

Appendix D

## **Open Day Display Boards**



# Building our city



## What goes into building our city?

All the buildings and infrastructure we see in Wellington - our magnificent old heritage buildings, the roads we travel, the homes we live in, the schools and universities we learn in, the offices we work from, the parks and gardens we play in, and the waterfront we enjoy - need rock, sand, and gravel to be built and maintained. These materials - called “aggregates” - form the basic building blocks of our infrastructure.

## Why quarry?

### It supports our industries and economy.

- Quarries support our essential building and construction industries.
- The building and construction industry needs more than 1.8 million tonnes of construction aggregates each year for our homes, workplaces, public buildings and roads.

### All construction projects need aggregates.\*

- In 2015, New Zealand produced 39 million tonnes of aggregates including limestone and other products.
- That’s around 8.5 tonnes per capita - or the equivalent of nearly a truckload for every New Zealander each year.
- Over half of the aggregate produced in New Zealand is used on roads.

### We all use the finished products.\*

- An average new house uses 250 tonnes of aggregate for construction.

## Where do aggregates come from?

We get aggregates through quarrying. Quarrying is the process of removing natural resources from the ground. Quarries produce all sorts of materials, including limestone, crushed rock, sand, and gravel. Wellington’s major source of rock comes from Kiwi Point Quarry. Two other quarries in the Wellington region help meet the overall demand for quarry products for the region - Horokiwi Quarry and Belmont Quarry.

- One kilometre of road uses 4000 tonnes of aggregate.
- Aggregates are used for building schools, hospitals, sports facilities, and office spaces.
- An average NZ family of four needs between 22 and 34 tonnes of aggregate per year for direct and indirect use.

\* Source of statistics - 2015 Aggregate and Quarry Association

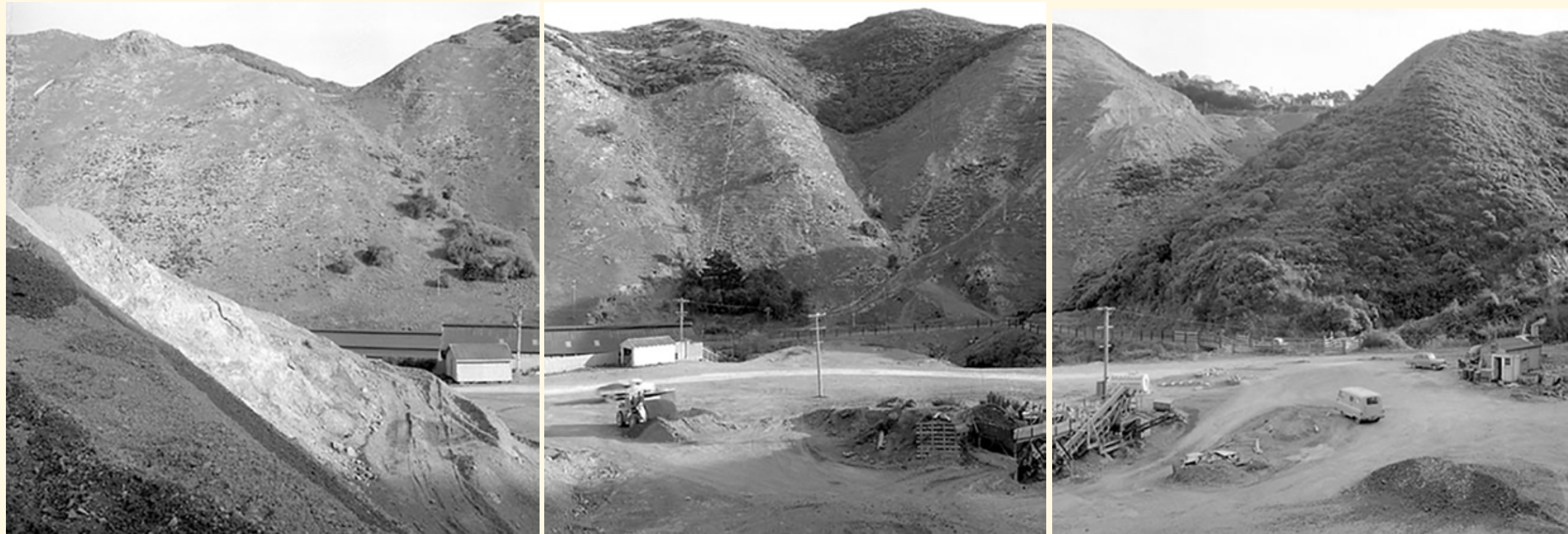
### It helps us invest in our city’s future.

