Economic Assessment

State Significant Development
SSD-70557215
Hillview Hard Rock Quarry Project
67 Maytoms Lane
Booral, NSW

Coastwide Materials Pty Limited

December 2024

AIGIS GROUP

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Executive Summary

ES1: Introductory material

Report purpose

This Economic Assessment (EA) provides quantitative and qualitative assessments of the proposed development and operation of a hard rock quarry at 67 Maytoms Lane, Booral, NSW. The site is located in the Mid-Coast Council (MCC) Local Government Area (LGA). For planning assessment purposes, the Department of Planning, Housing and Infrastructure (DPHI) has designated the Project as SSD-70557215. The Project proponent is Coastwide Materials Pty Limited. Full details of the site and Project are included in the EIS with which this EA is submitted.

DPHI has issued Secretary's Environmental Assessment Requirements (SEARs) for the Project.
The Project SEARs require '*a detailed assessment of the likely economic impacts of the development, paying particular attention to:*

- *The significance of the resource;*
- *The costs and benefits of the Project; identifying whether the development as a whole would result in a net benefit to NSW, including consideration of fluctuation in commodity markets and exchange rates; and*
- *The demand for the provision of local infrastructure and services*'.

Methodology

The EA has been developed to comply with the DPHI *Guideline for the Economic Assessment of Mining and Coal Seam Gas Proposals* and the supporting *Technical Notes* (collectively referred to as the guideline), to the extent that these are applicable to the specifics of this Project. Broadly, the two elements of economic assessment required by the guideline, Cost-Benefit Analysis (CBA) and Local Effects Analysis (LEA) are adopted as the conceptual framework for the assessments presented. As is required under the guideline, the EA relies on Project parameters and data provided by the applicant, and applies methods supported by the guideline to assess the economic effects of the Project.

Alternative to the proposal – 'base case'

The alternative to the proposal is that development and operation of the quarry does not proceed. The proponent already owns the property, and uses various parts of it for livestock grazing and recreational purposes. Should the Project not proceed, these uses may continue, or the proponent may decide to dispose of the land or use it for other purposes.

The economic outcomes of the base case correspond with no use of the site for quarrying. The economic benefits estimated in this EA would not eventuate. Similarly, actual and other costs, such as represented by the monetised estimates for certain environmental impacts that are presented in the EA, would also not eventuate.

ES2 Cost Benefit Analysis (CBA)

Aggregate economic benefit

The estimates described in the preceding sections are presented separately and in aggregate in Table 3. The employment benefit is based on the average of the two estimates calculated in Annexure 3, applied to employee estimates for each scenario. Values at each of the three Treasury/DPHI mandated discount rates are reported as sensitivity assessments. Table 4 shows additional sensitivity testing outcomes based on plus 25%/minus 25% assumptions on the core pricing estimate. All underlying assumptions are described in Annexures 2 to 4.

Table ES1: Estimate of economic benefit

Economic Benefit	Estimation assumptions	Economic effects Assessed PV (≈$ million)		
		4%	7%	10%
MCC road haulage charges	Refer to Annexure 1	12.2	8.3	6.0
MCC rates[1]	Refer to Section 3.1.5.1	≈0.1	≈0.1	≈0.1
PSC road haulage charges	Refer to Annexure 1	7.7	5.3	3.8
Net employee economic benefit	Refer to Annexure 2	3.5	2.5	1.8
Corporate income tax (NSW)	DPHI guideline	2.3	1.6	1.1
Net producer surplus	DPHI guideline	10.2	6.8	4.7
Total economic benefit PV ($M)		**36.0**	**24.6**	**17.5[2]**

Aggregate economic costs

Total Project cost estimates for the quantitatively valued impacts are presented in Table 6. Sensitivity analysis outputs based on discount rate adjustments as mandated by DPHI/NSW Treasury are also presented. The bases for the estimates are described in Annexures 5 and 6.

Table ES2: Sensitivity analyses, total quantified economic costs, PVs

	Assessment at discount rate ($)		
	4%	7%	10%
GHG emissions	$10,187,250	$7,077,396	$5,182,443
Air quality	$3,106	$2,133	$1,535
Surface water	$697,558	$421,994	$291,688
Biodiversity	$2,335,050	$1,412,611	$976,414
Noise and vibration	$1,132,737	$804,428	$603,868
Traffic & transport	$3,916,869	$2,752,150	$2,043,000
Total quantified costs	**$18,272,570**	**$12,470,711**	**$9,098,948**
Total ($M)	**18.3**	**12.5**	**9.1**

[1] Assessed values are $116,952 (4%); $83,470 (7%); and $63,917 (10%).
[2] There may be some small rounding differences between totals reported and workbook totals.

Net economic cost/benefit of the Project

Combining the outputs of Tables 3 and 6, the Net Present Value (NPV) for the CBA element of the Project is presented in Table 8. At each discount rate, the direct benefits of the Project to NSW are greater than the assessed costs, as indicated by positive NPV outcomes. The Benefit-Cost Ratio (BCR) for each scenario is also calculated. The BCR as calculated is high compared with conventional acceptable ranges. This is principally related to the assessment of locally concentrated impacts, such as noised and vibration and air quality in the context of the very small local population.

Table ES3: Summary of net economic benefit/cost

	PV ($ million)		
	4%	**7%**	**10%**
Economic benefit	36.0	24.6	17.5[3]
Quantified economic costs	18.3	12.5	9.1
Net economic benefit (NPV)	17.7	**12.1**	8.5
Benefit-Cost Ratio (BCR)	1.97	**1.97**	1.93

[3] There may be some small rounding differences between totals reported and workbook totals.

ES3: Local Effects Analysis (LEA)

Spatial area and

The Social Impact Assessment (SIA) for the Hillview Quarry Project identifies the social locality for the Project with reference to the definition provided in the DPHI *Social Impact Assessment Guideline* (2023:16) [SIAG]. The SIAG recognises that there may be more than one element to the social locality, depending on the nature of the Project. Based on that description, the various elements of the social locality for Hillview Quarry are defined in the SIA as:

- Booral (ABS Suburbs and Localities [SAL][4]).
- Bulahdelah - Stroud SA2.
- Mid-Coast Council LGA.
- NSW.

A detailed 'social baseline' profile of these parts of the social locality is included in the Project Social Impact Assessment (SIA). In accordance with the DPHI EA guidelines, the Project impacts for NSW are addressed in the CBA. The local and regional areas are addressed in this LEA.

Table 15: Summary of quantified regional effects[5]

Effect	Assessment (SA3)		
	4%	7%	10%
Assessed benefits			
Corporate tax[6] (PV $'000)	27.2	18.5	13.1
Net producer surplus PV $ million)	10.2	6.8	4.7
Total road haulage charges (PV $ million)	19.9	13.6	9.8
MCC land rates (PV $'000)	116.9	83.5	63.9
Net employee benefit (PV $million)[7]	3.5	2.5	1.8
Non-labour expenditure (PV $million p.a. [PV/30])	4.2	3.0	2.2
Voluntary local contributions [$12 million nominal over life of quarry] (PV $ million)	6.9	4.8	3.4
Assessed costs			
Aboriginal cultural heritage (PV $'000)	-	-	-
Biodiversity ($ million)	2.3	1.4	1.0
Air quality (PV $'000)	3.1	2.1	1.5
GHG (PV $'000)	118.2	82.1	60.1
Noise & vibration ($'000)	1.13	804.4	603.9
Surface water (PV $'000)	700	422.0	291.7
Traffic & transport (PV $M)	3.9	2.8	2.0

[4] ABS SAL = Suburbs and localities. ABS SA2 = Statistical Area Level 2.
[5] PVs at 7% discount rate
[6] Based on ABS 2021 Census data, proportion of SA3 to NSW population.
[7] As reported in Table 4.

Indicative indirect economic effects

I/O multipliers are presented in Section 3.1.9, as an overall indication of the potential indirect economic effects of the Project. One of the limitations on use of multipliers is that they are generally not appropriate for application to small regions. The multipliers in Section 3.1.9 are noted for reference, without inferring that they accurately apply to the more locally and regionally based economic effects of the Project.

As is noted in Section 3.1.9, in practice, the proposed quarry site is located near to major economic centres. As such, it is likely that a substantial amount of its employment and commercial activity will take place in the surrounding regions, as distinct from the areas immediate to the site.

ES4: Conclusions

CBA

The CBA indicates a positive economic outcome. NPVs are favourable, and remain so across a range of alternative scenarios. NSW would receive a flow of revenues. Importantly, access to materials for the construction of infrastructure and housing would be augmented by the Project. This has broadly-based positive economic implications for the state and its people.

At the localised level, some of the valuations for localised environmental effects such as air quality, and noise and vibration, would not be considered as material by conventional standards. However, Aigis Group also prepared the SIA for this Project, and these are matters of interest to stakeholders, and have been valued where practical on that basis.

The likely effects of additional quarry traffic on The Bucketts Way (particularly trucks) is the matter of greatest interest that was raised in engagement. The comparatively high valuations for this economic cost reflect this situation. However, these are offset by the assessed mandatory heavy vehicle contributions.

The EA has considered both quantitative and qualitative economic aspects of the Project. It is considered that, on balance, the Project would produce a positive economic outcome for the State of NSW.

LEA

The quantified benefit accruing to the local and regional areas is greater than the quantified cost, on the assessments presented. However, it should be noted that some significant sources of quantitative benefit are in the form of contributions to offset effects of the Project. The most apparent of these are road haulage contributions to MCC and PSC with respect to the use of The Bucketts Way by quarry trucks. Nevertheless, direct application of those contributions to addressing quarry impacts is a mitigatory economic initiative.

It must also be recognised that there are also intangible costs on the community. Therefore, some stakeholders may consider that the assessments do not adequately reflect the cost to

the community. In this respect, the LEA should also be considered in the context of the material presented in the SIA prepared for the Project, and in particular, the reporting of stakeholder engagement and its outcomes.

Economic assessment

The overall assessment is that the proposed Project would be likely to have a positive economic impact. The broad-based positive effect of continued supply of construction materials is a matter acknowledged in the *Hunter Regional Plan 2041*. Sufficient supply is crucial to allow the construction of the additional housing and infrastructure required to support future population growth. This is discussed in detail in the SIA prepared for the Project.

From the State's perspective, in aggregate terms, beneficial outcomes are unlikely to be material in terms of their scale. However, they do represent additional direct industrial activity and stimulus for the commercial activity required to support it. This is also the case for additional employment, with its beneficial socioeconomic onflows. Furthermore, the potential use of the quarry's output in the development of public infrastructure, such as roadworks etc., which generally benefit subsequent users of that infrastructure.

Abbreviations

ABS	Australian Bureau of Statistics
AHIMS	Aboriginal Heritage Information Management System
ANZEC	Australian and New Zealand Environment Council
ANZSIC	Australian and New Zealand Standard Industrial Classification
AQIA	Air Quality Impact Assessment
AUD	Australian dollar/s
BITRE	Bureau of Infrastructure and Transport Research Economics (Federal)
CBA	Cost Benefit Analysis
CCAA	Cement, Concrete and Aggregates Australia
dBA	A-weighted decibel
DMP	Dewatering Management Plan
DPHI	Department of Planning, Housing and Infrastructure
EA	Economic Assessment
EEX	European Emissions Exchange
EPA	Environment Protection Authority (NSW)
ERP	Estimated Resident Population (ABS)
ES	Executive Summary
EUR	Euro/s
FTE	Full Time Equivalent
GHG	Greenhouse gases
GWIA	Groundwater Impact Assessment
GWMP	Groundwater Management Plan
IA	Infrastructure Australia
I/O	Input/Output
IOIG	Input/Output Industry Group
LEA	Local Effects Analysis
LGA	Local Government Area
LQ	Location Quotient
MCC	Mid-Coast Council
ML	Megalitre
ML/a	Megalitres per annum
Mtpa	Million tonnes per annum
NPV	Net Present Value
NVIA	Noise and Vibration Impact Assessment
PAD	Potential Archaeological Deposit
PCT	Plant Community Type
$PM_{2.5}$	Particles with diameter ≤ 2.5 micrometres
PM_{10}	Particles with diameter ≤ 10 micrometres
PNTL	Project noise trigger level
PR	Planning Region (DPHI)
PSC	Port Stephens Council
PV	Present Value

RBA	Reserve Bank of Australia
REDS	Regional Economic Development Strategy
SAL	Suburbs and Localities (ABS)
SA2	Statistical Area Level 2 (ABS)
SA4	Statistical Area Level 4 (ABS)
SEARs	Secretary's Environmental Assessment Requirements
SIA	Social Impact Assessment
SWIA	Surface Water Impact Assessment
tCO^2-e	Tonnes of carbon dioxide equivalent
The Applicant	Coastwide Materials Pty Limited
Tpa	Tonnes per annum
TPIA	Traffic and Parking Impact Assessment
TSP	Total Suspended Particulate
USD	United States dollar/s

Contents

1 Introductory material

1.1 Purpose of report

This Economic Assessment (EA) provides quantitative and qualitative assessments of the economic effects of the proposed development and operation of a hard rock quarry at 67 Maytoms Lane, Booral, NSW. The site is located in the Mid-Coast Council (MCC) Local Government Area (LGA). For planning assessment purposes, the Department of Planning, Housing and Infrastructure (DPHI) has designated the Project as State Significant Development SSD-70557215. The Project proponent is Coastwide Materials Pty Limited.

DPHI has issued Secretary's Environmental Assessment Requirements (SEARs) for the Project. The Project SEARs require '*a detailed assessment of the likely economic impacts of the development, paying particular attention to:*

- *The significance of the resource;*
- *The costs and benefits of the Project; identifying whether the development as a whole would result in a net benefit to NSW, including consideration of fluctuation in commodity markets and exchange rates; and*
- *The demand for the provision of local infrastructure and services'*.

The EA has been prepared in the context that the proposed quarry will serve regional construction materials markets, within NSW. As a result, factors such commodity markets and exchange rates are not considered as likely to materially impact Project outcomes, as it would have little or no exposure to these foreign trade factors.

1.2 Approach

This Economic Assessment (EA) has been developed to comply with the DPHI *Guideline for the Economic Assessment of Mining and Coal Seam Gas Proposals* and the supporting *Technical Notes* (collectively referred to as the guideline), to the extent that these are applicable to the specifics of this Project.

Broadly, the two elements of economic assessment required by the guideline, Cost-Benefit Analysis (CBA) and Local Effects Analysis (LEA) are adopted as the conceptual framework for the assessments presented. As is required under the guideline, the EA relies on Project parameters and data provided by the Applicant, and applies methods supported by the guideline to assess the economic effects of the Project.

1.3 Site description

As stated in Section 1.1, the proposed site is nominally 67 Maytoms Lane, Booral, NSW. Title references for the various elements of the site are; Lot 1 DP 159902, Lots 2, 3 and 4 DP 1166923, Lot 60 DP 1094397, Lot 62 and 63 DP 95029 and Lot 64 DP 95030. The site is currently partially used for some grazing activity, and recreational uses. Large parts of the site have been modified to support grazing.

1.4 Alternative to the proposal – 'base case'

The alternative to the proposal is that development and operation of the quarry does not proceed. The Applicant proprietor already owns the property, and uses various parts of it for livestock grazing and recreational purposes. Should the Project not proceed, these uses may continue, or the Applicant may decide to dispose of the land or use it for other purposes.

The economic outcomes of the base case correspond with no use of the site for quarrying. The economic benefits estimated in this EA would not eventuate. Similarly, actual and other costs, such as represented by the monetised estimates for certain environmental impacts that are presented in the EA, would also not eventuate. The property is not used for commercial agricultural purposes at scale, and therefore there would be no material economic loss or gain related to continuation of current use.

There are two hard rock quarries currently operating in the surrounding areas of MCC and Port Stephens Council LGAs. Diagrams of the distance between the Hillview site and these quarries are presented in Annexure 1 for reference. These operating quarries are:

- Hunter Quarries, Karuah. MCC LGA. Approximately 16.8km (linear)[8] from site.
- Boral Seaham Quarry, Balickera. PSC LGA. Approximately 22.3km (linear) from site.

The Deep Creek Quarry hard rock quarry (Ironstone Developments) has also recently been approved to operate. The quarry is located near Limeburners Creek, approximately 7km (linear) from the Hillview site (refer to the diagram in Annexure 1).

Coastwide Materials also operates Allworth Quarry, located approximately 5km (linear) from the Hillview site (refer to the diagram in Annexure 1). This quarry is a river gravel quarry, using different extraction methods to the hard rock quarries noted above and proposed in this SSD application.

It is noted that, like Coastwide Materials, the Boral and Hunter Quarries operations are parts of vertically integrated industrial groups, although each differs in scale. Therefore some proportion of product will be allocated to the value-adding ready-mix concrete businesses that these groups operate. In the case of Boral, the group also produces and supplies asphalt, which also requires crushed quarry aggregate. This may insulate these businesses from the effects of competition between the various operations in the area, to some extent.

Section 2 discusses the significance of the resource. The section is also relevant to assessing the baseline situation in terms of existing general demand for quarry products.

[8] All quoted distances are indicative only, and are not purported to be precise.

2 Significance of resource

As is provided for in the SSD-70557215 SEARs, at maximum production, the quarry is planned to extract and process up to 1.5 million tonnes of hard rock per annum. Total maximum production is assessed as 30 million tonnes, to be extracted over approximately 30 years. The majority of material will be crushed and sized, for sale as aggregates for construction Projects, including as an intermediate input to concrete production.

Cement, Concrete and Aggregates Australia (CCAA)[9] currently quantifies the demand for quarry products as follows:

- *Every Australian requires 8 tonnes of stone, sand and gravel every year to build the roads, houses and other infrastructure we need.*
- *To build an average new house, we use about 110 tonnes of construction aggregates and 53m^3 of concrete.*
- *To build one kilometre of two-lane highway requires about 14,000 tonnes (or 400 truckloads) of construction aggregates.*
- *Quarry products are essential raw materials needed to build new infrastructure Projects. Over 200 million tonnes of aggregates [in Australia] are used in the construction of homes, workplaces, public buildings and roads every year.*
- *Quarrying needs to be carried out close to where these materials will be used. This keeps transportation costs low and helps keep building costs down in local communities* (CCAA website, 2024).

CCAA also stated in a 2016 submission to the NSW Environment Protection Agency (EPA), CCAA[10] stated that; *'Approximately, 45 million tonnes of construction materials are extracted in NSW each year for use in pre-mixed concrete, and other construction processes, such as road base and pavements'* (CCAA 2016:1)[11].

Although total production delivered is likely to have increased over the subsequent years, the proposed maximum production of 1.5 million tonnes per year for the quarry would represent 3.3% of 2016 production utilised in NSW. The requirement for these materials will increase in coming decades, as the housing and infrastructure is built to accommodate population growth of approximately 20.9% (NSW) and 14.4% (Mid-Coast Council Local Government Area[12]) by 2041. It is submitted that based on these measures, the proposed quarry is potentially a substantial regional resource in the context of a single producer.

[9] CCAA website 2024 https://www.ccaa.com.au/CCAA/Public_Content/INDUSTRY/Quarry/Quarry_Overview.aspx
[10] www.epa.nsw.gov.au/~/media/EPA/Corporate%20Site/resources/licensing/lbl/lbl-issues-paper-cement-concrete-and-aggregates-australia.ashx
[11] An enquiry with CCAA with respect to more recent data was unsuccessful. CCAA does currently identify national production at approximately 200Mtpa.
[12] Referred to in the report as MCC (Mid-Coast Council) and LGA (Local Government Area).

2.1.1 Infrastructure Australia Market Capacity Report 2023.

The Infrastructure Australia (IA) Market Capacity Report provides additional context when considering the economic context of the proposed quarry, and the significance of the resource.

Major public infrastructure spend is valued in the report at $230 billion over the five years from 2022—23 to 2026—27. As identified in Figure 1, IA assesses capacity risk for supply of quarry products as high.

Regarding the comment on capacity issues on the Mid-North Coast of NSW, IA elaborates on this as follows; '*Elsewhere, quarry capacity in Mid North Coast NSW is a growing risk to Coffs Harbour Bypass investments, as are quarries that serve regional and remote areas due to a lack of logistics and capacity approvals*' (2023:46). As the quarry is regionally located in the MCC LGA, the proposal may be considered as potentially contributing to greater capacity in the LGA and broader Mid North Coast area as defined by IA, should it be approved.

Figure 1

Construction materials	Key risks	Implications	Capacity risk
Quarry products	Quarries that serve Melbourne, Mid North Coast New South Wales, and Southeast Queensland are identified by industry as being low on supply. It takes 5–10 years between quarry application approval and extraction.	Without a view of national quarry supply there is no basis for predicting current capacity or planning future capacity. Inefficient planning, development, and re-approval processes prevent timely responses to emerging supply constraints. Projects carry the risk of higher transportation costs and schedule delays if forced to source quarry materials from further afield.	High

Source: Infrastructure Australia (2023:42)

2.1.2 Hunter Regional Plan 2041

Figure 2 is extracted from the Project SIA (Aigis Group 2024) and shows excerpts from the Hunter Regional Plan 2041 relating to regional development over the intervening period. It provides an indication of the importance of supply of materials to support future regional development. The Project would contribute to this supply.

Figure 2

Table 3: Relationship of proposal to Hunter Regional Plan 2041

Plan ref.	Hunter Region Plan element	Relevance of proposal to element
P.11	***The 2041 Vision for the Hunter*** Productive agricultural land and natural resources are the foundations of the region's economy with greater economic diversification in growing health, defence and aerospace, energy, tourism and transport sectors.	The proposed Project would permit extraction of a natural resource, operated by an experienced quarrying business. The material produced would be used as input in supporting the development of public and private infrastructure that would support social and economic progress in the Hunter.
P.87	NSW needs a reliable supply of construction materials to support continued growth. These include sand and gravel, crushed rock, recycled materials and secondary aggregates created from construction, demolition and excavation.	The Project would directly address this requirement, by contributing to supply of construction materials.
P.143	**PLANNING PRIORITY 5:** ***Promote sustainable use of mineral and energy resources*** Mineral and energy resources need to be managed and protected from incompatible development or encroachment that could lead to mineral resource sterilisation. This could lead to higher management costs or a reduced potential to sustain or grow rural and resource industries. The district contains regionally significant construction, mineral and energy resources such as sand, gravel, hard rock, sandstone (dimension stone), clay and coal deposits. Extraction of these resources supports major infrastructure projects, industries and agricultural businesses. Development proposals for aggregate extraction will be promoted if they are in accordance with the district planning principles and local strategic planning. They should balance economic benefits with the protection of the environment and local communities. . . Planning for these areas and the surrounding areas must ensure: • mining and quarrying remain a permissible use, with development consent, in the resource areas • appropriate land use buffers are provided between these areas and future development • these areas contribute to the longer term formation of a green corridor, both during extraction (e.g. by maintaining existing vegetation links and/or restoration on areas not being quarried or mined) and on completion of resource extraction	The Project is consistent with this Planning Priority, as it would contribute to maintaining supply of materials for infrastructure projects, construction, etc.

3 Cost-Benefit Analysis (CBA)

3.1 Assessment of economic benefit of the Project

3.1.1 Application of DPHI guidelines

As is provided for in the guidelines (2015:1), the collective public interest of households in NSW and the economic benefit of the Project to the NSW community are addressed in the CBA. The assessments reported below have been developed in this context. The principal or central estimates provided in these assessments are present values (PV) and net present values (NPV) at the discount rate of 7%, with sensitivity testing at 4% and 10% (as directed by DPHI 2015:4). In relevant tables in the document, the central 7% case is highlighted.

3.1.2 Description of approach to CBA assessments

As noted above, the CBA element of the Project relates to benefit to the NSW community generally. It is noted that elements of economic benefit, such as employee wages and salaries, and government charges and levies, also form part of the operating costs of the proposed quarry and are reflected in the assessment of net producer surplus.

With respect to hard rock quarrying, no royalties are levied on the materials produced. However, a mandatory return to the public is payable in the form of heavy vehicle road use charges, which are levied by local governments.

3.1.3 Road haulage contributions

The quarry will generate laden truck movements on The Bucketts Way. The Traffic and Parking Impact Assessment (TPIA) states that; '*All heavy vehicles will predominantly arrive from the south and travel from the development to the south towards Sydney, the Hunter and Central Coast. The exception to this is occasionally, vehicles will arrive from the south and depart to the north to travel to Stroud, but this will be a very rare occasion and generally will only be one or two vehicles in any given day*' (McLaren 2024:16). Laden trucks will therefore mostly travel between Maytoms Lane and the intersection of The Bucketts Way and the Pacific Highway at Twelve Mile Creek. The haulage route is shown in Figure 3 (Figure 4 in the TPIA [McLaren 2024:17])

Figure 3: Proposed heavy vehicle haulage route

Source: TPIA, McLaren 2024:17)

The use of this section of The Bucketts Way will result in liability for payment of charges to both Mid-Coast Council and Port Stephens Council (PSC), with this part of the route lying partially within both LGAs, as follows:

- MCC: approximately 14.1 kilometres (km) of The Bucketts Way between Maytoms Lane and approximately Captain Hills Creek Road.
- PSC: approximately 5.5 km of The Bucketts Way between Captain Hills Creek Road and the intersection with the Pacific Highway at Twelve Mile Creek.

As stated in the TPIA, there will be infrequent instances of trucks travelling towards Stroud on The Bucketts Way[13]. The TPIA does not quantify the frequency or number of these movements other than the description cited above. As a result, it was not possible to calculate a valuation for any such movements.

[13] Diagrams of each section of the route are included in Annexure 1. This includes a diagram of the Maytoms Lane to Stroud section, for reference.

These charges are also assumed to form part of the operational costs of the quarry and as such are effectively subtracted from net producer surplus. As a result, from the cost and benefit effectively cancel out, which can be considered as consistent with the cost recovery basis on which the charges are levied.

The rates applied for assessing these charges are reported in Annexure 1.

Table 1: Estimated road haulage charges (PVs)

	Assessment at discount rate ($ million)		
	4%	**7% (central)**	**10%**
MCC	12.2	8.3	6.0
PSC	7.7	5.3	3.8
Total	19.9	13.6	9.8

3.1.4 Economic benefit to workers

The definition of net economic benefit to workers presented in Task 6.2 of the guidelines (2015:13) forms the basis of the estimate presented in Table 2. The method for calculating the base estimates is presented in Annexure 3. Preliminary to presentation of this estimate, Table 2 presents estimates of the present values (PV) of *total net* and *total* employee benefit at the three discount rates. The estimates refer to full time equivalent (FTE) employees.

A time series diagram of the Projected workforce is shown in Figure 4. As demonstrated in the figure, there are workforce assumptions for the average number of employees in each of the three stages of the Project, which are:

- Quarry development (15 FTE).
- Full operations (20 FTE).
- Decommissioning and rehabilitation (10 FTE).

Figure 4

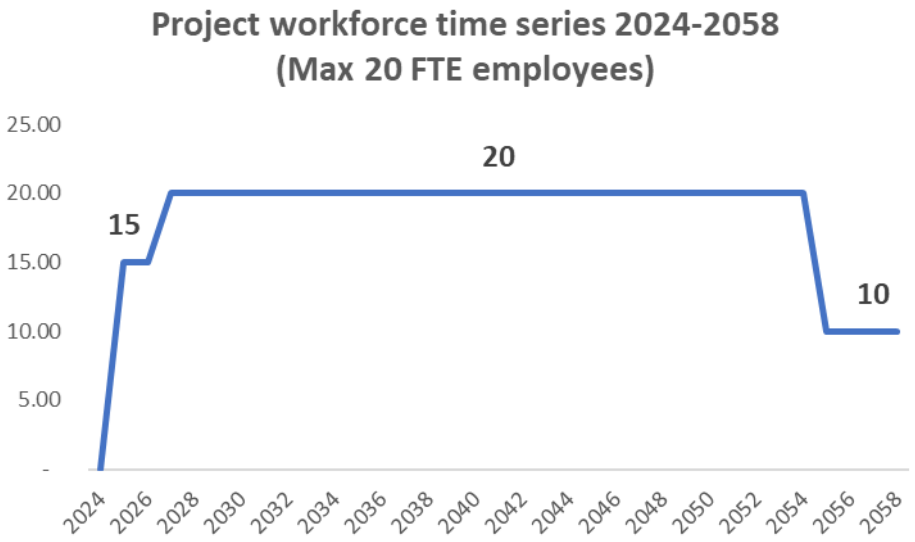

Table 2: Total employee incomes benefit (PV)

		($ million)	
	4%	**7%**	**10%**
Total net employee benefit[14]	3.5	2.5	1.8
Total employee incomes (Project life)	33.4	23.4	17.4

An alternative assessment method reported in Annexure 3 based on an estimation of disposable income returns aggregate disposable incomes spent in workers' local economies of:

- $12,864 per week.
- $668,928 per year.

This demonstrates the conservatism of the assessment methodology used in the CBA, as shown in Table 2. The central estimate of net employee benefit of around $2.5 million over the life of the Project is significantly lower than present value of total employee incomes $23.4 million. Annexure 3 describes a method for assessing disposable income and the resulting estimates. The present value of estimated disposable income over the Project life is approximately $8.1 million.

[14] Base assumptions held constant throughout assessment period.

3.1.5 Taxes

3.1.5.1 Local government (MCC)

Rates are payable by the Applicant to MCC. The current rates for the entire site are used for this purpose. The current MCC policy *Rates – Aggregation of Land Values for Rating Purposes*[15] states in relation to rate categories;

- ***Ordinary Rate Category*** *– land declared to be within one of the following categories; farmland, residential, mining or business.*

Section 517 (1) of the *Local Government Act 1993* states that for land to be categorised as mining, its dominant must be for coal or metalliferous mining. Section 518 provides that 'land is to be categorised as business if it cannot be categorised as farmland, residential or mining'.

On these bases, the current rating category for the land will continue to apply and is used as the basis for valuation.

3.1.5.2 NSW Government

As stated in Section 3.1.2, the State does not levy royalties on the materials to be produced by the quarry. In addition, the guideline states in respect of payroll tax that; '*the majority of these taxes will have been generated without the Project, as people would have been employed elsewhere. Hence these should be included in costs*' (2015:10)[16]. As recommended, these are provided for in the operating cost assessment for the Project.

3.1.5.3 Company income tax

Federally levied company income tax at the rate of 30% is apportioned to NSW using the proportional population method prescribed in the guideline. The advised rate in 2014 was 32%, as noted in the guideline. Based on ABS ERP data for 2023[17], the proportion was 31.3%, which was used for this analysis.

3.1.6 Local contributions

The Applicant's advice is that $12 million will disbursed into the local community over the operating life of the quarry. As this is the undertaking by the Applicant, this sum has been evenly distributed over the life of the quarry in annual 'instalments'.

3.1.7 Net producer surplus

Coastwide Materials is a NSW-owned and operated business, headquartered in Wyong, NSW. Therefore, 100% of net producer surplus will accrue to NSW.

[15] Adopted by Council 22 March 2023, next scheduled review November 2024. No information on this review was located via search of the relevant MCC webpages and documents, undertaken 298 November 2024.
[16] The same treatment is prescribed for federally-levied personal income taxes.
[17] Source: ABS Data by Region 2024. < https://dbr.abs.gov.au/ >

3.1.8 Aggregate economic benefit

The estimates described in the preceding sections are presented separately and in aggregate in Table 3. The employment benefit is based on the average of the two estimates calculated in Annexure 3, applied to employee income estimates for each scenario. Values at each of the three Treasury/DPHI mandated discount rates are reported as sensitivity assessments. All underlying assumptions are described in Annexures 2 to 4.

Table 3: Estimate of economic benefit

Economic Benefit	Estimation assumptions	Economic effects Assessed PV (≈$ million)		
		4%	7%	10%
MCC road haulage charges	Refer to Annexure 1	12.2	8.3	6.0
MCC rates[18]	Refer to Section 3.1.5.1	≈0.1	≈0.1	≈0.1
PSC road haulage charges	Refer to Annexure 1	7.7	5.3	3.8
Net employee economic benefit	Refer to Annexure 3	3.5	2.5	1.8
Corporate income tax (NSW)	DPHI guideline	2.3	1.6	1.1
Net producer surplus	DPHI guideline	10.2	6.8	4.7
Total economic benefit PV ($M)		**36.0**	**24.6**	**17.5**[19]

3.1.9 Indirect economic benefit

The economic activity of the proposed quarry would also support additional activity in the broader economy, as goods and services procurement, and consumption activity occur in progressive rounds resulting from the initial activity. An indication of the extent of these effects can be obtained using input-output (I/O) multipliers. There are several important limitations to reliance on multipliers. Material published by NSW Treasury on these limitations is in included in Annexure 2. The limitations are equivalent to those identified by ABS in previous iterations of IO multiplier publications (also included in Annexure 2).

Given the small population in the immediate area of the Project, the most important of these limitations is application of multipliers to small regions. Although the site is located in the ABS Mid-North Coast Statistical Area Level 4 (SA4), in practice, it is likely that the Project will interact with the Newcastle-Lake Macquarie and Hunter Valley SA4s[20], in terms of sourcing labour and other production factors, which mitigates this limitation to some extent, as this agglomerated economy is large. Although a significant proportion of the quarry's product is likely to go to Projects in the LGA, it is also noted that the Newcastle-Hunter area would also be a likely market for the quarry's products, based on proximity. However, as noted in Section 2.1.1, some product may also be distributed to other parts of the Mid North Coast.

[18] Assessed values are $116,952 (4%); $83,470 (7%); and $63,917 (10%).
[19] There may be some small rounding differences between totals reported and workbook totals.
[20] The site is 67km by road from central Newcastle, compared with 113km to Taree and 184km to Port Macquarie (both in the Mid North Coast SA4).

In recognition of these limitations, relevant I/O multipliers are presented in Table 4, but are not applied to the results of the economic analyses presented in preceding sections. The multipliers are sourced from ABS I/O modelling based on 1996/1997 data, and IO modelling conducted by Aigis Group (2020), based in 2012/2013 data, based on the ABS matrix algebra methodology. The most salient feature of the two sets of outputs is that they remained relatively stable between the two observation periods, although some of this stability is attributed to the limitations inherent in the structure of the multipliers.

Table 4: Indicative I/O multipliers: non-metallic mineral mining (IOIG 0901)[21]

	Output[22] multiplier	Gross value added (GVA) multiplier	FTE employment multiplier
ABS (1996-97 IO)	2.42	1.12	13
Aigis Group (2012-13 IO)	2.32	1.15	12.3

The multipliers are interpreted as the change in each measure of activity for an additional $1 million in demand for the target industry's output. The interpretation is that the outputs of the industry will add further value and employment to the state and regional economies, in addition to the direct economic effects of the Project.

3.2 Assessment of the economic costs of the Project

3.2.1 Explanatory material on cost assessments

This section presents the quantitative or monetised assessment of externalised costs estimated for the Project. The assessment consists of valuations of environmental and related effects and their associated socioeconomic aspects, that can be validly calculated. These are relevant for consideration from the perspectives of both the CBA and the LEA. In assessing the impacts, the listing of effects to be considered in the guidelines was adopted as the basis.

3.3 Assessment of economic costs

Those effects that can be validly expressed as monetary values are presented in Table 5. The method employed for valuations is benefit transfer, as described in the Technical Notes (DPHI 2019:10), which also describes the limitations of the method[23]. Those limitations were

[21] Input Output Industry Group, based on Australian and New Zealand Standard Industrial Classification.

[22] The output multiplier 'shows the relationship between the initial increase in output required from an industry and the total increase in output by all industries' (ABS 2001). The GVA multiplier 'excludes the value of goods and services provided by other industries that is used in producing the output', thus avoiding double counting. 'The [GVA] multiplier shows the relationship between the initial increase in output required from an industry and the total increase in gross value added by all industries' (ABS,2001).

[23] The Technical Notes (2018:9) address materiality as a consideration in choice of estimation methods. With the exception of greenhouse gas emissions, the assessments presented in this EA would generally not be considered as material in the context of Project scale against the NSW economy.

taken into consideration in determining which effects could be valued and the appropriate existing studies that could be applied with adequate validity, in the context of the scale of the Project. Detail of the reports and other assumptions used in valuations are included in Annexure 4, however brief outlines of relevant assumptions are also presented in Table 5.

Compared with the relative scale of the estimates presented in Table 3, it is evident that conventionally, some of these quantitative assessments may not be considered as material when considered individually (as addressed in the Technical Notes [2018:4]). For the purposes of ensuring that these effects are satisfactorily taken into account, the sum of valuations can be considered as material in magnitude. Furthermore, the qualitative aspects of these effects may alter the perceived materiality of potential impacts, particularly in relation to the views of some stakeholders. These aspects are outlined in Table 7, and discussed in the LEA (Part C).

Table 5: Assessment of environmental, social and transport costs (7% DR)[24]

Description of impact	Assessment assumptions	Assessed annual cost
Aboriginal Cultural Heritage[25]	*Not quantitatively assessed on materiality, based on ACHA findings.*	-
Groundwater	*Qualitative assessment. Some elements of assessment of surface water impacts are interrelated.*	-
Surface water	Annexure 4	$32,202
Air quality	*Varies on scheduled rate of production*	Variable
GHG	Annexure 5 (pricing/cost assumptions, average price assumed [$67/ t CO_2-e])[26]	$192,491
Noise & vibration	*Varies by Project stage and proposed impact management initiatives*	Variable
Traffic & transport costs	Annexure 4	$239,850
Biodiversity	Annexure 4	$107,795

3.3.1 Aggregate economic costs

Total Project cost estimates for the quantitatively valued impacts are presented in Table 6. Sensitivity analysis outputs based on discount rate adjustments as mandated by DPHI/NSW Treasury are also presented. The bases for the estimates are described in Annexures 5 and 6.

[24] Referred to subsequently as quantified economic costs, or economic costs.
[25] No historical heritage objects/sites were identified as likely to be impacted by the Project.
[26] GHG valuation at full production (1.5Mtpa) is presented in Annexure 6 (Table A6.4) for reference.

Table 6: Sensitivity analyses, total quantified economic costs, PVs

	Assessment at discount rate ($)		
	4%	**7%**	**10%**
GHG emissions	$10,187,250	$7,077,396	$5,182,443
Air quality	$3,106	$2,133	$1,535
Surface water	$697,558	$421,994	$291,688
Biodiversity	$2,335,050	$1,412,611	$976,414
Noise and vibration	$1,132,737	$804,428	$603,868
Traffic & transport	$3,916,869	$2,752,150	$2,043,000
Total quantified costs	**$18,272,570**	**$12,470,711**	**$9,098,948**
Total ($M)	**18.3**	**12.5**	**9.1**

3.3.2 Summary of qualitative and quantitative estimates

Table 7 presents a summary of the quantified and qualitative cost and benefits of the proposed Project. This includes material from the specialist technical reports describing the likely effects of the Project. The mitigation treatments for impacts that the technical reports include are also identified.

Table 7: Summary of environmental/biophysical effects assessments				
Impact	**Environmental Assessment Commentary**	**Economic Benefits**	**Economic Costs/impacts**	**Description of Environmental Controls & Mitigation Measures**
Economic impacts (EA) **Consultant: Aigis Group**		Total road haulage charges (MCC and PSC contributions) estimated at ≈$13.6 million PV (life of Project) [Aigis Group 2024]. MCC rates ≈$100k PV Corporate taxes (NSW attribution): ≈$1.6 million PV Net employee benefit: ≈$2.5 million PV Net producer surplus ≈ $7.2 million PV Advised, planned voluntary local contributions: ≈$4.7 million PV For each impact assessed, no benefits arise in the base case scenario (i.e. the Project does not proceed).	Cost assessments attributed to other relevant impact categories. For each impact assessed, no costs are incurred in the base case scenario (i.e. the Project does not proceed).	Conditions of consent to include relevant compensatory measures (e.g. road haulage contributions) to mitigate impacts on relevant communities.

Impact	Environmental Assessment Commentary	Social and Economic Benefits	Social & Economic Costs/impacts	Description of Environmental Controls & Mitigation Measures
Biodiversity (BDAR) **Consultant: SLR Consulting Australia**	Extensive vegetation clearing has (evidently) occurred for agricultural development (grazing) and the majority of the site is cleared grassland. The remaining native vegetation comprises patches of forest and isolated paddock trees. A total of 282 plant species were recorded, comprising 213 native species and 69 exotic species. No threatened plant species listed under the NSW Biodiversity Conservation Act 2016 (BC Act) or the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) were detected. The habitats to be removed for the proposed development are not considered to be important to the long-term survival of these species. The Project is therefore not considered likely to have a significant impact on EPBC Act listed threatened or migratory species. Overall, the Project is not likely to have a significant impact on any matters of national environmental significance listed under the EPBC Act. However, given the presence of the Koala and likely presence of the Grey-headed Flying Fox, a Referral is currently in preparation and will be submitted to the Department of Climate Change, Energy, the Environment and Water. The patch of PCT 3436 is located north of the proposed pit expansion and therefore lies outside of the development footprint; consequently, the Proposal will not have any direct impacts on Lower Hunter Dry Rainforest VEC.	Offsets, ecosystem credits: 250. Offsets, species credits: 4,137.	EA Technical Note 7 Biodiversity: *If consent is granted and the Biodiversity Offsets Scheme applies to the Project, a condition of consent may be for the applicant to retire biodiversity credits to offset the residual impact on biodiversity values.* Impacts that require an offset – ecosystem credits: Total PCTs: 4. Impacts that require an offset – species credits: Total species: 12. Quantitative valuation: ≈$1.4 million PV	Avoidance measures have been incorporated into the design and layout of the proposed quarry. The pit shell has been specifically designed to avoid areas of high biodiversity value such as larger patches of forest with high vegetation integrity. In particular, a small gully containing rainforest vegetation (PCT 3436) has been avoided and will be retained on-site. Mitigation measures have been presented to reduce the potential for impacts to biodiversity values, including pre-clearing surveys, tree felling protocol, wildlife exclusion fencing and monitoring and maintenance of retained bushland around the periphery of the site. A rehabilitation management plan will also be prepared to guide the staged soil management and planting of disturbed areas over the life of the Project.

Biodiversity cont.	The residual impacts of the Proposal (after application of impact avoidance and mitigation measures) consist of the permanent removal of 10.59 hectares (ha) of native vegetation, comprising: • Lower North White Mahogany-Spotted Gum Moist Forest (8.1 ha) • Northern Hinterland Tallowwood-Forest Oak Grassy Forest (0.7 ha) • Hunter Coast Sandy Creek Flat Low Paperbark Scrub (1.3 ha) • Hunter Coast Lowland Grey Myrtle Wet Forest (0.49 ha) One matter of national environmental significance, the Koala, listed as 'Endangered' under the EPBC Act, was recorded on site. No other listed threatened species were recorded. No important wetlands or other such breeding habitat was identified. No vegetation within the Subject Land meets the definition of a threatened ecological community under the Act. No other EPBC Act matters are considered relevant to this assessment.			

Impact	Environmental Assessment Commentary	Economic Benefits	Economic Costs/impacts	Description of Environmental Controls & Mitigation Measures
Groundwater (GWIA) **Consultants:** **SLR Consulting Australia**	The uncertainty analysis shows there will be a negligible impact to Karuah River and associated alluvial sediments from the Project during either operation or closure. Under the calibrated scenario, the nearer watercourses of Double Creek and Brewers Creek will experience a reduction in baseflow of up to 9.4 and 4.5 ML/a, which equates to 7 and 16 % of their total bedrock groundwater baseflow respectively. The uncertainty analysis shows the 95th percentile could result in a greater baseflow reduction of 29.4 and 10.8 ML/a respectively to these watercourses. This amounts to a significant change of baseflow to Double Creek and Brewers Creek (GWIA 2024:92). The Applicant acquired an aquifer Water Access Licence (number 44439) for 100 units from the New England Fold Belt Coast Groundwater Source. Based on the calibrated inflow predictions for Stages 6 and 7 (the final and deepest stages of quarry operations), the Applicant would be required to obtain an additional Water Access Licence for up to approximately 260 ML/a to cover transient inflows at the start of both Stages 6 and 7 (GWIA 2024:93).	Negligible – not significant effects on the one identified anthropogenic bore (GW050664), therefore no likely material economic impact on this water user.	Table F1 (GWIA pp. F1-F6) reports all post-mitigation impacts assessed as being either 'Minor adverse – not significant' or 'Negligible – not significant'. Quantitative valuation for effects on Double Creek/Brewers Creek reported in Surface Water assessment.	**Dewatering Management Plan (DMP)** Outline responsibilities, controls, and procedures to mitigate potential environmental impacts with operational dewatering. Acquire a Water Access Licence to cover the inflow from the Myall Volcanics. (GWIA Table 40, 2024:94). **A Water Management Plan (WMP) with Groundwater Management Plan appendix (GWMP)** will be created prior to operation to provide appropriate mitigation for the groundwater environment and to prevent significant adverse impacts. (GWIA Table 40, 2024:94).

Impact	Environmental Assessment Commentary	Economic Benefits	Economic Costs/impacts	Description of Environmental Controls & Mitigation Measures
Surface water (SWIA) Consultant: SLR Consulting Australia	Detailed hydraulic modelling has confirmed the Site is unaffected by floodwaters up to and including the 1% AEP flood. This conclusion includes both backwater influences from the Double Creek catchment, and potential ponding upstream of the Maytoms Lane crossing. Hydraulic modelling of overland flow over the Site has confirmed erosion and mobilisation of fines is unlikely to occur after stripping vegetation cover. The proposed development will involve the construction of conveyance drains, containment bunds, a creek crossing, and sediment basins. These proposed changes to the topography will reduce the contributing catchment area and flood levels downstream of the Site will reduce. The minor drainage line which passes through the Site and discharges to the Farm Dam will be intercepted by the Infrastructure Sump. As the contributing catchment to this drainage path upstream of the Infrastructure Sump is small, changes to the runoff volume entering the riparian corridor will be negligible. The development of the Double Creek crossing does not impede on outflow, and bed velocities, while providing a reduction in flood hazard. (SWIA 2024:A29)	SWIA indicates limited effects on the catchment.	Quantitative valuation: ≈$422K PV	SWIA Section 11 *Monitoring, Licensing and Reporting* (2024:96-108); and SWIA Section 12 *Environmental Impacts and Proposed Mitigation Measures* (2024:109-111).

Impact	Environmental Assessment Commentary	Economic Benefits	Economic Costs/impacts	Description of Environmental Controls & Mitigation Measures
Noise and vibration (NVIA) [incorporates blasting] Consultant: Advitech	**Construction noise and vibration**: There is the potential for construction noise management level noise goals to be intermittently exceeded throughout the site development and at some residential receivers (2024:90). **Operational noise**: The proposed operations will generate offsite noise levels below the PTNL at all receivers during the day period, however, measures and operational restrictions on mechanical plant items have been provided to result in operational compliance during both the evening and night periods. Site activities may well be audible at some locations given the characteristics of the receiving environment (2024:90). **Blasting:** Airblast overpressure levels are expected to be below the ANZEC guidance values at all receivers. The limiting charge size has been specified in the report body to result in the airblast overpressure to remain below the 115 dB annoyance threshold at modelled receivers. The results of the assessment indicate that, based on the observed separation distances, ground vibration levels are unlikely to exceed the criteria for human annoyance at sensitive receivers adjacent to the blast site (2024:90).	Some quantifiable impacts avoided by recommended restrictions on operating hours for some activities.	Quantitative valuation: ≈$804K PV	Refer to NVIA Section 8.2 *Assessment of Impacts and Recommendations for Management* (2024:86-90).

Impact	Environmental Assessment Commentary	Economic Benefits	Economic Costs/impacts	Description of Environmental Controls & Mitigation Measures
Aboriginal Cultural Heritage (ACHA) **Consultant: McCardle Cultural Heritage**	A search of the AHIMS register has shown that there are no known sites within two kilometres of the Project area (2023:1). As no sites were identified during the survey and the identified highly disturbed landscape due to previous large-scale clearing/logging, ploughing, grazing, dam and access road construction as well as significant erosion across the Project area, there are no impacts on the archaeological record (2023:3).	Nil assessed based on ACHA findings.	Nil assessed based on ACHA findings.	Refer to ACHA Section 8, *Mitigation and Management Strategies* (2023:48)
Impact	**Environmental Assessment Commentary**	**Economic Benefits**	**Economic Costs/impacts**	**Description of Environmental Controls & Mitigation Measures**
Historic heritage **Consultant:**	No matters reported	Nil	Nil	Nil

Impact	Environmental Assessment Commentary	Economic Benefits	Economic Costs/impacts	Description of Environmental Controls & Mitigation Measures
Air quality (AQIA) Consultant: Advitech	Construction stage: Annual average PM_{10}, $PM_{2.5}$ and TSP impact assessment criteria are not exceeded at any sensitive receivers. According to the NSW EPA guidance, no additional assessment of annual average PM_{10}, $PM_{2.5}$ and TSP is required (2024:21-22). Operations stage: Annual average PM_{10}, $PM_{2.5}$ and TSP impact assessment criteria are not exceeded at any sensitive receivers. According to the NSW EPA guidance, no additional assessment of annual average PM_{10}, $PM_{2.5}$ and TSP is required (2024:28).	Nil of material scale assessed.	Assessment of economic cost is not material. Annual estimates ranged between ≈ $1.4K to ≈ $2.8K, average ≈$2.1K PV.	Refer to AQIA Section 8, *Conclusions and Recommendations – Air Quality Impact Assessment* (2024:35-36).

Impact	Environmental Assessment Commentary	Economic Benefits	Economic Costs/impacts	Description of Environmental Controls & Mitigation Measures
GHG **Consultant: Advitech**	Total GHG emissions are based on conservative assumptions and maximum operating conditions over the expected life of the quarry (Section 9.6.3; 2024:43) "The Hillview 'Project' will not trigger the compulsory reporting under the NGER Act" for either construction stage (Section 9.6.1; 2024:42) or the operations stage (Section 9.6.2; 2024:43).	Nil assessed	Estimated cost of Scope 1 GHG emissions (total): ≈$7.1 million PV. Local attribution (LGA, per capita attribution): ≈$82K PV.	Refer to AQIA/GHG Assessment Section 9.7 '*Emission Reduction Opportunities*' (2024:44).
Impact	**Environmental Assessment Commentary**	**Economic Benefits**	**Economic Costs/impacts**	**Description of Environmental Controls & Mitigation Measures**
Traffic and parking (TPIA) **Consultant: McLaren**	The proposal is expected to generate 25 vehicle trips in the AM (13 in, 12 out) peak hour period and 51 vehicle trips in the PM (13 in, 12 out) peak hour period. As a maximum average, the site is expected to generate 126 heavy vehicles per operating day resulting in 252 two-way (126 in, 126 out) vehicle trips by heavy vehicles per day, over an 11-hour operating day. All assessed intersections retain their existing level of service in post development 2023 conditions, except for the AM peak hour period at the intersection of Pacific Highway / The Bucketts Way, which has a change of LoS "B" for the right turn from The Bucketts Way to LoS "C".	TPIA indicates that; 'The proposed development results in a small increase to the surrounding traffic network volumes and will not have an adverse impact on major traffic flows when considered in isolation'. Total road haulage charges (MCC and PSC contributions) estimated at ≈$13.6 million PV (life of Project) [Aigis Group 2024].	Community concerns relating to traffic volumes, specifically trucks; road safety; damage to road infrastructure through additional heavy vehicle movements. Estimated traffic and transport costs – supply of aggregates (total, attributed to POA households): ≈$2.8 million PV.	Road haulage contributions payable to MCC and PSC for The Bucketts Way road infrastructure upkeep. Driver code of conduct to be developed, implemented and enforced (TPIA, Annexure G [2024:66]).

	This represents an increase in average delay of 4 seconds, with LoS "C" representing a satisfactory operation. The proposed development results in a low increase to the surrounding traffic network volume. Although when considered as part of a cumulative assessment with the Deep Creek Quarry, the combined impacts of both developments result in a LoS "D" for the intersection of The Bucketts Way / Pacific Highway. This results in an acceptable operation, although the intersection is approaching its operating capacity. Any intersection upgrade to Pacific Highway / The Bucketts Way in 2033 is largely influenced by background traffic growth, rather than the proposed development traffic. The proposed development results in a small increase to the surrounding traffic network volumes and will not have an adverse impact on major traffic flows when considered in isolation. The intersection of The Bucketts Way / Maytoms Lane has been assessed, with the recommended design shown in Section 5.2 (of the TPA) for reference. It is recommended that the layout include a short deceleration left turn lane for access into Maytoms Lane and a basic right turn into Maytoms Lane.			

	Based upon AUSTROADS turn warrants, the intersection geometry is required to be in the form of a basic right and left turn treatments. As such, these recommended road treatments exceed those requirements as outlined in AUSTROADS and is recommended due to the associated higher levels of heavy vehicle traffic associated with the proposed development. The overall intersection geometry in terms of safety with reference to sight lines is acceptable and it is recommended that regular understorey trimming of trees located within the road reserve occurs to ensure unobstructed sight lines are provided. The existing 85th percentile road speeds of 100km/h, which requires 248m of sight distance, which is achievable.			

Impact	Environmental Assessment Commentary	Social and Economic Benefits	Social & Economic Costs/impacts	Description of Environmental Controls & Mitigation Measures
Rehabilitation Strategy **Consultant: SLR Consulting Australia**	The primary rehabilitation goal is to create a safe, stable and non-polluting post extraction landform that facilitates the achievement of the identified post mining land uses and is commensurate with site constraints. [SLR 2024:23].	Not quantitatively valued. SITE: 1.Safe, Stable, and non-polluting. 2.Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems [SLR 2024:23, Table 5]. COMMUNITY: 1.Ensure public safety. 2.Minimise the adverse socio-economic effects associated with quarry closure. [SLR 2024:23, Table 5].	Costs of rehabilitation borne by Coastwide Materials, therefore no material economic impacts on the state or other third parties assessed.	Rehabilitation Strategy: Section 7.0, Proposed Final Landform, Section 7.4 Safety [SLR 2024:27]. Section 9.7 – Phase 5: Ecosystem and Land Use Establishment [SLR 2024:42-43]. Section 11 – Post Closure Maintenance and Rehabilitation Monitoring Program [SLR 2024:46].

3.3.3 Net public infrastructure costs

Net public infrastructure costs primarily relate to the potential for degradation effects on road infrastructure, mainly relating to truck haulage. These costs are mitigated through the road haulage charges to be levied by MCC and PSC in respect of the parts of The Bucketts Way that lie within the respective LGAs. The charges are reported in Table 1.

Substantial roadworks will also be required at the intersection of Maytoms Lane and The Bucketts Way. The proposed intersection design is identified in Section 5.2 of the TPIA for the Project. The cost of this intersection is included in the capital cost assumptions for all road-related works in the Estimated Development Cost (EDC) assessment for the Project. This cost would also be reflective of a public infrastructure cost to be borne by the Applicant as part of the Project.

3.3.4 Loss of surplus to other industries

It is noted that, like Coastwide Materials, Boral and Hunter Quarries are parts of vertically integrated groups. Therefore some proportion of product will be allocated to the value-adding ready-mix concrete business that each group operates. In the case of Boral, the group also produces and supplies asphalt, which also requires crushed quarry aggregate. This may insulate these businesses from the effects of competition between the various operations to some extent.

As the materials produced are inputs to various other industries, such as residential, commercial and infrastructure construction and maintenance, the proposed quarry may positively contribute to the economic performance of its future customers.

3.3.5 Distributional impacts

During community engagement, some local residents stated a position that economic benefit from the Project would not accrue to the local community. Rather, any benefit would be distributed to other parts of the region or NSW. It is considered that there is some cause for this position. There is some likelihood that most employment positions will be filled by people from other parts of the region, although this outcome would be substantially influenced by the small pool of labour in Booral and its immediate surrounds. As the total local workforce is small, it is likely also that sufficient appropriately skilled people may also only be present in small numbers.

There are other forms of economic benefit from the Project that are considered as likely to be positive for the local community. Although road haulage contributions are essentially paid to compensate for the higher level of road degradation caused by heavy vehicles from the quarry, that part of the additional local government revenue that will be spent on The Bucketts Way will benefit the entire community. The Applicant has also indicated the intention to make contributions within the local community, which will assist specific organisations and the community generally.

Conversely, some of the likely negative impacts of quarry operations, such as air quality effects, for example, will be concentrated in the local area. On this basis, these aspects of distributional impact are addressed in greater detail in the Local Effects Analysis.

3.4 Net economic cost/benefit of the Project

Combining the outputs of Tables 3 and 6, the Net Present Value (NPV) for the CBA element of the Project is presented in Table 8. At each discount rate, the direct benefits of the Project to NSW are greater than the assessed costs, as indicated by positive NPV outcomes.

The Benefit-Cost Ratio (BCR) for each scenario is also calculated. The BCR as calculated is high compared with conventional acceptable ranges. This is principally a result of relativities between the more distributed benefits such as taxes and charges and the assessment of locally concentrated impacts, such as noise and vibration, and air quality which are concentrated in and calculated on the basis of the very small local population.

It is reiterated that the reported assessments relate to quantified economic impacts. These may not fully capture the qualitative impacts, as perceived and/or experienced by stakeholders. These are addressed in detail in the SIA prepared for the Project.

Table 8: Summary of net economic benefit/cost

	PV ($ million)		
	4%	**7%**	**10%**
Economic benefit	36.0	24.6	17.5[27]
Quantified economic costs	18.3	12.5	9.1
Net economic benefit (NPV)	17.7	**12.1**	8.5
Benefit-Cost Ratio (BCR)	1.97	**1.97**	1.93

[27] There may be some small rounding differences between totals reported and workbook totals.

3.5 Sensitivity testing – alternative benefit and cost assumptions

The guidelines indicate a series of additional sensitivity testing parameters, which essentially test the central assumptions of the CBA based on adjustment of operating outcomes (DPHI, 2015:18). Table 9 reports several sensitivity testing results, based on adjustments to performance assumptions. The testing parameters (+/- 25%) are based on those indicated in DPHI guidelines (2015:18).

Table 9: Sensitivity analysis – adjusted performance assumptions

ID	Sensitivity test parameters	PV ($ million)		
		4%	7%	10%
-	**Assessed benefit**	**36.0**	**24.6**	**17.5**
1	Assessed benefit lower	28.8	19.7	14.1
2	Assessed benefit higher	45.0	30.7	22.0
-	**Estimated costs**	**18.3**	**12.5**	**9.1**
3	Assessed cost (low)	14.6	10.0	7.3
4	Assessed cost (high)	22.8	15.6	11.4
5	High (2-3)	**30.4**	**20.7**	**10.6**
6	Low (1-4)	**6.0**	**4.1**	**2.7**

Sensitivity analyses based on output price adjustments, with the objective of producing a zero NPV (EA guidelines 2015:18) resulted in an assessment that the assumed quarry gate price would have to fall to approximately $9.30[28] per tonne. This represents an approximate 66% reduction in the modelled price of $27.50 per tonne assumed as the base case for the EA, with production commencing in 2026.

Based on the material presented on the significance of the resource (Section 2) and material presented in the Project SIA with respect to projected population increases[29], it is assessed that demand side influences, such as forecast population growth and necessary infrastructure to support it, would dictate that the risk of such a price reduction and the resulting zero NPV outcome cannot be considered as material. Such a price reduction would need to coincide with increased production costs, for example, to eventuate and it is probable that management actions would be implemented to ensure that the risk of such an outcome was minimised.

[28] $9.28 per tonne without rounding.
[29] The SIA also references the Hunter Regional Plan 2041, which identifies the need for continuing supply of construction materials to support the additional infrastructure and housing required to meet Projected population growth.

4 Local Effects Analysis (LEA)

4.1 Spatial area and community demographic profiling

The Social Impact Assessment (SIA) for Hillview Quarry identifies the social locality for the Project with reference to the definition provided in the DPHI *Social Impact Assessment Guideline* (2023:16) [SIAG]. The SIAG recognises that there may be more than one element to the social locality, depending on the nature of the Project. Based on that description, the various elements of the social locality for Hillview Quarry are defined in the SIA as:

- Booral (ABS Suburbs and Localities [SAL][30]).
- Bulahdelah - Stroud SA2.
- Mid-Coast Council LGA.
- NSW.

A detailed 'social baseline' profile of these parts of the social locality is included in the SIA. In accordance with the DPHI EA guidelines, the Project impacts for NSW are addressed in the CBA. The local and regional areas are addressed in this LEA.

4.2 MidCoast REDS 2018-2022 (2023 update)

The NSW Department of Regional NSW has produced Regional Economic Development Strategies (REDS) for the various regions in the state. MidCoast has been treated as a separate region for this purpose. It is noted that technically, quarrying is often considered within 'mining', of which it is nominally a subdivision[31].

4.2.1 2018 REDS

Generally, the REDS reports on 'non-metallic' minerals mining in the region, which mainly relates to coal mining in the Gloucester region (2018:4). The 2018 REDS stated that; '*The top five specializations in the MidCoast based on LQ[32] analysis are Aquaculture (LQ of 19.5); Fishing, Trapping and Hunting (LQ of 6.6); Non-Metallic Mineral Mining and Quarrying (LQ of 3.7); Forestry and Logging (2.9); and, Agriculture (2.5)*'.

4.2.2 2023 REDS update

The 2023 REDS update demonstrates the transition away from coal mining. It stated that 'mining is no longer a key specialisation for the MidCoast' (2023:23). Figure 5 is a graphic representation of regional industry structure based on determining the location quotients

[30] ABS SAL = Suburbs and localities. ABS SA2 = Statistical Area Level 2.

[31] The Australian and New Zealand Standard Industrial Classification (ANZSIC) 'Division B Mining defines mining activity as: 'The Mining Division includes units that mainly extract naturally occurring mineral solids, such as coal and ores; liquid minerals, such as crude petroleum; and gases, such as natural gas. The term mining is used in the broad sense to include: underground or open cut mining; dredging; quarrying; well operations or evaporation pans; recovery from ore dumps or tailings as well as beneficiation activities (i.e. preparing, including crushing, screening, washing and flotation) and other preparation work customarily performed at the mine site, or as a part of mining activity'.

[32] Location Quotient. This is defined in Footnote 32.

for various industries[33]. Mining generally within the region is plotted in Quadrant 3 'small and declining'. This is illustrated by the recent cessation of coal mining at the Duralie and Stratford Mines (located approximately 23km and 47km from the proposed quarry site respectively).

The 2018 REDS and the 2023 update contain no specific discussion on the quarrying industry other than in the context of the ANZSIC subclassification Non-Metallic Mineral Mining and Quarrying. However, although not a substantial industry of itself, quarrying for hard rock and other materials is a significant contributor to the construction industry. In terms of location quotients in the 2023 REDS update, construction is situated on the margin of Quadrants 1 and 2, which identifies it as a growth industry, of some regional significance. The quarry is also near to the Port Stephens and Dungog LGAs, and the Newcastle and Hunter regions generally, to which it may also supply materials. It may also be a source of materials for infrastructure projects on the Mid North Coast more broadly, based on the prospective demand constraints identified by IA (refer to Section 2.1.1). Furthermore, as noted by CCAA, quarrying generally needs to be located near where the materials will be used, to reduce transportation and overall construction costs (CCAA 2024).[34]

[33] The REDS describes this as: '*LQ analysis is used to measure industry specialisation by comparing the relative size of an industry in the region versus the whole of NSW*' (2023:23). Therefore, the reported LQ of 3.7 for *Non-Metallic Mineral Mining and Quarrying* is interpreted as meaning that the Mid Coast region has a comparative advantage of 3.7 times that of NSW as a whole.

[34] <https://www.ccaa.com.au/CCAA/CCAA/Public_Content/INDUSTRY/Quarry/Quarry_Overview.aspx?hkey=03c6b3a0-5148-4ae4-b751-83dec0318519 >

Figure 5: REDS location quotient analysis

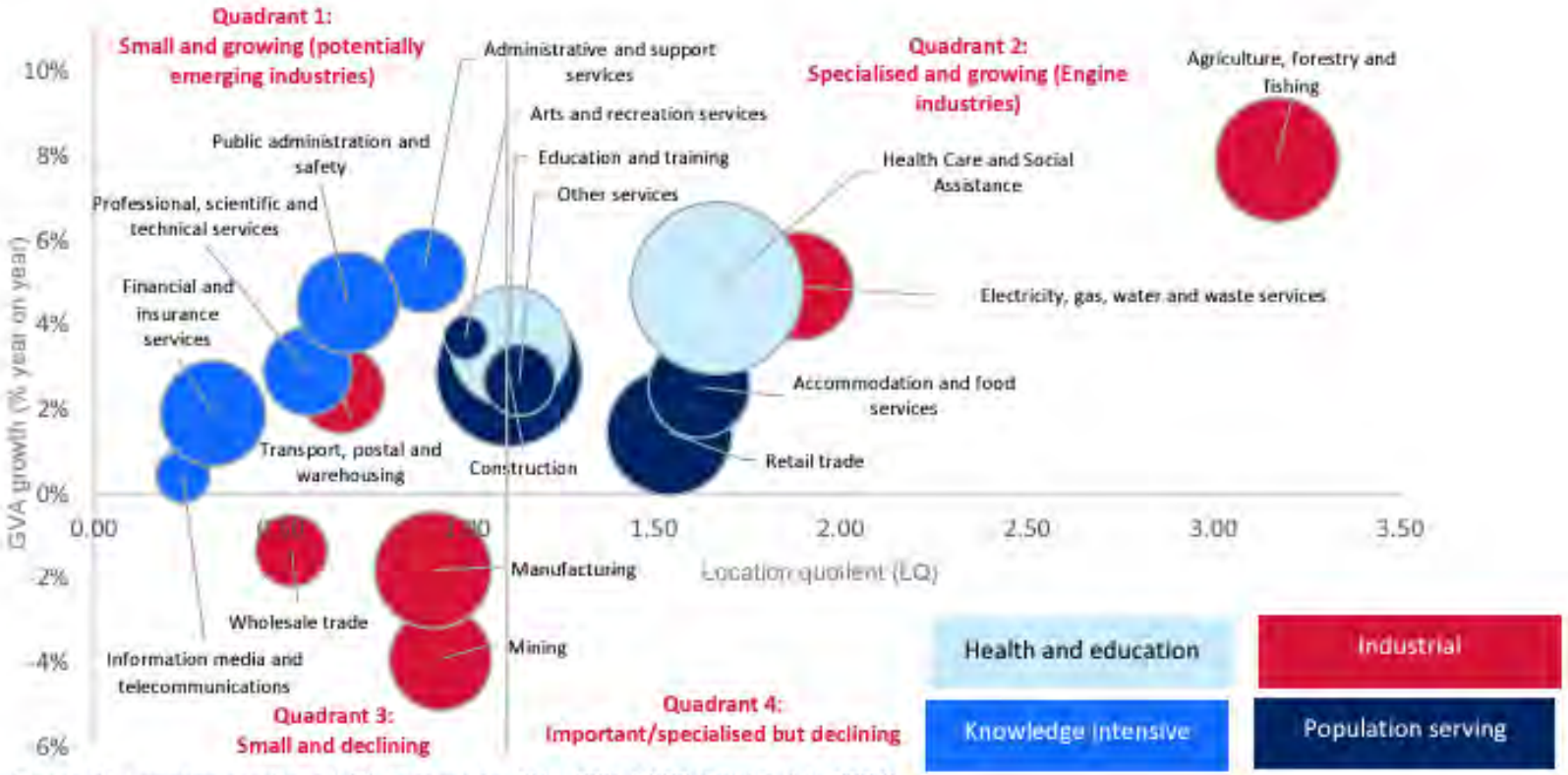

Figure 17: Location quotient (LQ) Analysis by GVA, 2011-2020 (REMPLAN, 2020)

Note: While the 2018 REDS used employment data as the basis for LQ analysis, the 2022 update has used gross value-add (GVA) data. This allows for a clear demonstration of the changing economic impact of both engine and emerging industries across the regions.

4.3 Regional and local economic profile information

4.3.1 Employment by industry - SA2 & LGA

Economic profile information for the LGA published by .id (Informed Decisions) reports mining as being 13th of the 19 main industry categories by output, 16th by FTE employment and 17th by value added. The scale of the industry in this assessment is mainly related to coal mining. As noted within Section 4.2, this activity has now nominally ceased, which has presumably resulted in the sector only being represented in the region by quarrying activity associated with a number of operations.

As noted in Section 4.2.2, quarry materials are a key input to the regionally significant construction industry. Construction is the largest regional industry by output and the second largest by value added and FTE employment. As noted in the SIA, implied dwelling demand is projected to increase by 11,035 dwellings, or 20.8% between the 2021 and 2041 Censuses, as illustrated in Table 10.

As is demonstrated in the Hunter Regional Plan 2041, from the DPHI regional planning perspective, MCC is located within the Hunter Planning Region. Given the proximity of the proposed quarry to other LGAs in the region, and in particular Port Stephens, Dungog, and parts of Newcastle and Maitland LGAs, implied dwelling demand for the Planning Region is also presented. There is an implied additional dwelling requirement of 101,808 dwellings, or 29.2% across the planning region.

Table 10: DPHI implied dwelling demand Projections 2021-2041

	2021	2026	2031	2036	2041	Change (%)
SA2	2,568	2,622	2,629	2,596	2,536	**-1.2**
LGA	52,998	56,043	59,090	61,760	64,034	**20.8**
DPHI-PR[35]	348,376	371,708	398,391	425,123	450,184	**29.2**

In addition to the numbers of new dwellings required to meet future demand, in many instances, such as the development of previously vacant land, supporting infrastructure will also be required. This will also require continued supply of materials over this period.

4.4 Regional and local employment effects

The Project would support an advised 20 FTE employment positions at full operating capacity. Positions will be in various operational, administrative, management and transport and logistics roles. Currently published ABS regional data for the MCC LGA recorded 55,368 jobs in the LGA in 2020[36]. At the same point there were 3,492 jobs in the Bulahdelah – Stroud SA2. The additional 20 positions would therefore represent a nominal increase of

[35] DPHI Planning Region – Hunter Region, comprising Cessnock, Dungog, Lake Macquarie, Maitland, MidCoast, Muswellbrook, Newcastle, Port Stephens, Singleton and Upper Hunter LGAs.
[36] This figure is not the same as the employed persons data in Census, which is based on employed people by place of residence. The figure above is the reported number of jobs in the LGA, some of which may be occupied by people who are not resident in the LGA.

0.04% (LGA) and 0.6% (SA2). The increase in employment is therefore assessed as being objectively not material in the regional context. This does not detract from the material benefit that would be obtained the households of workers employed at the quarry.

Table 11 presents material from the social baseline study in the SIA in relation to the composition of the local and regional workforce. As is observed in the SIA:

- '*The POA has a notably different industry of employment profile to the SAL. The three largest industries of employment for the POA were 'Aged Care Residential Services (3.6%), 'Beef Cattle Farming' (3.4%) and Road Freight Transport (3.2%). The Project may provide opportunities for some local residents who are employed in road freight transport*' (SIA, 2024:88).
- '*The larger representations of Machinery Operators and Drivers (POA, SAL and SA2) may indicate that there are opportunities for local employees to be engaged at the proposed quarry. The POA has the highest proportional representation of these employees, which is interpreted as being related to the comparatively high proportion of residents employed in the Road Freight Transport sector*' (SIA 2024:89).

Table 11: Occupation & industry of employment

	SAL	POA	SA2	LGA	NSW
Occupation	**%**	**%**	**%**	**%**	**%**
Technicians & Trades Workers	22.4	17.8	15.7	14.5	11.9
Managers	20.5	17.5	17.1	12.3	14.6
Professionals	14.3	12.4	12.0	16.6	25.8
Clerical & Administrative Workers	11.9	10.7	9.5	10.6	13.0
Machinery Operators & Drivers	9.0	9.9	9.7	6.2	6.0
Labourers	8.6	13.7	15.0	12.6	8.2
Community & Personal Services Workers	5.7	10.6	11.0	15.0	10.6
Sales Workers	5.7	5.7	7.0	10.1	8.0

In addition, in relation to stakeholder engagement undertaken as part of the SIA/EIS, the SIA reports that '*Two (2) attendees at the community drop-in sessions made enquiries on employment and business opportunities with the quarry if it is approved. This demonstrates that some local community members recognise that there are potential beneficial outcomes that the quarry may support*' (2024:45). This provides some primary evidence of potential positive local economic outcomes with respect to employment.

Balancing this expressed interest in employment and commercial opportunities, it must also be recognised that some stakeholders expressed opinions that the distribution of Project benefit would exclude the local community (e.g. SIA, Table 2 [2024:29]). The economic benefit from employment is likely to be concentrated with a small number of households, if realised. As is evidenced in the EA, other forms of benefit, including road haulage contributions and the advised intentions of the Applicant regarding voluntary community contributions would provide additional community benefit.

Notionally, individual employees and potentially their households (depending on individual circumstances) would experience material benefit from employment at the quarry. However, as is demonstrated by the method for assessing net employee benefit, a proportion of benefit is likely to be in the form of substitution for other employment. In the case of an individual employee, there may be some marginal benefit in changing employment to work at the quarry, but this would at most be presumed to be incremental to the employee's former employment and income. This approach is substantiated to a degree by DPHI's position on the exclusion of payroll tax as a source of Project benefit.

4.4.1 Effect of employee incomes

The Applicant has provided information on the proposed level of income for employees at the quarry. The information was used in the assessment of net employee benefit reported in the CBA. The following analyses compare that information with industry and local employee incomes. This allows an assessment of the relative economic impacts of Hillview Quarry employee incomes in the local and regional economies.

4.4.1.1 Contextual comparison with broader local incomes

The derivations of the incomes displayed in Table 12 are explained in detail in Annexures 2 and 3.

Table 12: Comparison of employment income data (2024 values)

Income measure	Estimate
Mean wage assumption (HVQ)	$96,018
Mean reservation wage	$85,937
Mean 'net employee benefit'	$10,080
Mean employee income MCC LGA (2020 [2024])	$50,044 [$55,239]
Adjusted mean employee income MCC LGA (2024)	$46,446

Advised mean income for Hillview Quarry is higher than for the 'reservation wage', based on the broad industry income mean. Both are substantially higher than the mean income for employed people in the LGA. This should be viewed in the context that quarrying industry employees are generally skilled workers, whereas the general population of workers includes less skilled workers who notionally may earn lower incomes. Table 11 presents some evidence of this, with higher proportions of labourers for the regional areas, when compared with the NSW workforce data.

The CBA (Section 3.1.4) included estimates of total employee benefit, and disposable income estimates for Hillview Quarry employees. These are reproduced below, and compared with corresponding assessments for the MCC LGA mean employee income based on the same number of employees (maximum of 20 FTE, as shown in Figure 3 [CBA]).

Table 13: Total employee incomes benefit, 20 employees (PV)

	($ million)		
	4%	**7%**	**10%**
Total employee incomes (Hillview quarry)	33.4	23.4	17.4
Total employee incomes (LGA mean)	19.2	13.5	10.0

The alternative assessment method based on an estimation of disposable income is reported in Annexure 3. The results are:

- At full production employment of 20 workers, this equates to an aggregate $12,864 per week, or $668,928 per year.
- For 20 employees at the mean LGA income, the outcome is $7,772 per week, or $404,140 per year.

4.4.2 Non-labour economic activity in the local, regional and NSW economies

Information provided by the Applicant is that in its other comparable businesses, essentially all of Coastwide Materials' procurement activity is conducted with businesses based in NSW and the majority of this within the parts of NSW in which Coastwide Materials operates[37]. It was advised by the Applicant that this would also be the case for the proposed Hillview Quarry operations. As noted in the CBA (Section 3.1.4) based on proximity, it is likely that the majority of activity will be in the Newcastle – Lake Macquarie and Hunter Valley SA4s.

4.4.3 Indicative indirect economic effects

I/O multipliers are presented in Section 3.1.9, as an overall indication of the potential indirect economic effects of the Project. One of the limitations on use of multipliers is that they are generally not appropriate for application to small regions. The multipliers in Section 3.1.9 are noted for reference, without inferring that they accurately apply to the more locally and regionally based economic effects of the Project.

As is noted in Section 3.1.9, in practice, the proposed quarry site is located near to major economic centres. As such, it is likely that a substantial amount of its employment and commercial activity will take place in the surrounding regions, as distinct from the areas immediate to the site.

4.4.4 Effects on other industries

The potential for the operation of the quarry to materially, negatively impact on other industries is considered as a relatively low risk. The technical assessments of likely localised environmental impacts indicate that these will not affect other activity in the area, such as agricultural production. There are other quarries in the area, however any effects on these would be a result of competition between producers, which is described in detail in Section 3.3.4 (CBA).

[37] Central Coast SA4, Newcastle-Lake Macquarie SA4 and Mid North Coast SA4.

Industries supplying goods and services to the quarry would be presumed to be positively affected by these transactions. This would also entail additional indirect economic activity and benefit, as noted in Section 4.4.3.

4.4.5 Attribution of economic benefit

Attribution of the various components of economic benefit of the Project (established in the CBA) has been undertaken on the bases described below. The summary of assessments is reported in Table 20.

Corporate and state-levied taxes are attributed to the local/regional area on a per capita basis, as a proportion of the NSW population. The method is consistent with that proposed in the guideline. The local/regional population is assessed on the basis of the LGA as being the representative regional community.

100% of the local government levied road haulage charges is attributed to the local/regional community, notwithstanding that the charges are shared between MCC and PSC. This is on the basis that levies are presumed to contribute to works on The Bucketts Way, which is the matter of greatest interest to the local community, as evidenced by the expressed views of engaged stakeholders, reported in the SIA. The application of these charges to roadworks will have the effect of addressing the impacts of all use of the road and is considered as being beneficial in this respect.

The advice of the Applicant is that procurement activity is basically 100% regionally based. Therefore the full value of the assessed contribution is attributed regionally.

Employment positions and the resulting net employment benefit are both presumed to be entirely regionally based. These are therefore attributed at 100%.

The Applicant has also advised the intention of distributing $500,000 per year in contributions to the local community, in the form of donations to community organisations, sports clubs, etc. These contributions are attributed at 100% to the local/regional community.

4.5 Environmental and social impacts on the community

4.5.1 Environmental impacts – quantitative assessments

4.5.1.1 Attribution of quantitatively estimated environmental effects to regional/local communities

Table 14 shows the attribution of the quantitative estimates of environmental and social costs to the local community. The bases for these attributed effects is displayed in the table.

Table 14: Regional distribution of quantified environmental effects (PV at 7% discount rate)

Environmental effect	Basis of attribution	Assumptions	4%	7%	10%
Aboriginal cultural heritage	100%	No impacts predicted in ACHA, not assessed	-	-	-
Biodiversity	100%	Refer to Annexure 4	$2,335,050	$1,412,611	$976,414
Air quality	100%	Refer to Annexure 4	$3,106	$2,133	$1,535
GHG	LGA/NSW population	Refer to Annexure 5	$118,172	$82,098	$60,116
Noise & vibration	100%	Refer to Annexure 4	$1,132,737	$804,428	$603,868
Surface water	100%	Refer to Annexure 4	$697,558	$421,994	$291,688
Traffic and transport	100%	Refer to Annexure 4	$3,916,869	$2,752,150	$2,043,000

4.5.2 Qualitative assessments

Comments on qualitative aspects of the CBA-level impacts are included in Table 7. The same assumptions for the attribution of quantitative impacts shown in Table 14 are held for the distribution of qualitative impacts.

4.5.2.1 Water resources

The SWIA and GWIA for the Project state that the water from creeks on the site contribute to the Karuah River catchment. The technical reports forecast that material impacts will not result from the Project. This includes the finding that there will be no impact on the one registered bore in the area relevant to the Project. The quantitative assessment is not material in the context of the Project. Any impacts that may occur will be localised. Therefore the monetised assessment is fully attributed to the local area.

4.5.2.2 Noise impacts

Noise impacts are localised and fully attributed to the area. The benefit transfer study used is based on household preferences for 'peace and quiet', and is a monetised estimate of the 'welfare values' associated with this[38]. As such, the method takes into account qualitative impacts on affected households.

4.5.2.3 Air quality

As is the case with noise impacts, air quality impacts are also fully attributed to the local area. The quantitative methods ascribes a cost to $PM_{2.5}$ emissions as the 'index pollutant'. However, the Project AQIA also identifies PM_{10} and TSP emissions. Both emissions would also have localised effect. The benefit transfer study used for evaluation does recognise that in the base study on which its estimates were derived, 'most of the PM_{10} emitted is $PM_{2.5}$', i.e. $PM_{2.5}$ particles are smaller and therefore included in PM_{10} (PAE Holmes 2013:30).

4.5.2.4 Aboriginal cultural heritage

The ACHA for the Project did not predict any impacts, and recommends management protocols should unanticipated finds be located during work on the site. If impacts were likely to occur, these would ordinarily be assumed as mainly affecting the local Aboriginal community, although broader effects might also be possible. However, based on the ACHA findings, in the absence of significant sites or items, no economic effects on, for example health (such as mental health), are assessed.

4.5.2.5 Traffic and transport

Engagement with the local community during preparation of the Project SIA (Aigis Group, 2024) identified traffic matters as being the highest order concern for engaged local stakeholders. The economic benefits of additional production of aggregates (e.g. contributing to construction of infrastructure and housing) are presumed to be broadly based. However, the effects of additional quarry-related traffic will be particularly concentrated on people living in the surrounding areas of

[38] Day, Brett; Bateman, Ian; Lake, Iain (2006) : Estimating the demand for peace and quiet using property market data, CSERGE Working Paper EDM, No. 06-03, University of East Anglia, The Centre for Social and Economic Research on the Global Environment (CSERGE), Norwich

the quarry, who are reliant on The Bucketts Way as the main travel and transport route to and from the area.

As a result, impacts estimated in relation to the supply of aggregates are fully attributed to the communities in Gloucester, Stroud, Booral and surrounding areas. Another example of the quantified social impacts of potential traffic outcomes is the social cost of vehicle crashes. For example, based on estimates from the Bureau of Infrastructure and Transport Research Economics (BITRE), the average cost of a vehicle accident in was $27,959 (BITRE 2022). Attribution of such effects is not possible, as the circumstances and causes of accidents vary.

4.5.2.6 Biodiversity

The existing, highly modified condition of the site means that removal of vegetation/habitat is limited. The valuation method (Annexure 4) is based on the regional (SA3) population and is therefore attributed at 100% in terms of the LEA.

4.5.2.7 Management of local environmental and related social impacts

Each of the technical reports dealing with the environmental and social impacts of the Project include recommendations for the avoidance, minimisation and mitigation of impacts. With respect to the physical effects discussed above, these generally include a regime of monitoring, reporting and management of detected exceedances of permissible emissions etc. The implementation of technical recommendations is assessed as likely to reduce the economic costs of impacts, in addition to the environmental and social costs.

4.6 Summary of quantified local effects

4.6.1 Direct effects

Table 15 presents a summary of those quantified, localised effects that are assessed as being directly attributable to the region as a result of the Project.

Table 15: Summary of quantified regional effects[39]

Effect	Assessment (SA3)		
	4%	7%	10%
Assessed benefits			
Corporate tax[40] (PV $'000)	27.2	18.5	13.1
Net producer surplus PV $ million)	10.2	6.8	4.7
Total road haulage charges (PV $ million)	19.9	13.6	9.8
MCC land rates (PV $'000)	116.9	83.5	63.9
Net employee benefit (PV $million)[41]	3.5	2.5	1.8
Non-labour expenditure (PV $million p.a. [PV/30])	4.2	3.0	2.2
Voluntary local contributions [$12 million nominal over life of quarry] (PV $ million)	6.9	4.8	3.4
Assessed costs			
Aboriginal cultural heritage (PV $'000)	-	-	-
Biodiversity ($ million)	2.3	1.4	1.0
Air quality (PV $'000)	3.1	2.1	1.5
GHG (PV $'000)	118.2	82.1	60.1
Noise & vibration ($'000)	1.13	804.4	603.9
Surface water (PV $'000)	700	422.0	291.7
Traffic & transport (PV $M)	3.9	2.8	2.0

[39] PVs at 7% discount rate
[40] Based on ABS 2021 Census data, proportion of SA3 to NSW population.
[41] As reported in Table 4.

5 Part D: Conclusions and recommendations

5.1 Conclusions

5.1.1 CBA

The CBA indicates a positive economic outcome. NPVs are favourable, and remain so across a range of alternative scenarios. The NSW economy, and particularly regional economic entities such as councils, would receive a flow of revenues. Importantly, access to materials for the construction of infrastructure and housing would be augmented by the Project. This has broadly-based positive economic implications for the state and its populations.

At the localised level, some of the valuations for localised environmental effects such as air quality, and noise and vibration, would not be considered as material by conventional standards. However, Aigis Group also prepared the SIA for this Project, and these are matters of interest to stakeholders, and have been valued where practical on that basis. The qualitative aspects of theses impacts are also acknowledged in this report, and the SIA.

The likely effects of additional quarry traffic on The Bucketts Way (particularly trucks) is the matter of greatest interest that was raised in engagement. The comparatively high valuations for this economic cost reflect this situation. However, these are offset to some extent by the assessed mandatory heavy vehicle road use contributions.

The EA has considered both quantitative and qualitative economic aspects of the Project. It is considered that, on balance, the Project would produce a positive economic outcome for the State of NSW.

5.1.2 LEA

The quantified benefit accruing to the local and regional areas is greater than the quantified cost, on the assessments presented. However, it should be noted that some significant sources of quantitative benefit are in the form of contributions to offset effects of the Project. The most apparent of these are road haulage contributions to MCC and PSC with respect to the use of The Bucketts Way by quarry trucks. Nevertheless, direct application of those contributions to addressing quarry impacts is a mitigatory economic initiative.

It must also be recognised that there are also intangible costs on the community. Therefore, some stakeholders may consider that the assessments do not adequately reflect the cost to the community. In this respect, the LEA should also be considered in the context of the material presented in the SIA prepared for the Project, and in particular, the reporting of stakeholder engagement and its outcomes.

5.1.3 Economic assessment

The overall assessment is that the proposed Project would be likely to have a positive economic impacts. The broad-based positive effect of continued supply of construction materials is a matter acknowledged in the *Hunter Regional Plan 2041*. Sufficient supply is

crucial to allow the construction of the additional housing and infrastructure required to support future population growth. This is discussed in detail in the SIA prepared for the Project.

From the State's perspective, in aggregate terms, beneficial outcomes are unlikely to be material in terms of their scale. However, they do represent additional direct industrial activity and stimulus for the commercial activity required to support it. This is also the case for additional employment, with its beneficial socioeconomic onflows. Furthermore, the potential use of the quarry's output in the development of public infrastructure, such as roadworks etc., which generally benefit subsequent users of that infrastructure.

5.2 Recommendations

The majority of the economic contributions assessed are associated with formal obligations, such as tax and road haulage charges liabilities. As such, these do not warrant recommendations on behalf of the Applicant.

The following assessments are subject to decisions of the Applicant. In respect of these, the following recommendations are made to maximise the value of the Project to the local, regional and State economies:

- Where feasible, employ a locally and/or regionally based workforce. This will ensure the onflow of additional benefit to these communities and their economies.
- Endeavour to conduct procurement activity within NSW.
- The Applicant has indicated an intention to make substantial voluntary contributions to the local community/ies. This should be undertaken, in consultation with relevant community representatives, to ensure that community value is maximised.

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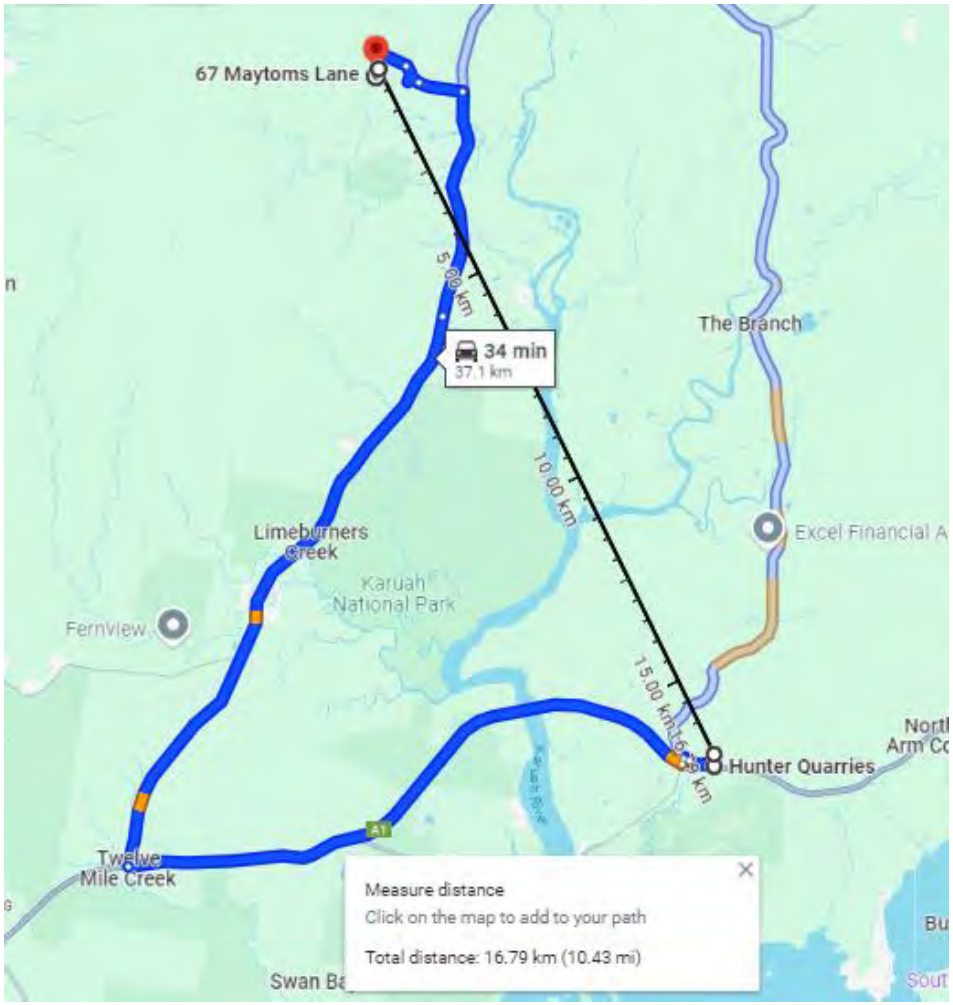
SLR Consulting Australia Pty Ltd. *Hillview Hard Rock Quarry. Rehabilitation Strategy*. February 2024.

SLR Consulting Australia Pty Ltd 2024. *Hillview Hard Rock Quarry. Surface Water Assessment*. April 2024.

Annexure 1: Relative locations, Hillview site and other hard rock quarry sites

Hunter Quarries, Karuah



Boral Seaham Quarry, Seaham

Ironstone Developments Deep Creek Quarry

Coastwide Materials Allworth Quarry

Annexure 2: Economic assessment assumptions

General assessment assumptions

Table A4.1: Estimation assumptions:		
Description	**Source**	**Assumption adopted**
Total/annual production	Coastwide Materials	30,000,000 tonnes at up to 1,500,000 tonnes per annum
Life of Project	Coastwide Materials	30 years.
Price	Coastwide Materials	$25/tonne at quarry gate
Employee numbers	Coastwide Materials	Development stage: 15 FTE; Production/operations stage: 20 FTE; Decommissioning and rehabilitation stage: 10 FTE
Other business case assumptions	Coastwide Materials	Capex, opex etc.
Sensitivity test assumptions (based on DPHI guidelines)	DPHI EA guideline	Corporate taxes; +/- 50%; Community contributions 100%/ -25%; road haulage charges and land rates; 100%. Quantified environmental costs: +/- 25%.
Discount Rate	DPHI EA guideline	7% (DPHI guidelines)
Sensitivity testing	DPHI EA guideline	By discount rates at 4% and 10% (DPHI guidelines); By increasing and reducing price assumptions by 25% to produce alternative royalty assessments.
LGA/NSW population	DPHI EA guideline	NSW (8,342,285) ≈ 30% of Australia; LGA (96,579) 1.16% of NSW population

DPHI EA guidelines – second round/ flow-on effects

The following explanatory material from the DPHI EA guideline (2015:23) is provided for the information of readers of the EA with respect to the underlying assumptions for the assessment of indirect effects:

Second round / flow-on effects Second round effects can be extremely important for local communities and therefore considered as part of the LEA. A range of techniques are available for estimating second round or flow-on effects. These include CGE (computable general equilibrium)-modelling, Input-Output (I-O) or multiplier analysis. Most such techniques have limitations. For example, CGE modelling can be complex and expensive and lack transparency, while I-O analysis has been criticised for overstating impacts.

The LEA should include analysis of second round effects. However, the type and form of this analysis should be identified based on a case by case assessment of the most appropriate approach for each Project. This may mean that, in some cases, a purely qualitative discussion is the best option. In other cases, CGE analysis may be most appropriate, particularly for larger Projects. Regardless of the approach taken, any limitations should be noted. Careful consideration should be given to how quantitative results are presented to minimise the risk of them being misinterpreted.

The overall results of this calculation are not intended to provide a precise measure of employment effects but, rather, an indication of the likely range of local effects.

Limitations of multipliers

NSW Treasury (2022)

Inherent shortcomings and limitations of multipliers for economic impact analysis include:

- **Lack of supply-side constraints:** The most significant limitation of economic impact analysis using multipliers is the implicit assumption that the economy has no supply–side constraints. That is, it is assumed that extra output can be produced in one area without taking resources away from other activities, thus overstating economic impacts. The actual impact is likely to be dependent on the extent to which the economy is operating at or near capacity.
- **Fixed prices:** Constraints on the availability of inputs, such as skilled labour, require prices to act as a rationing device. In assessments using multipliers, where factors of production are assumed to be limitless, this rationing response is assumed not to occur. Prices are assumed to be unaffected by policy and any crowding out effects are not captured.
- **Fixed ratios for intermediate inputs and production:** Economic impact analysis using multipliers implicitly assumes that there is a fixed input structure in each industry and fixed ratios for production. As such, impact analysis using multipliers can be seen to describe average effects, not marginal effects. For example, increased demand for a product is assumed to imply an equal increase in production for that product. In reality, however, it may be more efficient to increase imports or divert some exports to local consumption rather than increasing local production by the full amount.
- **No allowance for purchasers' marginal responses to change:** Economic impact analysis using multipliers assumes that households consume goods and services in exact proportions to their initial budget shares. For example, the household budget share of some goods might increase as household income increases. This equally applies to industrial consumption of intermediate inputs and factors of production.
- **Absence of budget constraints:** Assessments of economic impacts using multipliers that consider consumption induced effects (type two multipliers) implicitly assume that household and government consumption is not subject to budget constraints.
- **Not applicable for small regions:** Multipliers that have been calculated from the national I–O table are not appropriate for use in economic impact analysis of projects in small regions. For small regions multipliers tend to be smaller than national multipliers since their inter–industry linkages are normally relatively shallow. Inter–industry linkages tend to be shallow in small regions since they usually don't have the capacity to produce the wide range of goods used for inputs and consumption, instead importing a large proportion of these goods from other regions.

ABS (2001, 2011)[42]

The Statistical Working Group (SWG, 2001, 2011) described the limitations of multipliers as follows:

'These arise because of the basic input-output assumption that the change in output of any industry will lead to the same proportional change in the quantities of all inputs the industry uses, including labour. This assumption rules out the possibility of economies of scale and the substitution of imports for local production. Multipliers do not take into account any unused capacity that the industry may have, nor do they make allowances for other possible responses by firms (e.g. if more production capacity is required, it is assumed to occur, rather than prices increasing or the demand being met by imports).

Another assumption of input-output analysis is that the mix of inputs remains stable over time. This assumption is important because the tables are published about three years after the year to which the data apply (due to the large amount of information that must be gathered and the time delays in obtaining some of these data).

Changes to the tax system since 1996-97, when the latest input-output tables were compiled, means that this assumption may not be correct. The introduction of the Goods and Services Tax in July 2000 and the reduction in wholesale sales tax will have affected some of the costs of inputs faced by firms (some inputs will have risen in price while others, such as motor vehicles, which were previously subject to wholesale sales tax will have fallen in price). Consequently, since 1996-97 firms may have changed the composition of their input mix to achieve lower costs of production. As well, consumers may have changed their expenditure patterns to purchase more goods and fewer services, as some goods, previously subject to wholesale sales tax, are now cheaper while services are now dearer. It is not possible to quantify the effect these changes would have on the size of the multipliers, and, for this reason, extra caution should be taken when using multipliers based on data collected prior to the introduction of the Goods and Services Tax.

As well, the mix of inputs that an industry uses may be affected by changes in technology. This is particularly so in industries which are subject to rapid technological change. However, generally, the technology used by most industries is fairly stable, so this is not a serious shortcoming'.

SWG (2011) concluded that *'Despite these shortcomings, multipliers derived from 1996-97 input-output tables can provide an indication of how a change in demand (e.g. an increase in exports of manufactured goods) would impact on the economy today'.*

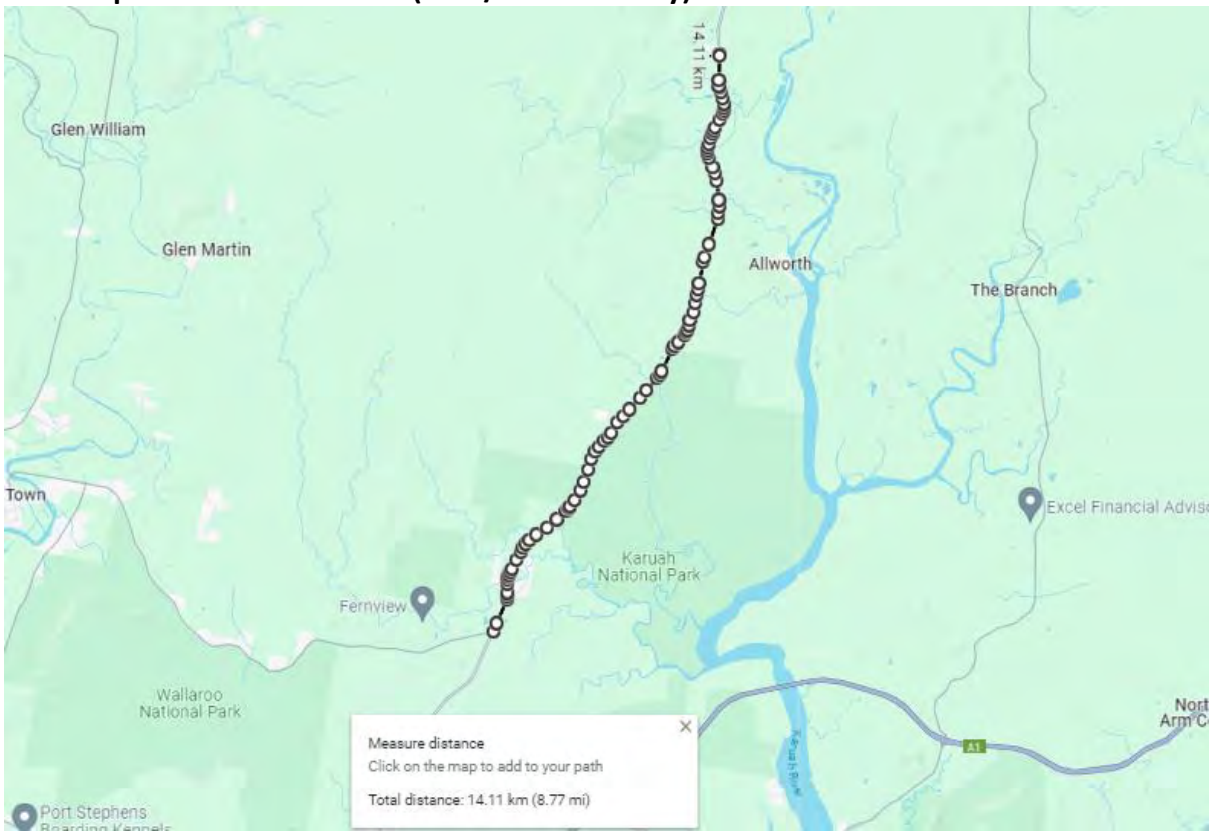
[42] Statistical Working Group, Cultural Ministers' Council (2001, 2011).

Local government road haulage charges

Table A1.2: Detailed road haulage charges assumptions

Single journey road levies	Distance (km)	Tonnes/load	Tonne/km	Rate ($)	Cost per load ($)
Port Stephens	5.5	32	176	0.086	15.136
Mid Coast (Captain Hills Creek Road to Maytoms Lane)	14.1	32	451.2	0.0516	23.282
Mid Coast (Maytoms Lane to Stroud)	11.7	32	374.4	0.0516	19.32
Totals	19.6	-	-	-	**38.066**

Figure A1.1: Maytoms Lane to Captain Hills Creek Road (MCC/PSC boundary) – MCC area[43]



[43] Images source: Google Maps 2024.

Figure A1.2: Captain Hills Creek Road (MCC/PSC boundary) to Pacific Highway – PSC area

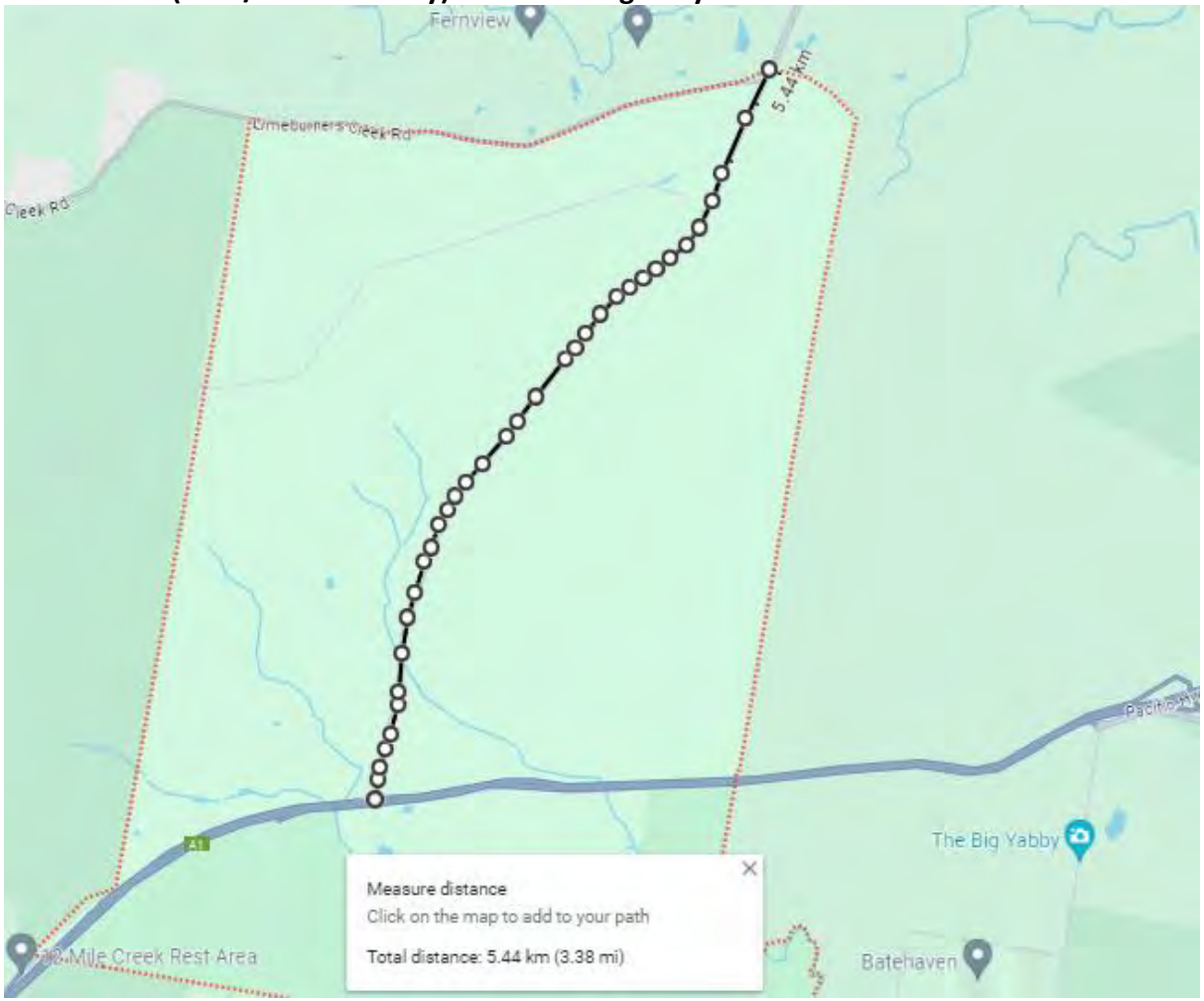


Figure A1.3: Maytoms Lane to Stroud – PSC area

Great Lakes Wide S94 Contributions Plan

7 ROAD HAULAGE

7.1 Purpose of Road Haulage Contributions

Road Haulage contributions are to rectify the accelerated wear caused by heavy vehicle traffic that is a consequence of a development.

7.2 Developments to which Road Haulage Contributions Apply

Road Haulage contributions apply to all developments where material is to be transported over Great Lakes Council Roads. These are all roads in the Great Lakes Area except for the current alignment of the Pacific Highway.

7.3 Effect of Development on Need for Work

Development that creates heavy haulage will cause accelerated pavement damage in accordance with the "fourth power rule." This means that twice the axle load causes 16 times the damage.

Heavy haulage attributable to a development therefore renders the development liable to contribute. There is no reduction in contribution resulting from any grant funding Council may receive. This is because Council believes that the road haulage levy is different from normal section 94 plans where there is a finite cost of a particular facility.

With respect to damage to road pavements, there is no finite amount. There is ongoing damage and consequential rehabilitation cost. Each ESA causes damage and incurs cost by shortening the life of the pavement. This cost is additional to the normal wear and tear and is not lessened by the existence of grants. Each ESA, therefore, should incur a levy.

7.4 Schedule of Works

Works will be carried out as required on Council Roads. This will generally be those roads subject to damage by the development in question and is not predictable

7.5 Calculation of Contribution Rates

Equivalent Standard Axle (ESA)

This is the basic unit of measurement of a heavy vehicle with respect to the pavement damage it causes. One ESA is equal to an 18,000lb (8.16t) single axle with dual wheels. Other loadings are computed on the fourth power rule, that is, twice the load will be 16 times the ESAs and 16 times the pavement damage.

Components of the contribution rate

Contributions depend on

- The cost of reconstructing a road pavement
- The number of ESAs in the life of the pavement between reconstructions
- Hence the cost of damage done by one ESA
- The number of tonnes of payload represented by one ESA
- Hence the cost of damage done by one tonne

Cost of Reconstructing A Road Pavement

The cost of road pavement reconstruction from Council's recent experience is typically $700,000 a kilometre for a class 3 road.

RE: S7.11 Contribution Plan - Road Haulage

NR

Naomi Reeves <Naomi.Reeves@MidCoast.nsw.gov.au>
To Mark Sargent

Reply | Reply All | Forward

Wed 6/12/2023 12:09 PM

You forwarded this message on 6/12/2023 12:35 PM.
Click here to download pictures. To help protect your privacy, Outlook prevented automatic download of some pictures in this message.

Hi Mark

Your request has come through to my section and I have been advised of the following:

For the old Taree Council area the rate is $0.0516 per tonne per KM.

For the old Great Lakes Council area the rate is $0.04 per tonne per KM.

Regards

Naomi

Naomi Reeves | Development Engineering Support Officer

Direct (02) 7955 7361
Email Naomi.Reeves@MidCoast.nsw.gov.au I midcoast.nsw.gov.au

Port Stephens Local Infrastructure Contributions Plan (March 2024)

5.3.14 Road Haulage

There are a number of extractive industries operating in the Port Stephens LGA and there could be opportunities for new development or expansion of existing sites, subject to relevant approvals.

Extractive industries generate significant truck movements in Port Stephens, which impacts the road performance and conditions along haulage routes. To offset the impact of haulage associated with mining and extractive industry, this Plan authorises the consent authority to apply a haulage contribution rate where an application is made for such a use. It should be noted that the haulage rate will apply to the proposed haulage route for the life of the development (subject to CPI amendments).

For the purpose of this Plan, the contributions collected for haulage will go towards all necessary works of carriageway construction and maintenance, including pavement, associated culverts, bridges, drainage, signs, line marking, noise attenuation measures, landscaping, safety and traffic management measures, including bus bays, pedestrian crossings and footpaths associated with the haulage route.

Some roads and infrastructure may not be able to accommodate additional heavy vehicle loading without immediate upgrades. There may be upgrades to roads or traffic facilities that are directly required by a development and without which the development could not or should not reasonably occur. New roads, or upgrades to the existing road network, may be required to accommodate the additional heavy vehicle loading. Where a development requires works to be undertaken, the requirement will be by way of a condition imposed on the development consent under section 4.17(1)(f) of the EP&A Act. This will be in addition to contributions required for haul routes.

Table 4 – Summary of road haulage contribution

Development Type	Contribution Amount
Extractive Industry and/or mining	$0.086/t/km

Annexure 3

Estimation of net economic benefit to workers

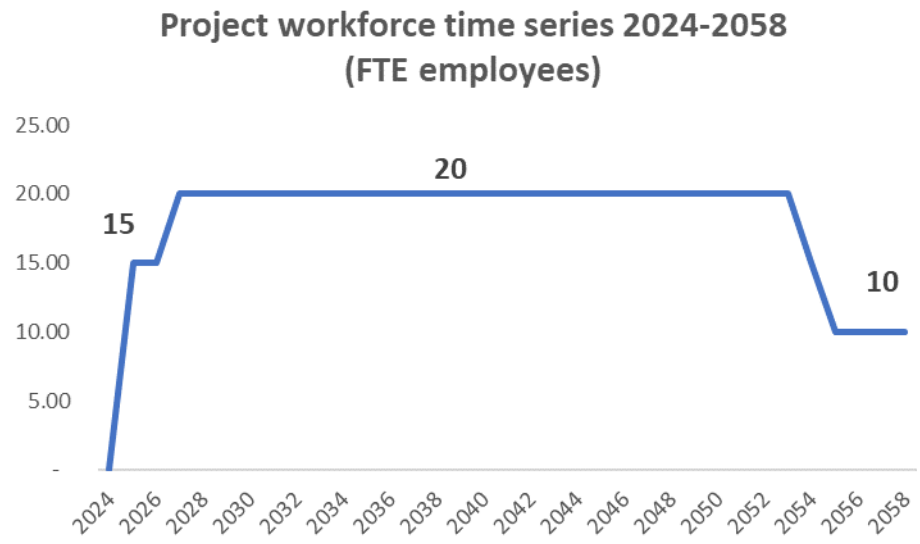
Based on the scale of the regional economy in which the business will operate, it is assumed that all employees will be resident in the region. Some proportion of these employees may be resident in areas more immediate to the quarry site (i.e. 'locally'), although the possible extent of this cannot be validly estimated. The assumption of a regionally resident workforce means that a proportion of employees' incomes is likely to be spent within the region. This supports additional economic activity and employment.

As reported in Section 3.1.4 of the EA, there are workforce assumptions for the average number of employees in each of the three stages of the Project, which are:

- Quarry development (15 FTE).
- Full operations (35 FTE).
- Decommissioning and rehabilitation (10 FTE).

Figure 2 from the EA is reproduced below as Figure A2.1 to illustrate the assumed workforce size through these stages.

Figure A2.1



Although all jobs to be created by the Project will be additional to the existing number of jobs available, practice dictates that an assumption must be made that filling new jobs may manifest as substitution in the context of the workforce generally. An example is a person leaving their current employment for employment at the quarry, which may result in their previous job needing to be filled. The approach taken to assessing 'net employee benefit' is to adopt a 'reservation wage' and compare this to the wage level for the proposed operations, as advised by the proponent. This allows an estimate of 'net employee benefit'. The reservation wage is derived as:

RW = (1 – p)AW + pB

Where:

RW = reservation wage. The Australian Government Jobs and Skills Australia (JSA) Labour Market Insights website was referenced to assess this value. Relevant occupations and incomes are included in Table A3.1.

p = probability of a worker remaining unemployed and thus claiming unemployment (Jobseeker Allowance) benefit. Assumed as the current unemployment rates reported below.

Table A3.1: Estimate of average employee incomes – quarry personnel

Description	Income/week[44]	Annualised
Earthmoving Plant Operators	$1,944	$100,088
Production Managers	$2,588	$134,576
Fitters	$2,243	$116,636
Drillers, Miners & Shotfirers	$2,824	$146,848
Weighbridge Operators	$1,818	$104,936
Welders	$1,936	$100,672
Diesel Plant Mechanics	$2,329	$121,092
Clerks/Account Clerks	$1,392	$72,384
Cleaners	$1,192	$61,984
Truck Drivers	$1,780	$92,560
Average income	**$2,005**	**$104,260**

This assessed average salary was escalated to a 2026 value as the assumed commencement of production. The long run average Wage Price Index (private sector, March quarters 2013-24), which was 2.5%[45]. The escalated incomes were $109,538 and $83,471 net of tax[46].

Incidence of unemployment is assumed as average, therefore, the unemployment rate for NSW may be considered as reflecting the likelihood of a displaced employee being unable to find alternative work. For June 2024, the unemployment rate for NSW was 3.9%[47]. To allow for the assumption that the majority of employees will originate from surrounding regions. As is the case for NSW, the most recent data at the time for were obtained from ABS, at labour market region (Statistical Area Level 4 [SA4]). The location of the site is such that employees may be reasonably anticipated to come from any one of three SA4s. These SA4s and their respective unemployment rates are: Hunter Valley (4.5%); Mid North Coast (2.8%);

[44] JSA has not provided updated estimates for some occupational incomes. These have been escalated in line with increases for incomes provided.

[45] < https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/wage-price-index-australia/latest-release >

[46] Income tax deductions for all reported incomes were calculated using the Australian Tax Office (ATO) Simple Tax Calculator. All figures are rounded.
< https://www.ato.gov.au/single-page-applications/calculatorsandtools?anchor=STC#STC/questions >

[47] < https://www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia/latest-release >

Newcastle and Lake Macquarie (2.4%). Given the variance between areas, the median of 3.2% was assumed for the following analyses.

AW = assumed alternate wage. In this instance the alternate wage is assumed as the median after tax wage for the quarry industry jobs shown in Table A3.1 and as determined in the preceding material ($77,333 annualised).

B = Jobseeker Allowance. The benefit is assumed at partnered level, $698.30 per fortnight (each)[48] annualised ($36,312). Therefore, the reservation wage would be alternatively:

(0.961 x $83,471) + (0.039 x $36,312) ∴
$80,216 + $1,416 = **$81,632 (NSW unemployment rate)**
OR
(0.968 x $83,471) + (0.032 x $36,312) ∴
$80,800 + $1,162 = **$81,962 (LGA unemployment rate)**
Average = $81,797

The industry wage data (Table A3.1) were provided to the proponent for advice on what would be an appropriate assumption for employee remuneration for the quarry. The proponent has advised that, consistent with the company's existing operations, employee remuneration will be approximately 15% to 20% higher than the estimate provided. A premium of 17.5% is assumed. The gross wage assumption was therefore $122,505. Escalated to a 2026 value as for the industry wage, this became $128,707. Net of income tax, the resulting assessment is **$96,018.** The two after tax reservation wages calculated above were escalated for the Jobseeker Allowance component on the same basis, with these becoming **$85,765** and **$86,111 ($85,937 average)**.

Consequently, the differences, and the net employee benefit values for each job assumed for estimation, are **$10,253 (Estimate 1)** and **$9,907 (Estimate 2) ($10,080 average)**.

For comparison, mean employee income for the MCC LGA (2020) was $50,044. Escalated as above, this becomes $55,239 ($46,819 net of tax).

(0.961 x $46,819) + (0.039 x $36,312) ∴
$44,993 + $1,416 = **$46,409 (NSW unemployment rate)**
OR
(0.968 x $46,819) + (0.032 x $36,312) ∴
$45,320 + $1,162 = **$46,482 (LGA unemployment rate)**

The mean of these two estimates is **$46,446.**

[48] Australian Government Services Australia website (2024). Partnered rate assumed as this is consistent with internally generated workforce demographic data. Allowance updated 20 September 2023. < https://www.servicesaustralia.gov.au/how-much-jobseeker-payment-you-can-get?context=51411 >

Annexure 4. Method for estimating disposable income

The method employed for assessing the proportion of income spent in the local/regional economy is presented for the purposes of comparison and/or validation of the method employed above. This involves the application of broad household expenditure data to the assumed average after tax workforce income of $96,018.

ABS data for gross and disposable income (2015/2016, released 2017) are presented in Figure A3.1. The average annual nominal gross income equates to approximately $1,847 per week[49]. This approximates the third income quintile, for which 52.0% or $960 per week is disposable income. This equals disposable income of $49,920 per year for each employee.

For the purposes of comparison, disposable income associated with the mean wage for the LGA of $46,446[50] is also calculated. This results in a mean weekly income of $893 per week (second quintile), for which 65.0% or $580 is disposable income. Estimated disposable income is therefore approximately $30,160.

Figure A1.1

Mean income per week NSW	2015/16	Disposable	Gross	%
Lowest quintile	$	397	454	87.4
Second quintile	$	641	986	65.0
Third quintile	$	878	1,690	52.0
Fourth quintile	$	1,231	2,668	46.1
Highest quintile	$	2,206	5,713	38.6
All persons	$	***1,070***	***2,306***	***46.4***
Adjusted lowest income quintile(c)	$	429	503	85.3

In order to assess local expenditure, the following items were subtracted from expenditure on the basis that the majority of the value is unlikely to be spent in the local/regional economy:

- Current housing costs;
- Domestic fuel & power;
- Communication;
- Mortgage repayments[51];
- Superannuation and life insurance.

The total local/regional spend excluding these items is approximately 67% of disposable income (the latter is equated to 'take home pay'). The estimated average local expenditure per quarry employee in their locality is approximately $33,446 per year. This compares with $20,207 for the average wage earner in the LGA.

[49] $96,018/52 weeks ≈ $1,847 per week.
[50] $46,446/52 weeks ≈ $893 per week
[51] It is assumed that this figure is supplementary to 'current housing costs', which is interpreted as the proportion of weekly housing costs that equates to equivalent rental cost.

At full production employment of 20 FTE workers, this equates to an aggregate $12,864 per week, or $668,928 per year. For 20 FTE employees at the mean LGA income, the outcome is $7,772 per week, or $404,140 per year.

The estimates demonstrate the conservatism of the assessment methodology used in the CBA. The central[52] *net* employee benefit estimate of around $2.5 million over the life of the Project is significantly lower than present value of *total* employee incomes of $23.4 million (refer to Table 2 in the CBA). The present value of *total* estimated disposable income estimated above over the life of the Project is approximately $8.1 million.

Figure A1.2

Average weekly expenditure (AWE)	**Value $**
Goods and services	
Current housing costs (selected dwelling)	279.12
Domestic fuel and power	40.92
Food and non-alcoholic beverages	236.97
Alcoholic beverages	31.95
Tobacco products	12.84
Clothing and footwear	43.75
Household furnishings and equipment	57.87
Household services and operation	44.90
Medical care and health expenses	82.38
Transport	206.69
Communication	46.62
Recreation	171.85
Education	43.86
Personal care	28.64
Miscellaneous goods and services	97.08
Total goods and services expenditure	***1,425.44***
Selected other payments	
Mortgage repayments – principal (selected dwelling)	70.77
Superannuation and life insurance	77.14
Total payments	1,573.35
Assumed non-local payments	514.57
% local expenditure	**67%**

[52] At 7% discount rate.

Annexure 5 – Assumptions supporting economic assessments of environmental effects

Biodiversity

Assumption	Source	Comments/derived estimate
Valuation – clearing of native vegetation	Curtis I A (2004): Valuing ecosystem goods and services: a new approach using a surrogate market and the combination of a multiple criteria analysis and a Delphi panel to assign weights to the attributes. *Ecological Economics* Volume 50 Issues 3-4, pp.163-194. Value escalated by 2.5% p.a. (as midpoint of RBA long-run inflation target range). 2024 valuation range $427/ha to $590/ha (ref. