

Economic analysis of Bothamley Park Trunk Sewer Stage 1 upgrade **for Te Aranga Alliance**

September 2021



Authorship

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Table of contents

1. Executive summary.....	4
2. Introduction	9
3. Key assumptions and limitations.....	10
4. Regional context.....	12
5. Impact of sewer design, consenting and construction.....	22
6. Impact of house construction.....	24
7. Summary	26
8. Appendix 1: Methodology	27
9. Appendix 2: Project Cost-Estimate.....	29

1. Executive summary

1.1. Introduction

- 1.1.1. This report supports Kāinga Ora and Porirua City Council's application under the COVID-19 Recovery (Fast-Track Consenting) Act, by exploring the economy and community of Porirua City and the Wellington Region, and analysing the economic impact of the proposed Bothamley Park Trunk Sewer Stage 1 upgrade to these areas. The report also analyses the economic impact of housing regeneration in Eastern Porirua which is enabled by the sewer upgrade.

1.2. Summary

- 1.2.1. The proposed Bothamley Park trunk sewer stage 1 upgrade achieves the purpose of the COVID-19 Recovery (Fast-track Consenting) Act as identified in Section 19 by providing economic benefit to people affected by COVID-19, and providing public benefit from infrastructure provision which improves economic and employment outcomes.

1.3. S19(a): Employment for people affected by COVID-19

- 1.3.1. Employment of Porirua residents fell by 0.8% between March 2020 and April 2020 as New Zealand entered its first COVID-19 lockdown. While employment has since recovered, the number of Porirua residents on Jobseeker Support benefit remains elevated compared to pre-COVID levels. The Bothamley Park sewer upgrade will support 43 full time equivalent (FTE) jobs across the Wellington Region, including five FTE in Porirua. This will provide opportunities for people affected by COVID-19 to re-enter the labour market.

1.4. S19(d): Providing infrastructure in order to improve economic and employment outcomes

- 1.4.1. The Bothamley Park sewer upgrade is one of three major infrastructure projects that together will unlock infrastructure constraints for Porirua East, enabling Kāinga Ora to build an additional 1,500 to 2,000 new dwellings. Construction of these dwellings is expected to support 152 FTE jobs across the Wellington Region, including 26 FTE within Porirua City (including Porirua East), over a 19-year period. The sewer will also enable private sector housing development which will support further jobs. There may also be further unquantified economic benefits resulting from the reduction in wastewater overflows into the natural environment, such as enhanced water-based tourism opportunities.

1.5. Porirua has been growing strongly pre-COVID

- 1.5.1. Employment and Gross Domestic Product (GDP) growth in Porirua City has been strong in recent years, outpacing the rest of the Wellington Region and New Zealand overall. GDP grew 2.4% in Porirua City over the year to March 2020, compared to 2.4% across the Wellington Region and 1.6% nationally. Employment grew 1.9% in Porirua over the year to March 2020, compared to 1.6% across the Wellington Region and nationally.

1.6. Construction is the largest employer

- 1.6.1. Construction is the largest industry in Porirua, accounting for 16% of the City's employment. The City's five largest industries together account for 63% of total employment – construction, education, health care, retail and professional services. Across the Wellington Region, professional services are the largest industry, accounting for 14% of total employment. Nationally, the largest employing industries are construction, health care, manufacturing and professional services.

1.7. Strong employment growth for Māori

- 1.7.1. Employment growth for Māori in Porirua has been faster than the regional and national trend over the past three years. Māori employment grew 1.7% in Porirua in 2020, compared to 1.5% across the region and 1.4% nationally. Māori employment growth tends to be higher in expansionary economic cycles, peaking at 6.4% in 2017 compared to 3.1% for total employment in Porirua. Māori employment has a similar industry makeup to total employment in Porirua, with construction, education, health care and retail the largest employing industries for Māori.

1.8. High unemployment, but trending down

- 1.8.1. Porirua's unemployment has consistently sat above the regional and national average for much of the past 20 years. The gap between Porirua and New Zealand grew particularly wide in the aftermath of the Global Financial Crisis in 2009. However, this gap has continued to close over the past five years. Porirua's unemployment rate in the year to June 2021 was 4.5%, compared to 4% across the Wellington Region and 3.9% nationally. These three rates are all relatively low and considered indicative of an overall tight labour market.

1.9. NEET rate high, but trending down

- 1.9.1. The proportion of youth not in employment, education or training (NEET) has been consistently higher in Porirua than the Wellington Region or New Zealand overall. In 2020, 14.9% of Porirua's population aged 15-24 was NEET, down from a high of 21.3% in 2017. This compares to a rate of 10% across the Wellington Region and 11.9% nationally in 2020.

1.10. Particularly young population in Porirua

East

- 1.10.1. Porirua East has a particularly young population, with 26% of the population under the age of 15, and 39% of the population between the ages of 15 and 39 years of age. Porirua East's population is younger than Porirua City overall, which is in turn younger than the national population. Across Porirua City, 23% of the population is under the age of 15, compared to 18% across the Wellington Region and 19% nationally. Across Porirua City, 33% of the population is between 15 and 39 years of age, compared to 36% across Wellington City and 34% nationally.

1.11. Strong Pasifika and Māori population in Eastern Porirua

- 1.11.1. Eastern Porirua has a particularly strong Pasifika population, with 52% of the population identifying as Pacific Peoples, compared to 23% across Porirua City, and 7% across the Wellington Region and New Zealand overall. Porirua has the largest Pacific Peoples population in New Zealand outside of Auckland.
- 1.11.2. Eastern Porirua and Porirua City overall also have a relatively large Māori population, with 24% of Eastern Porirua's population identifying as Māori and 19% of Porirua City. This compares to 12% across the Wellington Region and 14% nationally. Note that people can identify with more than one ethnicity, so the ethnicity percentages can sum to more than 100%.

1.12. COVID-19 drives up Jobseeker numbers

- 1.12.1. The number of Jobseeker Support recipients nationally jumped strongly in April 2020 as New Zealand entered its first lockdown for COVID-19. This pattern was replicated across the country, including in Porirua, with numbers going from 2,202 in March 2020 to 2,637 in May 2020 (Graph 11). The number of Jobseekers in Porirua continued to rise slowly thereafter, reaching a peak of 2,919 in January 2021. Since then Jobseekers have consistently declined, reaching 2,493 in July 2021, unwinding roughly half of the COVID induced surge in Jobseekers.

1.13. Employment dented briefly, continues to grow

- 1.13.1. Employment of Porirua residents fell by 0.8% between March and April 2020 as New Zealand entered its first COVID-19 lockdown, however, employment growth resumed by May 2020 and had recovered by September 2020. Employment of Porirua residents has grown strongly throughout 2021, and as of July 2021 was 1,653 or 6.1% higher than pre-COVID (September 2019).

