 2011, \$17.7 million in 2012, \$43.6 million in 2013, \$40.3 million in 2014 and will average \$28.9 million from 2015 onwards.

- 6.7** The net additional expenditure other than wages and salaries in north-east Otago is estimated to be \$2.1 million in 2011, \$4.1 million in 2012, \$8.4 million in 2013, \$8.1 million in 2014 and will average \$7.9 million from 2015 onwards. For the Otago region as a whole net additional expenditure other than wages and salaries is estimated to be \$14.0 million in 2011, \$27.3 million in 2012, \$56.8 million in 2013, \$54.5 million in 2014 and will average \$53.2 million from 2015 onwards.
- 6.8** Using the same employment, income and other expenditure multipliers for north-east Otago and the Otago region as used in the previous section of this report, the total direct plus indirect economic impacts of the Macraes Phase III Project are as follows³⁵:

	2011	2012	2013	2014	2015 onwards
North-east Otago					
Employment (jobs)	252	494	1,226	1,224	970
Wages and salaries (\$m)	13.2	25.5	62.6	57.8	41.7
Other expenditure (\$m)	3.2	6.2	12.6	12.2	11.9
Otago					
Employment (jobs)	314	630	1,570	1,568	1,237
Wages and salaries (\$m)	24.1	48.0	118.2	109.2	78.3
Other expenditure (\$m)	31.4	61.2	127.2	122.1	119.2

³⁵ Again these direct and indirect impacts result from the retention of employment, wages and salaries and other expenditure from extending the mine's life, rather than the creation of new employment, wages and salaries and other expenditure.

6.9 Also by extending operations beyond 2012, the Macraes Phase III Project will enable the continued contribution of gold mining at Macraes Flat to:

- The diversity of the north-east Otago and Otago regional economies;
- Tourism expenditure, employment and wages and salaries in north-east Otago;
- The rating base of the Waitaki District Council; and
- A wide range of community initiatives and socioeconomic benefits in north-east Otago and the Otago region generally.

6.10 At the national level, additional royalty payments³⁶ to Government as a result of the Macraes Phase III Project are estimated at \$1.4 million in 2011, \$2.6 million in 2012, \$6.1 million in 2013, \$5.1 million in 2014 and will average \$4.0 million from 2015 onwards. The Phase III Project will also extend the Macraes Flat mining operations significant contributions to New Zealand's total value of output, GDP and exports. For example, the additional total expenditure in New Zealand as a consequence of the Macraes Phase III Project over the period 2011 to 2018 inclusive is estimated at \$1.6 billion,³⁷ or more than 3 times the \$0.5 billion³⁸ estimated expenditure to result from the filming of the two Hobbit movies in New Zealand.³⁹

Retention of Employment, Wages and Salaries and Other Expenditure - West Coast

6.11 As indicated above closure of the Macraes Gold Project will also lead to the closure of OceanaGold's mining operations at Reefton on the West Coast. In 2010 OceanaGold provided 222 on-site jobs for staff and contractors with wages and

³⁶ Assumed to be 1.5% of additional revenue.

³⁷ The distribution of which is estimated to be approximately 4% north-east Otago, 24% rest of Otago, 3% West Coast, 18% other South Island, 17% North Island, 28% overseas and 6% Government.

³⁸ See Reuters Entertainment; October 21, 2010.

³⁹ There may be additional spinoff benefits from the Hobbit movies such as ongoing tourism benefits and the attraction of other film industry work, which do not arise or will be more limited from the Macraes Phase III Project.

salaries of \$15.5 million. Other expenditure for local businesses on the West Coast in 2010 is estimated at \$11.2 million.

- 6.12** If the Macraes Gold Project is extended through to 2020, OceanaGold's Reefton operations will extend through to until at least 2015⁴⁰. However if gold ore processing capacity at Macraes Flat is not available the Reefton mine will also close at the end of 2012. This will result in a significant reduction in employment, wages and salaries and other expenditure on the West Coast.
- 6.13** Using West Coast regional multipliers⁴¹ of 2.0 for employment and 1.5 for wages and salaries and other expenditure the retention of employment, wages and salaries and other expenditure for the region are estimated as follows:

	2011	2012	2013	2014	2015
West Coast					
Employment (jobs)	104	209	521	495	141
Wages and salaries (\$m)	5.4	10.8	26.9	36.6	11.3
Other expenditure (\$m)	3.9	7.9	17.4	17.1	9.5

7. POTENTIAL ECONOMIC COSTS OF MACRAES PHASE III PROJECT

Lost Agricultural Production

- 7.1** Lost agricultural production is not an external cost of the Macraes Phase III Project. The productive value of the land in alternative uses has been internalised into the cost structure of the Project – in other words OceanaGold in purchasing the land has paid a price reflective of future net returns from alternative uses for the land. Such costs are not costs to be borne by the wider community.