- The population of Wellington City is estimated to grow by 53,000 to 82,000 by 2043. This means an additional \$4.5 - 6.9million tonnes of aggregate will be needed each year for the extra households directly and indirectly.
- There are plans to build a movie museum and convention centre, and rebuild or strengthen the St James Theatre, Town Hall, and other historic buildings in the city. All of these will require millions of tonnes of quarry products.
- We need quarry products for the proposed Petone to Grenada expressway and other northern roading projects.
- New cycleways and road lanes and the new airport hotel also need construction aggregates.



# Kiwi Point Quarry: a brief history

Kiwi Point Quarry in Ngauranga Gorge has existed since the 1920s, with rock extraction taking place since the 1880s. It is the last remaining quarry in Wellington City and is owned by Wellington City Council.



*Panorama of Kiwi Point Quarry 1964*

The quarry provides the raw materials to pave roads and build bridges and buildings across the Wellington region, which has included redevelopment of Lambton Quay, Willis Street, Victoria Street and the Pukeahu National War Memorial Park.



*Ngauranga Gorge looking south to Wellington Harbour c1880*

*Source: Alexander Turnbull Library*



*Ngauranga on the Wellington Coast Road 1870*

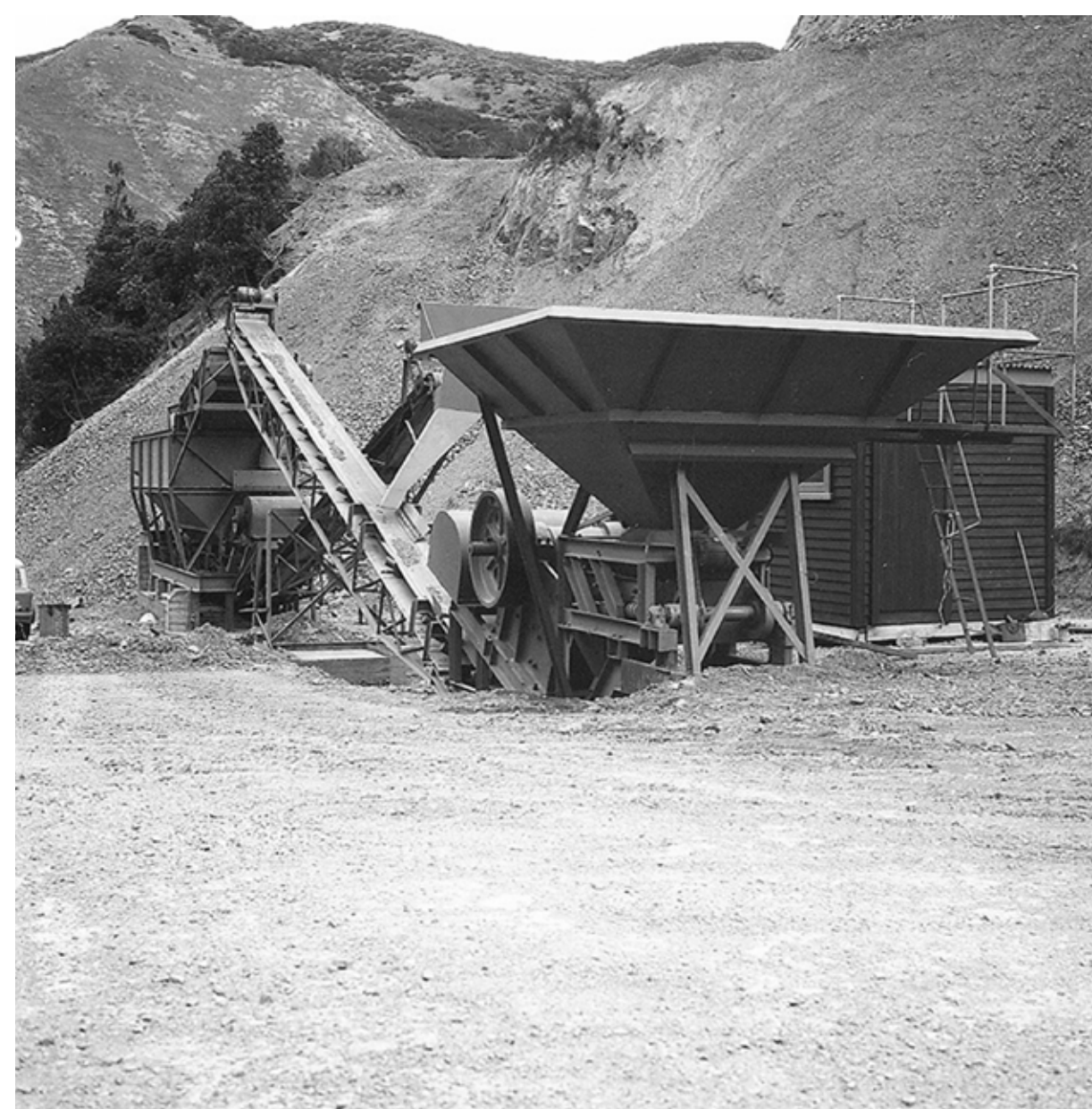
*Source: Wellington City Archives*

## Quarry operations

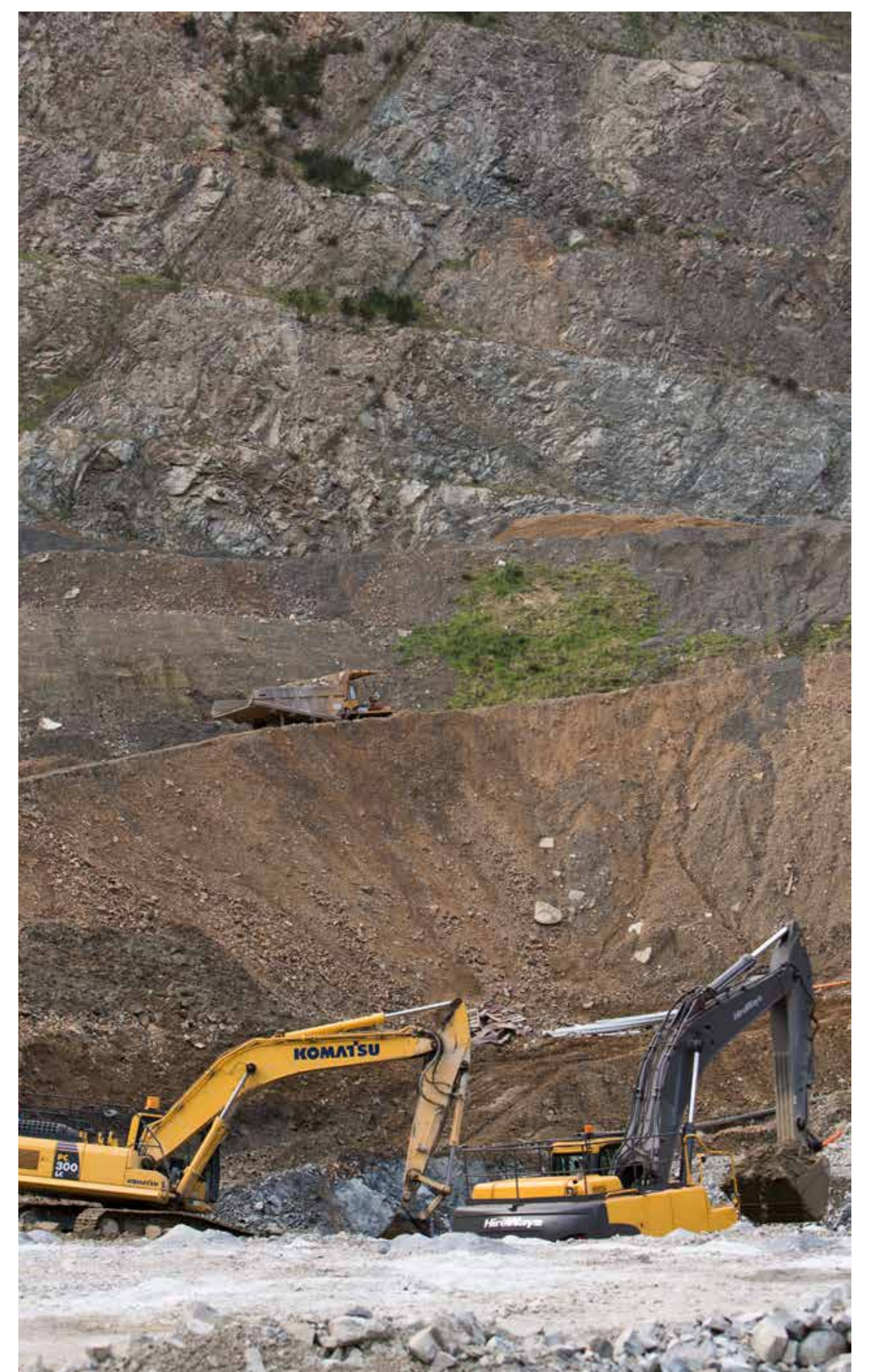
Since 2006 the quarry has been operated by a contractor - currently Holcim NZ Limited. It pays a royalty to the Council for products sold and clean fill deposited. Every year between 300,000 and 400,000 tonnes of rock is extracted from the northern face and crushed for use. Having a quarry just 5km from the city centre and owned by the City Council has many benefits, including reduced costs and transport. This is estimated to save the city \$2 million a year on road construction alone. This saving has a positive impact on rates.



*Quarry expansion in 1967*



*New crusher in 1967*



*Quarry operations in 2017*



# What is the rock from Kiwi Point Quarry used for?

The aggregate and rock produced at Kiwi Point Quarry are used to build bridges, offices, houses, apartments, tunnels and every road in Wellington. Aggregates make up 75 - 90 percent of all the concrete used in construction projects.

**Projects in Wellington using Kiwi Point Quarry aggregates include:**



*New airport hotel and car park*



*Arras Tunnel*



*BNZ Building*



*Wellington Regional Hospital*



*Pukeahu War Memorial Park*



*Wellington Waterfront*



*Courtenay Place*



*CBD Motorway*



*Tawa Pool Construction*

**Rock extracted from Kiwi Point Quarry goes into making**

**43%** of roading products

**23%** of concrete aggregate

**17%** asphaltic aggregate

**17%** other purpose aggregates



# The future of the quarry

Based on the current rate of extraction, the existing north face quarry only has a few years of remaining life.

Forecasts predict by 2043 there will be between 53,000 and 82,000 more Wellingtonians in the central city and to the north, which will mean more construction work requiring the types of rock extracted from Kiwi Point Quarry.

There are two other quarries in the Greater Wellington region. If we don't do anything, the resources in these quarries will be depleted sooner and supplies will have to be transported in from outside the area, increasing costs to Wellingtonians and raising the number of trucks on the road.



Excavation on the north face of Kiwi Point Quarry

**“Our national plans must take into account that every road and the majority of buildings will need aggregate sourced locally to keep costs down. The importance of quarries cannot be underestimated, so it is crucial to protect existing and future sources of supply.”**

**Brian Roche,  
 Chair of the Aggregate and Quarrying Association**

## Four shortlisted options were assessed by specialists

OPTIONS	PROs	CONs
1. Do nothing and close the quarry when north face rocks exhausted	<ul style="list-style-type: none"> <li>No impact on landscape</li> <li>Site can be gradually regenerated with native bush</li> <li>District Plan change not required</li> </ul>	<ul style="list-style-type: none"> <li>Road construction costs for Wellington increase by 60% every year</li> <li>Concrete and other aggregate costs increase by 40% every year</li> <li>200 more heavy trucks through our city daily</li> <li>Would not help meet current or future aggregate demand</li> </ul>
2. Permitted activity development south of site access road	<ul style="list-style-type: none"> <li>Little impact on landscape</li> <li>Already a permitted activity</li> <li>District Plan change not required</li> </ul>	<ul style="list-style-type: none"> <li>Not financially viable</li> <li>Very limited rock resources</li> <li>Road construction costs for Wellington increase by 60% every year</li> <li>Concrete and other aggregate costs increase by 40% every year</li> <li>200 more heavy trucks through our city daily</li> </ul>
3. Medium development of south face	<ul style="list-style-type: none"> <li>Construction costs maintained at current level in Wellington</li> <li>No additional heavy trucks on the road</li> <li>Rock resources secured for Wellington for an additional 15 years</li> <li>Some residential buildings will get extended harbour views.</li> <li>Rockfall protection for SH1 &amp; Tylers Road Business Park</li> <li>Provides flat land for future development</li> </ul>	<ul style="list-style-type: none"> <li>Requires District Plan change</li> <li>Closer to residential housing (100m buffer when only 25m required)</li> <li>Increased impact on landscape (before mitigation)</li> </ul>
4. Maximum development of south face	<ul style="list-style-type: none"> <li>Construction costs maintained at current level in Wellington</li> <li>No additional heavy trucks on the road</li> <li>Rock resources secured for Wellington for additional 20 years</li> <li>Some residential buildings will get extended harbour views</li> <li>Rockfall protection for SH1 &amp; Tylers Road Business Park</li> <li>Provides flat land for future development</li> </ul>	<ul style="list-style-type: none"> <li>Requires District Plan change</li> <li>Closer to residential housing (70m buffer when only 25m required)</li> <li>Increased impact on landscape (before mitigation)</li> <li>Visual and ecological impact will be similar to Option 3.</li> </ul>

Quarrying needs to be carried out close to where materials will be used. This keeps transportation costs low and helps keep building costs down in local communities.

For each tonne of aggregate produced, the first 30 kilometres it has to travel doubles the overall cost. There are further costs for every extra kilometre – and these costs are passed on to consumers. That’s why it’s crucial that aggregates are sourced as close as possible to where they are needed.

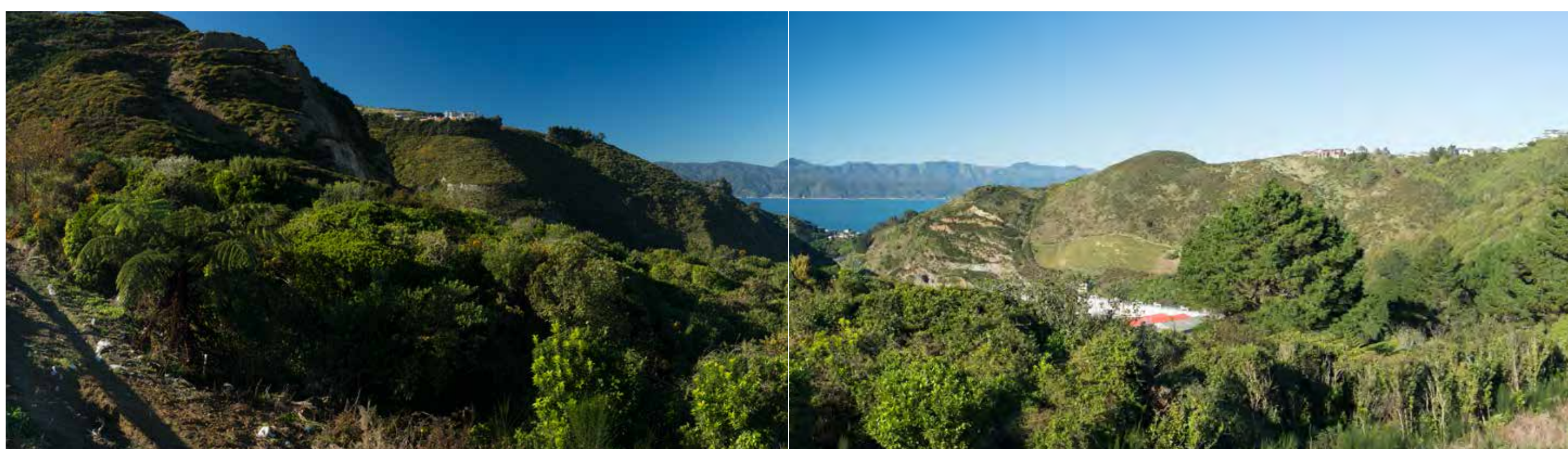
Development of new quarry sites is expensive, uncertain and challenging. If rocks are transported from quarries outside the city limits, there will be greater road maintenance costs due to increased truck movements on roads. Kiwi Point Quarry’s location next to the motorway means a minimal effect on suburban roads.