1.14. Sewer upgrade worth \$51m

- 1.14.1. The total value of Stage 1 of the Bothamley Park Trunk sewer upgrade project is estimated to be \$51m, inclusive of design, consenting and construction costs. This is spread over a period of 39 months, including a 15-month design and consenting phase and 24-month construction phase. This expenditure is expected to be spread around the Wellington Region and New Zealand, with some contractors coming into Porirua from other parts of the region, and some materials coming in from the rest of the country. This means that the economic benefits are spread beyond just Porirua.

1.15. Sewer upgrade supports 43 jobs, \$10m earnings

- 1.15.1. The sewer upgrade project is estimated to have a total employment impact of 43 jobs, including the effect on suppliers and other businesses in the community. This includes the indirect effect on suppliers to those involved in the sewer upgrade project, and induced effect on businesses across the community that benefit from higher earnings. Within Porirua City, the total employment effect is estimated to be five jobs. Across both Porirua City and the Wellington Region, the employment impact is expected to be concentrated in the construction industry.
- 1.15.2. Increased employment associated with the sewer upgrade project is estimated to increase household incomes across the Wellington Region by \$10m in total. Within Porirua, incomes are estimated to increase by \$1.3m in total.

1.16. Sewer upgrade contributes \$39m to GDP

- 1.16.1. The sewer upgrade project is estimated to contribute a total of \$39m to Wellington Region's GDP over the 39-month design, consenting and construction process. The project is estimated to contribute \$4m to the Porirua City economy specifically. This includes direct, indirect and induced effects. Porirua's total GDP was \$2,449m in the year to March 2020.

1.17. Sewer upgrade enables step-change in housing

- 1.17.1. The construction of the Bothamley Park sewer will enable a step change in house construction within the Porirua East area. Additional wastewater capacity will enable a housing intensification to take place on a greater scale than would otherwise be achievable. Trunk sewers servicing the area have insufficient capacity and frequently overflow into Kenepuru Stream during heavy rainfall events. Without the sewer upgrade, the Porirua East area is unable to accommodate additional dwellings.
- 1.17.2. The sewer is one of three major infrastructure projects that together are estimated to enable the construction of at least 1,500 additional new dwellings by Kainga Ora in Porirua East between 2023 and 2041, in addition to replacement and renewal of existing dwellings. This amounts to \$518m of construction activity, with further construction on private land also enabled by

the sewer upgrade.

1.18. House construction supports 152 jobs, \$196m earnings

- 1.18.1. The total impact of the additional house construction enabled by the sewer upgrade is an estimated 152 full time equivalent jobs across the Wellington Region. This includes direct jobs, such as those working on-site, as well as suppliers and other industries which benefit from higher household incomes. Within Porirua City, the total effect is estimated at 26 full time equivalent jobs per year.
- 1.18.2. Additional house construction enabled by the sewer upgrade is estimated to boost household incomes by \$196m in the Wellington Region across the 19-year construction programme, amounting to an average of \$10.3m per year. Within Porirua City, the additional house construction is estimated to boost household earnings by \$23.5m, or \$1.2m per year.

1.19. House construction boosts GDP by \$398m

- 1.19.1. The additional house construction enabled by the sewer upgrade is estimated to contribute a total of \$398m to the Wellington Region's GDP over its 19-year construction programme, or \$21.0m per year. The effect on Porirua City specifically is expected to total \$40.7m, or \$2.1m annually.

2. Introduction

- 2.1. The Bothamley Park Trunk Sewer upgrade is proposed by Kāinga Ora and Porirua City Council to enable regeneration of housing in Eastern Porirua. Kāinga Ora and Porirua City Council are jointly applying to the Environmental Protection Agency for a resource consent for the sewer upgrade under the COVID-19 Recovery (Fast-track Consenting) Act 2020 ('the Fast-Track Act'). The purpose of this Act is to "urgently promote employment to support New Zealand's recovery from the economic and social impacts of COVID-19 and to support the certainty of ongoing investment across New Zealand, while continuing to promote the sustainable management of natural and physical resources".
- 2.2. Under Schedule 6, Clause 11(a) of the Fast-Track Act, an application must include an assessment of the effects of the proposal on "the people in the neighbourhood and, if relevant, the wider community, including any social, economic or cultural effects".
- 2.3. This report supports Kāinga Ora and Porirua City Council's application under the Fast-track Act by exploring the economy and community of Porirua City and the Wellington Region, and analysing the economic impact of the proposed sewer upgrade to these areas. The report also analyses the economic of housing regeneration in Eastern Porirua which is enabled by the sewer upgrade.

3. Key assumptions and limitations

3.1. Based on cost estimates

- 3.1.1. We have based our analysis on design, consenting and construction cost estimates provided by Te Aranga Alliance, who will be constructing the sewer on behalf of Kāinga Ora and Porirua City Council. The cost estimates feature a number of exclusions, such as the cost of the consent application fee, any additional excavation for poor ground conditions or environmental protection works. The cost estimates are detailed in Appendix 2.

3.2. Input-Output multiplier approach

- 3.2.1. We use a regional input-output (IO) multiplier model to estimate the impact of the sewer upgrade. The IO model is based on inter-industry relationships within an economy, mapping how economic activity in one industry flows through to other industries and ultimately households.
- 3.2.2. Our multiplier approach is described in more detail in Appendix 1. All dollar figures referred to are in 2020 prices.

3.3. Direct, indirect and induced economic effects considered

- 3.3.1. We consider the direct, indirect and induced economic effects as a result of the sewer upgrade. Direct effects include the effect on industries directly involved in the sewer upgrade project, such as construction contractors and design consultants. Indirect effects include the effect on suppliers to those directly involved, for example, construction contractors may purchase fuel from a local fuel retailer as a result of the sewer upgrade project. Induced effects include the broader economic effect from the increase in household earnings driven by direct and indirect effects. For example, higher earnings in construction contracting and fuel retailing will lead to higher household spending, for example, at retail and hospitality businesses. Indirect and induced effects are typically much smaller than direct effects, therefore we present total effects, which include direct, indirect and induced effects combined.

3.4. Assumed split across the region and country

- 3.4.1. The economic impact is apportioned to Porirua City, the rest of the Wellington Region, or outside of the region based on where an input is manufactured or how an industry is distributed. For example, some pipes have been identified as coming from an Auckland manufacturer, so we have assumed there will be no economic impact on Porirua or the Wellington Region from the manufacture of these particular pipes. For subcontractors working on the project, we have been advised that 95% are expected to be local (the remainder being highly specialised national subcontractors). We have

apportioned 95% of the subcontracting work across Porirua and the rest of the Wellington Region in accordance with their share of regional employment in construction subcontracting. This reflects that on a large and specialist project, it is unrealistic to expect that all contractors will come from Porirua City, particularly as they can easily travel daily from other centres in the Wellington Region. Input from consultants is spread across Porirua, the rest of Wellington Region and the rest of New Zealand in proportion to their share of professional services employment. This reflects that consultant input is highly specialist and is based around the country.

3.5. Regional spill-over effects not counted

- 3.5.1. Our modelling approach considers the effect of the sewer upgrade on Porirua and Wellington Region separately. There are likely to be additional regional spill over benefits which have not been quantified, for example, an increase in household incomes in Porirua City is likely to flow through to retail spending in other parts of the region. This means that the modelling estimates are a slight underestimate of the overall effect.

4. Regional context

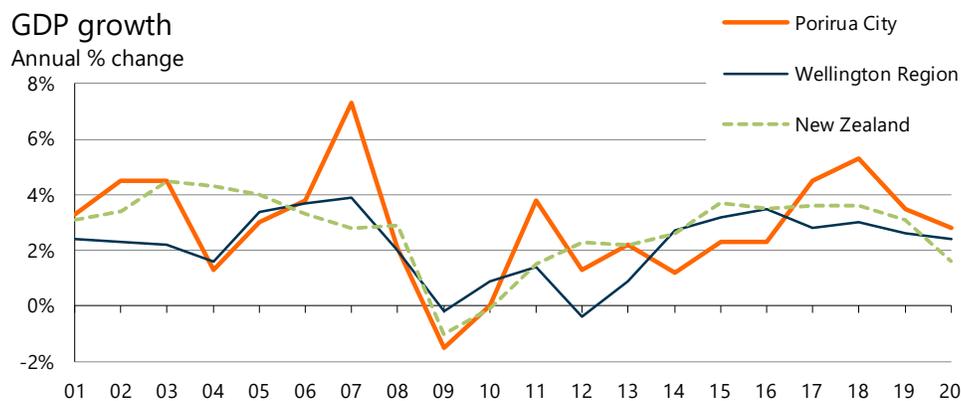
- 4.1. In this section we explore the economy and community of Porirua City and the broader Wellington Region to highlight the effect of COVID-19 and provide context for the economic impacts of the Bothamley Park sewer upgrade.

4.2. Economy

4.2.1. Strong economic growth in recent years

- 4.2.1.1. The Porirua City economy has grown faster than the Wellington Region and New Zealand overall in the past four years. In the year to March 2020, gross domestic product (GDP) in Porirua grew 2.8%, compared to 2.4% across the Wellington Region and 1.6% nationally. Historically, Porirua's GDP growth has broadly followed the regional and national trend.

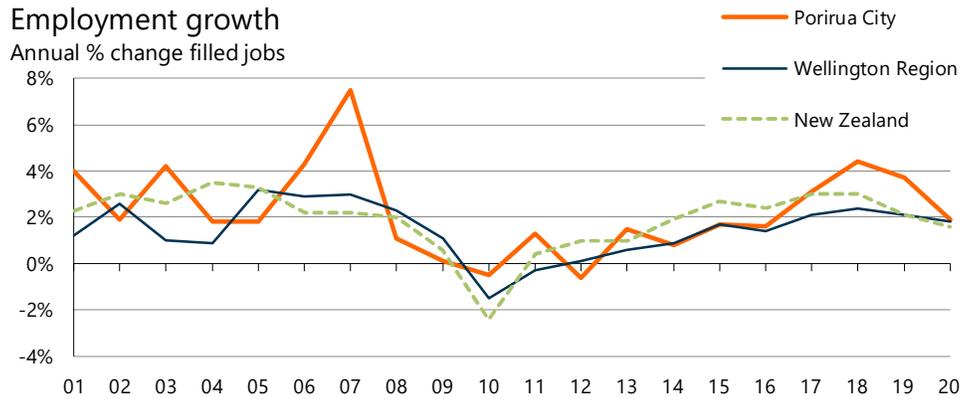
Graph 1



4.2.2. Strong employment growth in recent years, too

- 4.2.2.1. Employment growth in Porirua has outpaced the regional and national trend over the past three years. Employment growth in Porirua reached 1.9% in the year to March 2020, ahead of the Wellington Region and New Zealand overall on 1.6%. As with GDP, Porirua's employment growth has historically followed the regional and national trend.

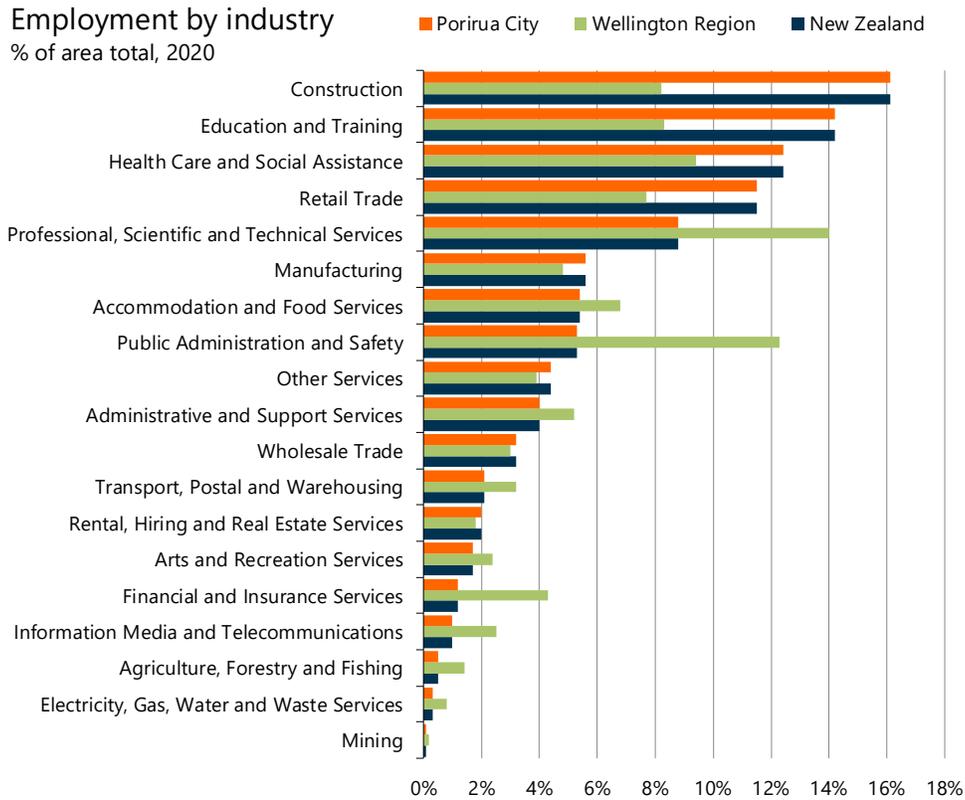
Graph 2



4.2.3. Construction is the largest industry

- 4.2.3.1. Construction is the largest industry in Porirua, accounting for 16% of the City’s employment. The City’s five largest industries together account for 63% of total employment – construction, education, health care, retail and professional services. Across the Wellington Region, professional services are the largest industry, accounting for 14% of total employment. Nationally, the largest industries are construction, health care, manufacturing and professional services.

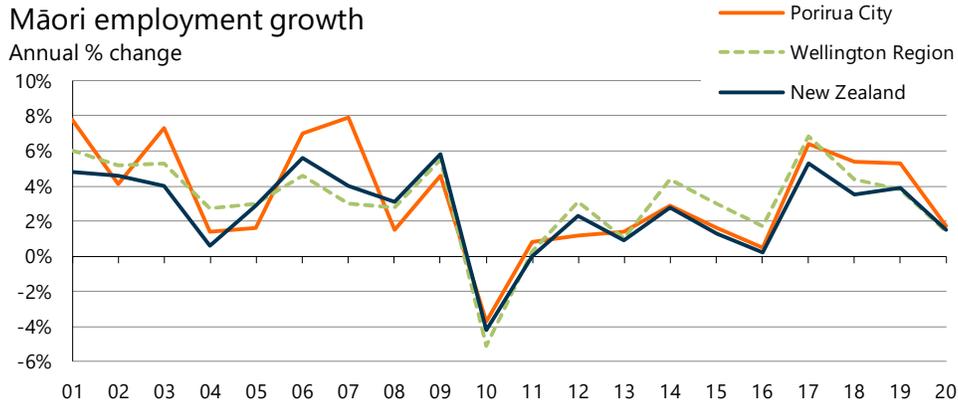
Graph 3



4.2.4. Strong employment growth for Māori

4.2.4.1. Employment growth for Māori in Porirua has been faster than the regional and national trend over the past three years. Māori employment grew 1.7% in Porirua in 2020, compared to 1.5% across the region and 1.4% nationally. Māori employment growth tends to be higher in expansionary economic cycles, peaking at 6.4% in 2017 compared to 3.1% for total employment in Porirua. However, Māori are disproportionately affected through recessionary periods, with Māori employment in Porirua falling 3.7% in 2009 compared to a 0.5% fall for total employment in Porirua.

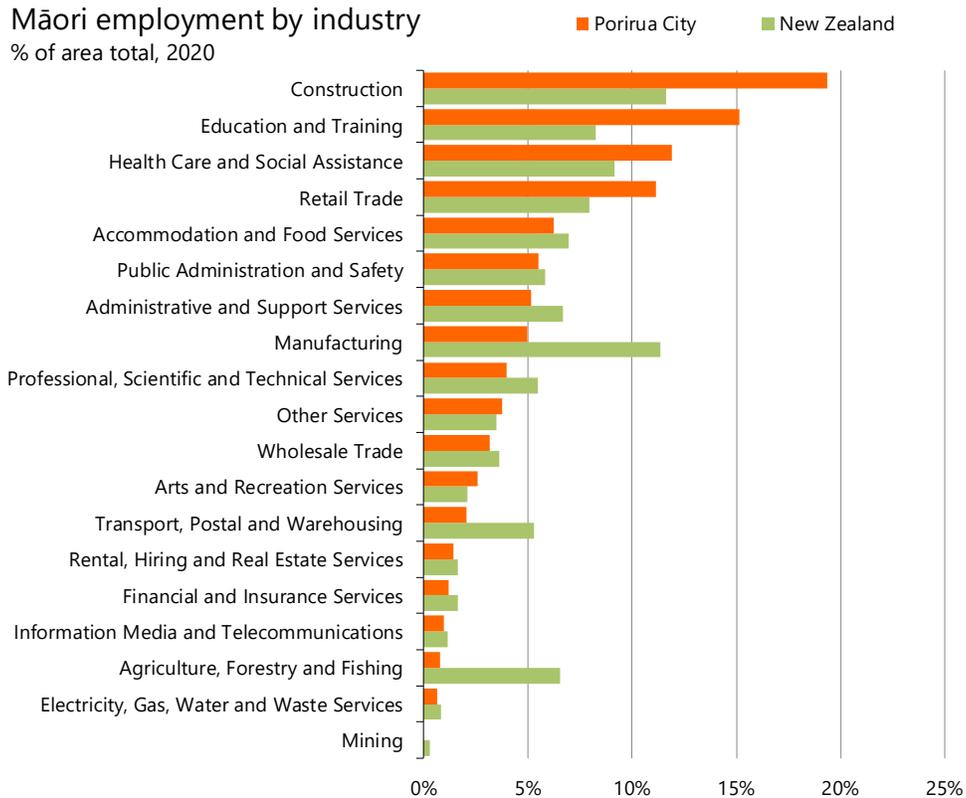
Graph 4



4.2.5. Maori employment concentrated in construction

4.2.5.1. Māori employment has a similar industry makeup to total employment in Porirua, with construction, education, health care and retail the largest industries for Māori. Māori in Porirua are more concentrated in these four industries than the rest of New Zealand. Māori are particularly concentrated in construction, with construction accounting for 19% of Māori employment in Porirua, compared to 16% of total employment.

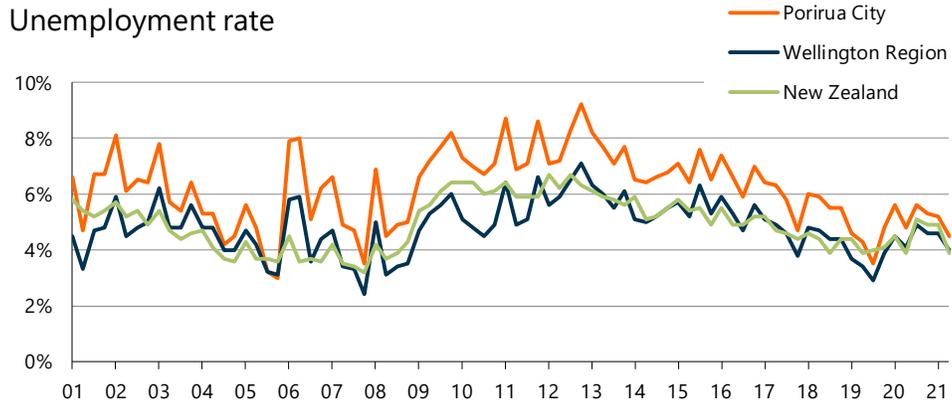
Graph 5



4.2.6. Higher unemployment, but trending down

4.2.6.1. Porirua’s unemployment has consistently sat above the regional and national average for much of the past 20 years. The gap between Porirua and New Zealand grew particularly wide in the aftermath of the Global Financial Crisis in 2009. However, this gap has continued to close over the past five years. Porirua’s unemployment rate in the year to June 2021 was 4.5%, compared to 4% across the Wellington Region and 3.9% nationally. These three rates are all relatively low and considered indicative of an overall tight labour market.

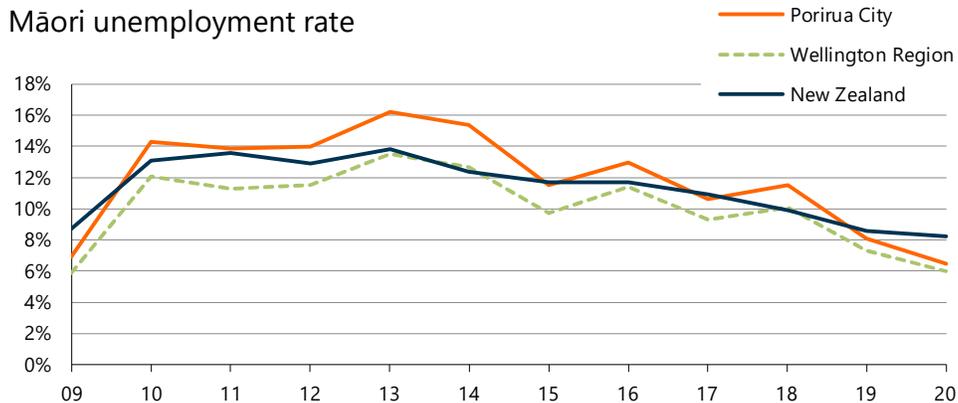
Graph 6



4.2.7. Māori unemployment coming down too

4.2.7.1. The unemployment rate for Māori in Porirua has historically been higher than Māori unemployment across the Wellington Region and New Zealand. However, Māori unemployment in Porirua has been trending down strongly and has been below the national rate for the past two years. In the year to March 2020, the Māori unemployment rate was 6.5% in Porirua, 6.0% across the Wellington Region and 8.2% across New Zealand.

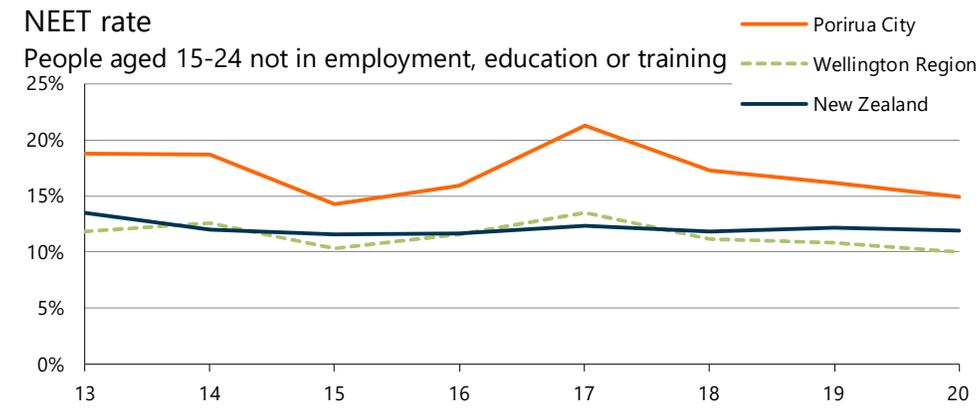
Graph 7



4.2.8. NEET rate high, but trending down

4.2.8.1. The proportion of youth not in employment, education or training (NEET) has been consistently higher in Porirua than the Wellington Region or New Zealand overall. In 2020, 14.9% of Porirua’s population aged 15-24 was NEET, down from a high of 21.3% in 2017. This compares to a rate of 10% across the Wellington Region and 11.9% nationally in 2020.

Graph 8



4.3. Community

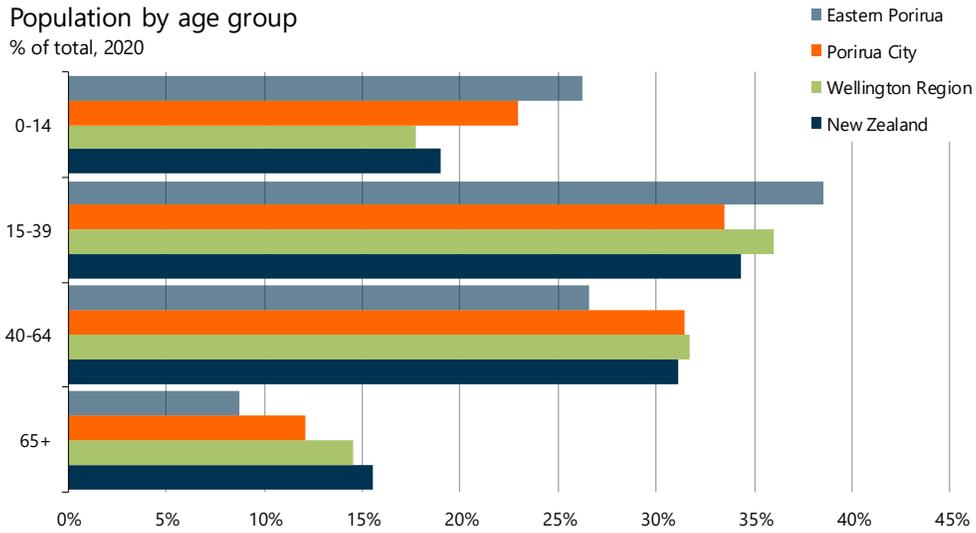
4.3.1. Particularly young population in Porirua East

4.3.1.1. Porirua East has a particularly young population, with 26% of the population under the age of 15, and 39% of the population between the ages of 15 and 39 years of age. Porirua East's population is younger than Porirua City overall, which is in turn younger than the national population. Across Porirua City, 23% of the population is under the age of 15, compared to 18% across the Wellington Region and 19% nationally. Across Porirua City, 33% of the population is between 15 and 39 years of age, compared to 36% across Wellington City and 34% nationally.

4.3.1.2. Conversely, Porirua East has a relatively small older population. Within Porirua East, 27% of the population is between 40 and 64 years of age, compared to 31% across Porirua City, 32% across the Wellington Region, and 31% nationally. This is more pronounced in the oldest age group, with 9% of the population in Porirua East over the age of 65, compared to 12% across Porirua City, 15% across Wellington City, and 16% nationally.

Graph 9

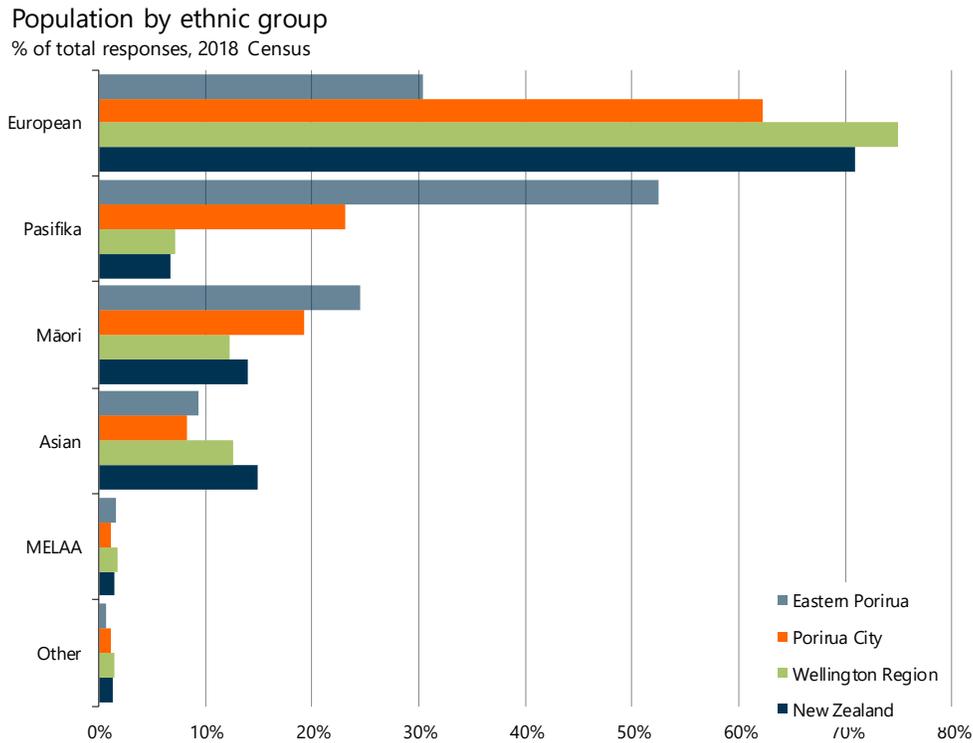
Population by age group
% of total, 2020



4.3.2. Strong Pasifika and Māori population in Eastern Porirua

- 4.3.2.1. Eastern Porirua has a particularly strong Pasifika population, with 52% of the population identifying as Pacific Peoples, compared to 23% across Porirua City, and 7% across the Wellington Region and New Zealand overall (Graph 10). Porirua has the largest Pacific Peoples population in New Zealand outside of Auckland.
- 4.3.2.2. Eastern Porirua and Porirua City overall also have a relatively large Māori population, with 24% of Eastern Porirua’s population identifying as Māori and 19% of Porirua City. This compares to 12% across the Wellington Region and 14% nationally.
- 4.3.2.3. Conversely, people identifying as European comprise a smaller share of the Eastern Porirua and Porirua East population. In Eastern Porirua, 30% of the population identifies as European, 62% across Porirua City, 75% across the Wellington Region, and 71% nationally.
- 4.3.2.4. Note that people can identify with more than one ethnicity, so the percentages in Graph 10 add to greater than 100%.

Graph 10



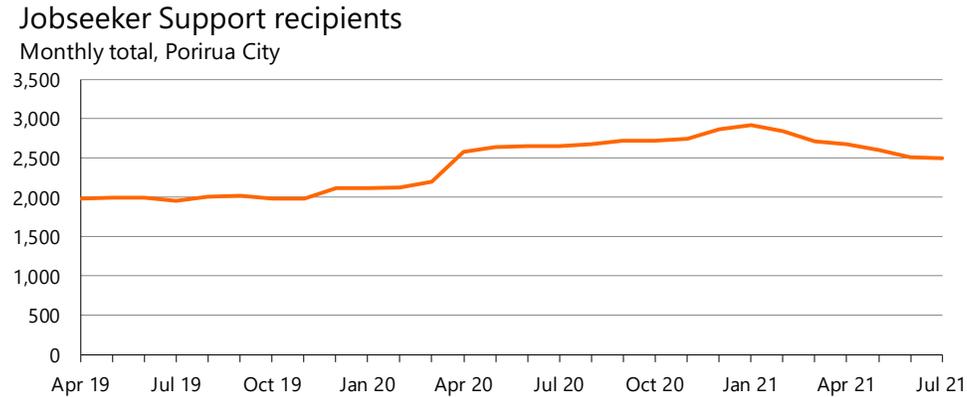
4.3.3. Impact of COVID-19 - S19(a): People: Jobseekers increase, but coming down

4.3.3.1. The number of Jobseeker Support recipients nationally jumped strongly in April 2020 as New Zealand entered its first lockdown for COVID-19. This pattern was replicated across the country, including in Porirua, with numbers going from 2,202 in March 2020 to 2,637 in May 2020 (Graph 11). The number of Jobseekers in Porirua continued to rise slowly thereafter, reaching a peak of 2,919 in January 2021. Since then, Jobseekers have consistently declined, reaching 2,493 in July 2021, unwinding roughly half of the COVID-induced surge in Jobseekers.

4.3.3.2. In normal economic conditions, the majority of Jobseeker Support recipients are only on the benefit for a brief period of time, for financial assistance and support in finding a new job. However, disruption from COVID-19 has meant that many people who would have otherwise been short-term Jobseekers, have been on the benefit for an extended time period, which increases the risk of them becoming long-term benefit recipients. The economic fall-out from COVID-19 has not greatly increased the number of people applying for Jobseeker Support, rather it has reduced the number of people exiting from Jobseeker Support, thereby increasing the overall number Jobseekers. The number of Jobseekers who have been on the benefit for over one year increased by 35% or 442 between March 2020 and March 2021. This suggests that to return the number of

Jobseekers to pre-COVID-19 levels, it will require a specific effort to help long-term benefit recipients to reenter employment after a period out of the labour market. This is different to the support for short-term Jobseekers which typically involves helping Jobseekers to find employment that suits their skills and abilities.

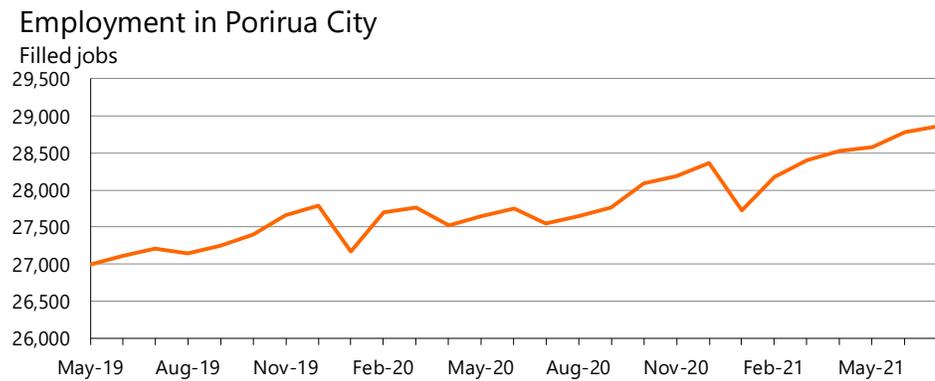
Graph 11



4.3.4. S19(a) Industries: Employment dented briefly, continues to grow

4.3.4.1. Employment of Porirua residents has been growing steadily over the past two years (Graph 12). Employment fell by 0.8% between March and April 2020 as New Zealand entered its first COVID-19 lockdown, however, employment growth resumed by May 2020 and had recovered by September 2020. Employment of Porirua residents has grown strongly throughout 2021, and as of July 2021 was 1,653 or 6.1% higher than pre-COVID (September 2019).

Graph 12



5. Impact of sewer design, consenting and construction

5.1. Broad economic benefit

5.1.1. The sewer upgrade will deliver a broad economic benefit to Porirua, the broader Wellington Region and the national economy through job creation, higher household incomes and greater economic activity. There may also be further unquantified economic benefits resulting from the reduction in wastewater overflows into the natural environment, such as enhanced water-based tourism opportunities.

5.1.2. Design, consenting and construction worth \$51m

5.1.3. The total value of the Bothamley Park Trunk sewer upgrade Stage 1 is estimated to be \$51m, inclusive of design, consenting and construction costs. This is spread over a period of 39 months, including a 15-month design and consenting phase and 24-month construction phase. This excludes the period during which the consenting application will be processed by the Environmental Protection Agency.

5.2. S19(d) Generation of Employment

5.2.1. Directly supports 30 jobs

5.2.1.1. Construction of the sewer is expected to directly support 30 full-time equivalent jobs during the design, consenting and construction phases across the Wellington Region. This includes four full-time equivalent jobs in Porirua City. The employment effects of the project are expected to be diffused across the Wellington Region as contractors can easily travel across city boundaries regularly for work. It is unlikely that there would be a sufficient number of Porirua-based contractors with appropriate specialist skills to meet the entirety of the project's needs. The project will additionally contribute to national employment, for example through specialist subcontractors and consultants from other regions.

5.2.2. Total impact of 43 jobs

5.2.2.1. The sewer upgrade project is estimated to have a total employment impact of 43 jobs, including the effect on suppliers and other businesses in the community. This includes the indirect effect on suppliers to those involved in the sewer upgrade project, and induced effect on businesses across the community that benefit from higher earnings. Within Porirua City, the total employment effect is estimated to be five jobs. Across both Porirua City and the Wellington Region, the employment impact is expected to be concentrated in the construction industry.

5.3. S19(d) Economic Outcomes

5.3.1. Earnings increase by \$10m across Wellington Region

- 5.3.1.1. Increased employment associated with sewer upgrade project is estimated to increase household incomes across the Wellington Region by \$10m in total. Within Porirua, incomes are estimated to increase by \$1.2m in total.

5.3.2. \$39m total contribution to GDP

- 5.3.2.1. The sewer upgrade project is estimated to contribute a total of \$39m to Wellington Region's GDP over the 39-month design, consenting and construction process. The project is estimated to contribute \$4m to the Porirua City economy specifically. This includes direct, indirect and induced effects.

6. Impact of house construction

6.1. S19(d) Provision of Infrastructure

6.1.1. Sewer enables step change in housing construction

6.1.1.1. The construction of the Bothamley Park sewer is one of three major infrastructure projects that together will enable a step change in house construction within the Porirua East area. Additional wastewater capacity will enable housing intensification to take place on a greater scale than would otherwise be achievable. Trunk sewers servicing the area have insufficient capacity and frequently overflow into Kenepuru Stream during heavy rainfall events. Without the sewer upgrade, the Porirua East area is unable to accommodate additional dwellings.

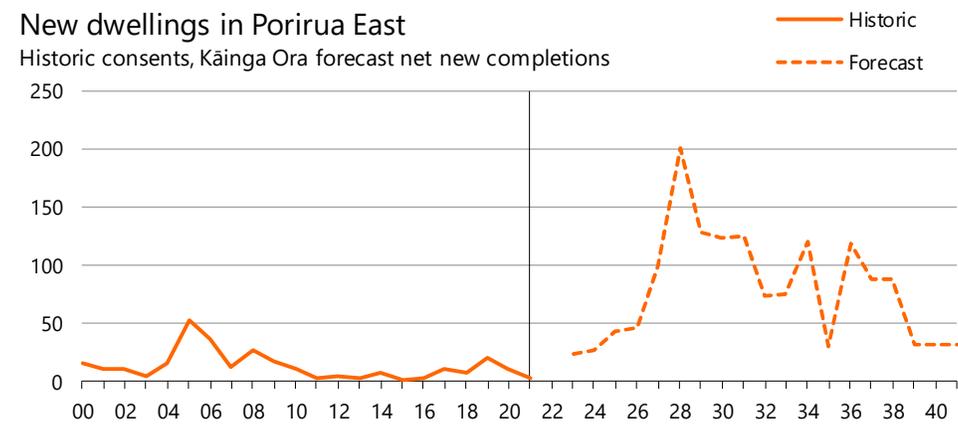
6.1.2. Additional 1,500 to 2,000 new dwellings

6.1.2.1. Kāinga Ora plans to replace and renew existing dwellings in this area, and build an additional 1,500 to 2,000 dwellings between 2023 and 2041. Based on the lower end estimate of 1,500 additional new dwellings, this amounts to an average of 78 additional dwellings built per year for 19 years.

6.1.2.2. Across the programme area (Cannons Creek, Porirua East, Ranui Heights, Ascot Park and Waitangirua SA2 areas), new dwelling consents have averaged 13 per year since 2000. This peaked at 52 in 2005 as a result of a new 44 dwellings constructed in a subdivision near the junction of Whitford Brown and Warspite Avenues.

6.1.2.3. Graph 13 highlights the significance of this construction programme in relation to the historic level of new dwelling construction in Porirua East. These additional dwellings would not be built without the Bothamley Park sewer upgrade. This excludes any potential for increased private sector construction in the area served by the upgraded sewer.

Graph 13



6.1.3. Additional \$518m worth of house construction

6.1.3.1. While Kāinga Ora is yet to confirm the specific housing typologies for the 1,500 additional new dwellings to be constructed, given the focus on intensification, townhouses are likely to represent the modal typology. Over the past three years, 217 new townhouses have been constructed across Porirua City, with an average construction cost of \$345,299 based on building consent data. Based on the forecast 1,500 additional new dwellings enabled by the sewer upgrade, this is expected to contribute an additional \$518m worth of house construction in the Porirua East area.

6.1.4. Economic impact spread across the region

6.1.4.1. As per the sewer upgrade impact analysis, we expect that the economic impact of the additional house construction will be spread across the Wellington Region. This reflects that building contractors easily and regularly travel across city boundaries for work. Furthermore, Kāinga Ora's proposed construction programme for Porirua East represents a substantial increase in residential construction for Porirua City, which is unlikely to be accommodated within Porirua's existing construction industry capacity. Kāinga Ora's proposed construction of 79 additional new dwellings per year, with a peak of 200 in 2028, is significant relative to Porirua City's total dwelling construction of 315 in the year to June 2021.

6.1.5. Directly supports 123 jobs

6.1.5.1. The additional house construction enabled by the sewer upgrade is estimated to directly support 123 full time equivalent jobs across the Wellington Region throughout the 19-year programme. Within Porirua City (including Porirua East), this is estimated to directly support 23 full time equivalent jobs.

6.1.6. Total impact of 152 jobs

6.1.6.1. The total impact of the additional house construction enabled by the sewer upgrade is an estimated 152 full time equivalent jobs across the Wellington Region. This includes direct jobs, such as those working on-site, as well as suppliers and other industries which benefit from higher household incomes. Within Porirua City, the total effect is estimated at 26 full time equivalent jobs per year.

6.1.7. \$196m boost to incomes across the region

6.1.7.1. Additional house construction enabled by the sewer upgrade is estimated to boost household incomes across the Wellington Region by \$196m across the 19-year construction programme, amounting to an average of \$10.3m per year. Within Porirua City, the additional house construction is estimated to boost household earnings by \$23.5m, or \$1.2m per year.

6.1.8. \$398m boost to regional GDP

6.1.8.1. The additional house construction enabled by the sewer upgrade is estimated to contribute a total of \$398m to the Wellington Region's GDP over its 19-year construction programme, or \$21.0m per year. The effect on Porirua City specifically is expected to total \$40.7m, or \$2.1m annually.

7. Summary

- 7.1. The proposed Bothamley Park trunk sewer stage 1 upgrade achieves the purpose of the COVID-19 Recovery (Fast-track Consenting) Act as identified in Section 19 by providing economic benefit to people affected by COVID-19, and providing public benefit from infrastructure provision which improves employment.

7.2. S19(a): Employment for people affected by COVID-19

- 7.2.1. Employment of Porirua residents fell by 0.8% between March 2020 and April 2020 as New Zealand entered its first COVID-19 lockdown. While employment has since recovered, the number of Porirua residents on Jobseeker Support benefit remains elevated compared to pre-COVID levels. The Bothamley Park sewer upgrade will support 43 full time equivalent (FTE) jobs across the Wellington Region, including five FTE in Porirua. This will provide opportunities for people affected by COVID-19 to re-enter the labour market.

7.3. S19(d): Providing infrastructure in order to improve economic and employment outcomes

- 7.3.1. The Bothamley Park sewer upgrade is one of three major infrastructure projects that together will unlock infrastructure constraints for Porirua East, enabling Kāinga Ora to build an additional 1,500 to 2,000 new dwellings. Construction of these dwellings will support 152 FTE jobs across the Wellington Region, including 26 FTE within Porirua City (including Porirua East), over a 19-year period. The sewer will also enable private sector construction which will support further jobs.

8. Appendix 1: Methodology

8.1. Multiplier analysis

- 8.1.1. We use input-output (I-O) multiplier analysis to estimate the impact of the trunk sewer upgrade on the local and regional economy. The I-O model is based on inter-industry relationships within an economy, understanding how economic activity in one industry flows through to other industries and ultimately households.
- 8.1.2. For earnings and employment, we also apply marginal output-employment ratios based on econometrically estimated employment-output elasticities because when faced with changes in demand at the margin, many businesses will continue to operate with the same level of employment.
- 8.1.3. Our I-O model uses regional multipliers estimated by Infometrics for each territorial authority in New Zealand. These are derived from the 2013 New Zealand Input-Output table from Stats NZ. The 2013 Input-Output Table is the latest table available.
- 8.1.4. The I-O model estimates the direct, indirect and induced effects of the project.
- 8.1.5. **Direct effect.** This is the effect associated with increased spending directly in each industry associated with the project. For example, if a construction firm takes on an additional construction project, this will contribute towards GDP (or value add) will increase through higher firm earnings before interest and tax (EBIT), wages and salaries.
- 8.1.6. **Indirect effect.** The indirect effects are the second round of economic effects associated with the direct effect. For example, the construction firm will turn to local wholesalers to supply building materials. The indirect effect includes the increase in GDP within wholesaling, which reflects the increase in EBIT, wages and salaries associated with increased demand from the construction firm.
- 8.1.7. **Induced effect.** The induced effect arises from changes in spending from changes in employment. For example, if workers at the construction and wholesaling firm who benefit from extra earnings associated with the project will spend some of their extra earnings at local retailers, bars and restaurants. The induced effect includes the increase in EBIT, wages and salaries in the retail and hospitality industries.
- 8.1.8. **Total effect.** The total effect is the sum of direct, indirect and induced effects. Due to the small magnitude of induced effects, and for ease of reading, we only refer to the direct and total effect.
- 8.1.9. The various effects outlined above are measured in terms of value added (or GDP) and employment.

8.2. Earnings

- 8.2.1.1. Changes in the earnings are estimated based on the estimated change in employment by industry (described above), and mean earnings by industry across the Wellington Region in the year to March 2020.

9. Appendix 2: Project Cost-Estimate

- 9.1. The project cost estimate is based on estimates provided by Te Aranga for design, consenting and construction of Stage 1 of the Bothamley Park Trunk Sewer Stage 1 upgrade. This includes Limb 1 and Limb 2 costs under the alliance contracting agreement.

Table 1

Cost estimate for Bothamley Park Trunk Sewer Stage 1 Upgrade

Source: Te Aranga Alliance

Item	Description	Cost
1.0	Design Cost	\$ 5,615,000
2.0	Traffic management	\$ 1,232,964
3.0	Earthworks	\$ 1,602,125
3.1	Earthworks construction	\$ 1,263,236
3.2	Erosion and sediment control (not priced)	\$ -
3.3	Other items	\$ 338,889
4.0	Sewer	\$ 32,450,188
4.1	Open Trench	\$ 6,507,856
4.2	Trench-less and Shafts	\$ 25,942,332
5.0	Manholes and Connections	\$ 2,824,058
5.1	Manholes	\$ 1,869,244
5.2	Connections	\$ 638,080
5.3	Testing and commissioning	\$ 103,316
5.4	Miscellaneous	\$ 213,418
6.0	Roading	\$ 973,774
6.1	Pavement and Surfacing	\$ 876,174
6.2	Markings & Signage	\$ 97,600
7.0	Retaining wall	\$ 1,102,270
8.0	Fixed costs	\$ 1,554,492
9.0	Time related cost	\$ 3,998,575
TOTAL		\$ 51,353,445