⁴⁰ Or longer if exploration work indicates extending the mine's life is economic and required consents are granted.

⁴¹ Because the West Coast region is likely to be less self-sufficient in goods and services than the Otago region it is appropriate to use these lower multipliers for the region.

- 7.2** In terms of reduced economic activity within north-east Otago (and the Otago region) from a reduction in agricultural use, the direct and indirect economic impacts of gold mining operations at the site will significantly outweigh any reductions in economic activity from any displaced farming.⁴²

Utilities

- 7.3** Externality costs can arise when utilities provided by central or local government (e.g. roads, water supply, storm water and flood control systems and wastewater disposal) are not appropriately priced. In the case of the Macraes Phase III Project no such externality costs will arise. The mine is completely self-sufficient with respect to water supply, wastewater disposal and storm water and flood control systems. In addition to road user charges, and roading costs payable as part of the annual rates, OceanaGold is responsible for maintenance of key sections of local roads adjacent to the mine, as required under conditions of consent and these payments are to continue for 4 years after mine closure.

Local Road Congestion Costs

- 7.4** An analysis of the traffic effects of the proposed development has concluded that the proposed access arrangements will readily accommodate the volumes of vehicles envisaged and that the traffic generated during the Phase III Project will be safely and efficiently accommodated within the adjacent road network.

8. THE MACRAES GOLD PROJECT CLOSURE STRATEGY

- 8.1** Economic activity (i.e. expenditure, employment and incomes) in north-east Otago and the wider Otago region generated by the Macraes Gold Project will commence winding down from 2018 onwards, assuming exploration work does

⁴² See for example in Section 2 of this report, the Infometrics report compares the contributions to GDP of the Macraes Gold Project and the alternative of dairy farming at the site.

not lead to further economic discoveries and resource consents being sought for extending the life of the mine beyond 2020. However even after 2020, when gold production is currently intended to cease, the Project will continue to contribute to economic activity in the north-east Otago economy.

8.2 Firstly, following the cessation of gold production, rehabilitation and ongoing monitoring of the site will be required involving:

- Finishing waste rock stacks, capping the tailing dams with top soil, removing the over-bridge and rehabilitating and top soiling haul roads. This is estimated to require a staff of between 15 and 20 employees for up to 18 months;
- Dismantling the process plant which will take up to six months and require between 20 and 30 employees;
- Removal of buildings, which will take around 3 months and require 10 to 20 employees; and
- Ongoing monitoring of the site, which would continue for perhaps 10 years after mine closure and require 2 fulltime staff reducing to 1 part time staff after 5 years.

Therefore ongoing employment will be generated by the mine even after the cessation of gold production.

8.3 Secondly, the closure strategy for which resource consent is now being sought has been revised since it is considered that the currently consented HAP by itself is not sustainable in terms of providing future economic growth and development options for the local community as was originally intended.

8.4 The closure strategy for which resource consents are now being sought in conjunction with those to extend the life of the Macraes Gold Project, comprises: two lakes formed from pit excavations; bike trails and tracks; formation of a Community Development Trust; gifting Stanley's Hotel to the Trust and provision

of a significant fund to the Trust to support local community initiatives and encourage business development. Such initiatives could include upgrading Stanley's Hotel and upgrading the town water supply, but ultimately that will be at the discretion of the Trust. It is anticipated that the revised closure strategy will help generate additional expenditure, employment and incomes in the local Macraes Flat economy.

9. CONCLUSIONS

9.1 Since its start-up in 1990, the Macraes Gold Project has been, and continues to be, a significant contributor to levels of employment, incomes and expenditure for north-east Otago and the Otago region. At a national level, the Macraes Gold Project has made, and continues to make a considerable contribution to Government revenues, GDP and exports. The proposed Macraes Phase III Project will extend mining operations at Macraes Flat out beyond 2012, enabling these positive economic impacts to continue.

9.2 In particular the Macraes Phase III Project will enhance the economic well being of the north-east Otago and Otago (as well as the Reefton and West Coast) communities by:

- (i) Maintaining significant levels of local and regional employment, incomes and expenditure beyond 2012;
- (ii) Maintaining population levels in north-east Otago, thereby maintaining the quality of some central government provided services;
- (iii) Providing the local economy with greater diversity and resilience;
- (iv) Contributing to ongoing economic activity at Macraes Flat after mine closure;

- (v) Providing greater employment choice for local residents;
- (vi) Broadening the rating base of the Waitaki District Council; and
- (vii) Contributing to local community activities and socioeconomic benefits.

9.3 The Macraes Phase III Project will improve resource use efficiency by maintaining economic activity and population in north-east Otago and the Otago region (as well as in Reefton and on the West Coast), enabling increased economies of scale in the local provision of goods and services. It will also assist in reducing unemployment and underemployment of labour and other resources.

9.4 The new plant will not give rise to economic externality costs.