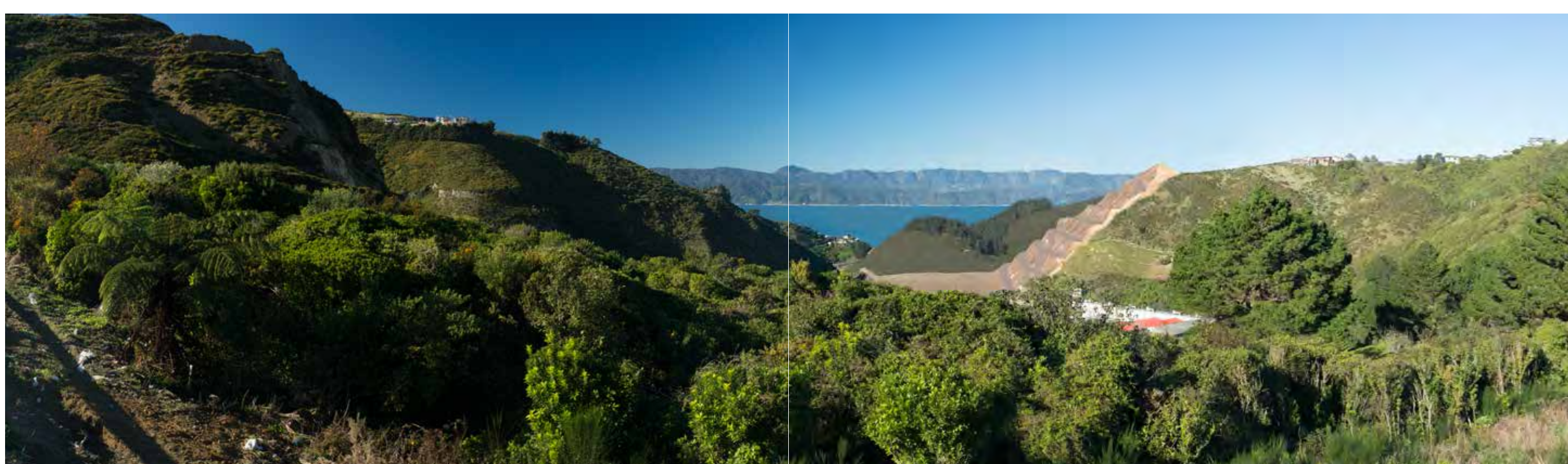
# Representations of proposed options



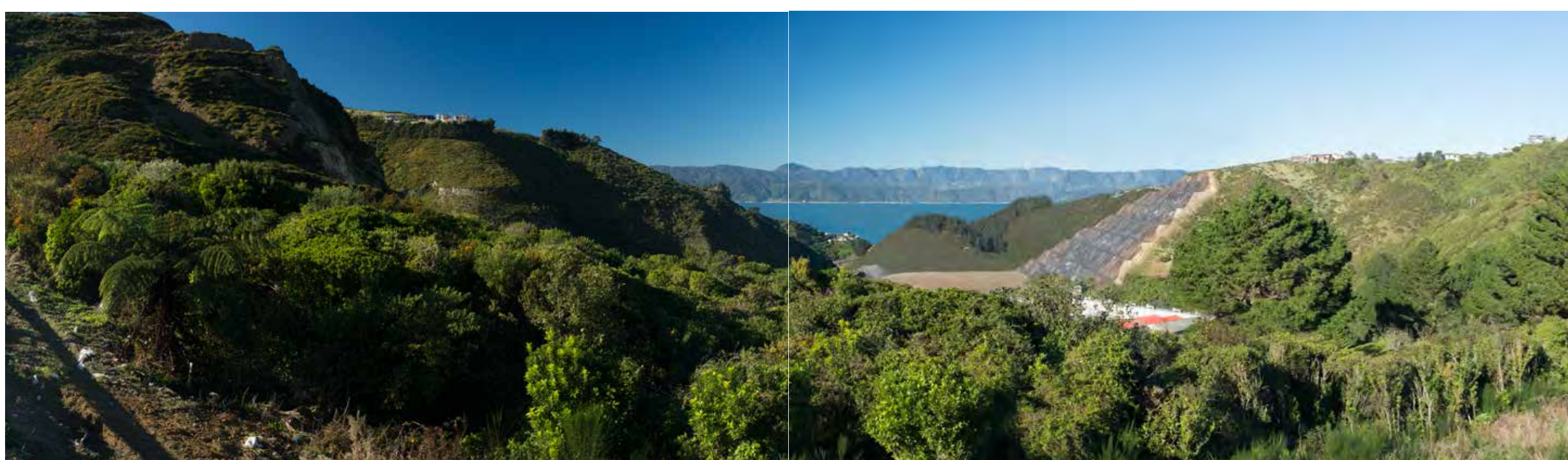
*Approximate locations of the maximum extent of the quarry area cuts under option 3-4*



*Existing view*



*Extent of Option 3: Medium Development - Unmitigated*



*Extent of Option 4: Maximum Development - Unmitigated*



# Life after quarrying

Quarry operations are usually long term and they serve the needs of their communities for many years. As resources are extracted from the surface, there will be changes to landscape, vegetation and

natural visual impacts. However, our quarry management plan ensures that we progressively restore the quarry's vegetation to help bring it back to its closest natural state.

Ngauranga Gorge is a highly modified environment but retains landscape qualities and characteristics of value. In particular, the gorge is noted as part of the “gateway experience” to Wellington.



*Option 3 before mitigation*



*Option 3 after mitigation*



*Option 4 before mitigation*



*Option 4 after mitigation*

## Mitigation

Mitigation is the process of returning the area to a natural state. This can start within the first couple of years of any expansion of the south face and starts from the top of the quarry down. The first 15 metres can be hydro seeded and can start growing quickly, depending on weather conditions. The bare quarried rocks will not be visible for more than a few years, as the process of hydro seeding is continual.



## Ecology

An assessment of the ecological effects for the proposed expansion site has been done. There are two types of indigenous forest on the site. The forest vegetation is significant because it provides locally important seasonal habitat for indigenous forest birds. The ngaio-māhoe-māpou forest is also significant because it represents the area's likely pre-human vegetation, has high plant species diversity, and provides a habitat for a locally uncommon plant species. Other habitats may be significant for indigenous lizards and fish. Surveys for these will be undertaken in the summer months.

The recommended option for mitigation is to re-vegetate the area adjacent to the proposed expansion area. This area is considered a viable alternative to address mitigation for the loss of ngaio-māhoe-māpou forest. It is Council-owned land and, if agreed by the Council, would be reclassified as reserve land, the same as neighbouring Tyers Stream Reserve and Maldiva Street Reserve.



# Views from State Highway One

Quarrying the south face will be highly visible from State Highway One, particularly to motorists travelling south.

Options are being considered for screening quarrying activities from motorists and passengers travelling on SH1 in both directions. This will form an important part of public consultation and engagement, given the significance of this area as a “Gateway to Wellington”. Options could include artworks, urban design elements including planting, as well as a temporary lighting feature and/or projection art. This would likely need to be static images (which could be changed regularly) to address highway safety concerns, but would still require appropriate New Zealand Transport Authority approval.

## Ngauranga Quarry Screen



### Considerations:

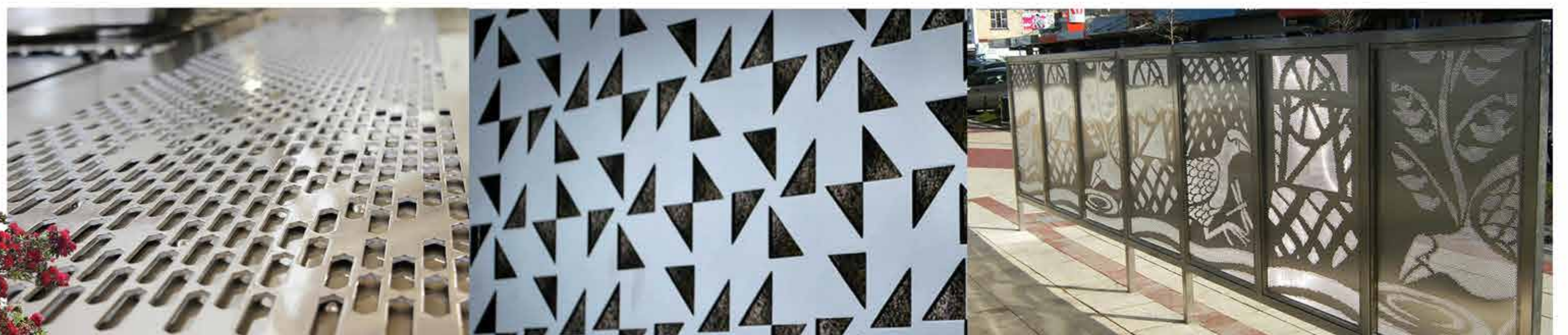
- 20 year life span
- Relocatable
- Wind loading
- Noise (anti whistling)
- Site context - NZ plants
- Opportunity for greening / tree protection

### Screen Design

- NZ plants - abstracted design
- Perforated / turret press process
- Zig-zaged for better structural support

### Plan View

Screens arranged to provide shelter to promote vegetation growth





# Have your say on the future of Kiwi Point Quarry

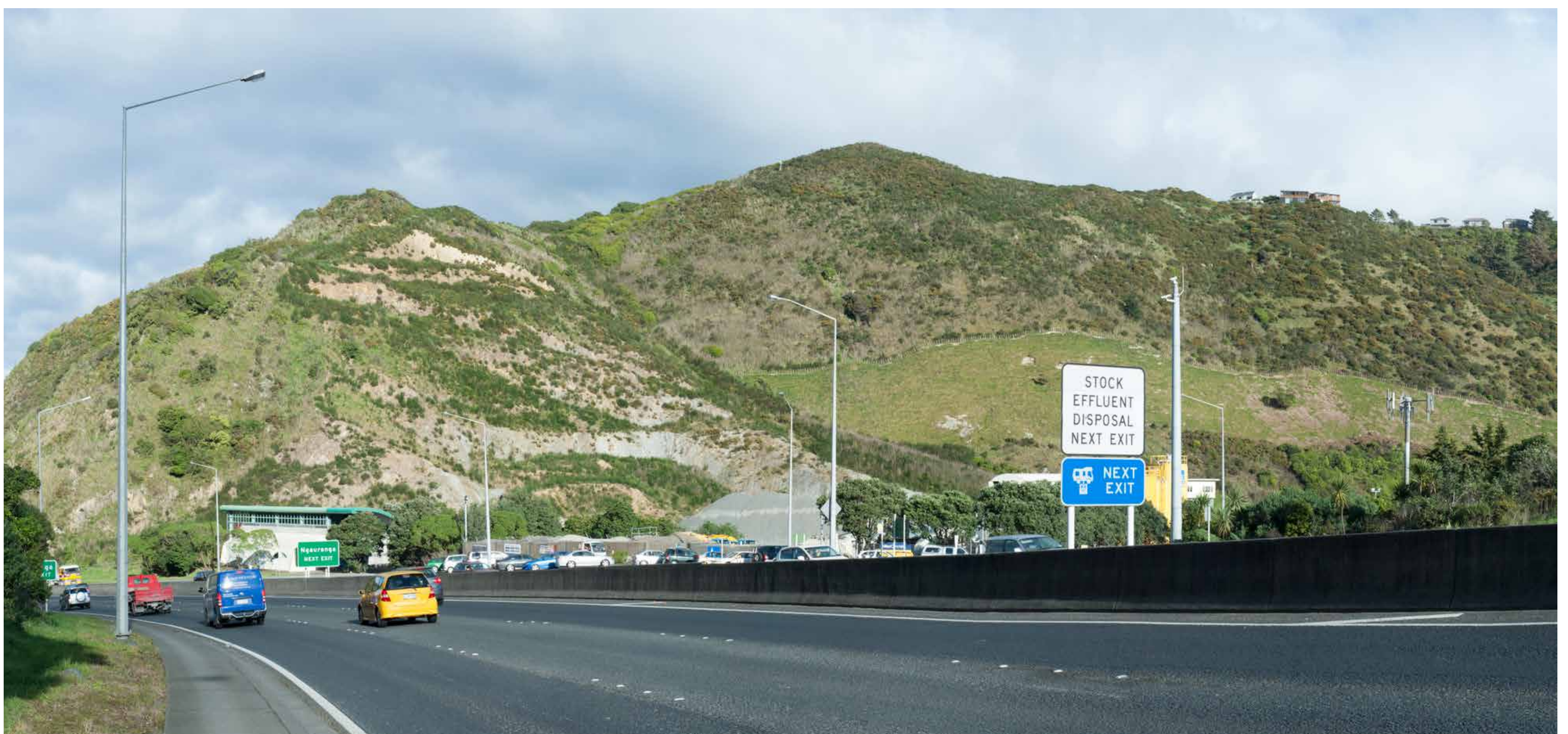
We want to hear your views on the proposed expansion options for Kiwi Point Quarry.

You can make your submission online at [wellington.govt.nz/kiwipointquarry](https://wellington.govt.nz/kiwipointquarry) or email your thoughts to [kpq@wcc.govt.nz](mailto:kpq@wcc.govt.nz)

If you prefer, you can also complete a hard copy form, which you can pick up at Wellington Central Library, Johnsonville Library, Khandallah Library, or Wellington City Council at 101 Wakefield Street, then post your filled submission form to us (no stamp needed).

Based on your feedback and other evidence available, we may then go through the District Plan change process with formal submissions from stakeholders, oral hearings and a decision by an independent commissioner.

Tell us what you think by 5pm, 30 October 2017.



*View of quarry site from SH1*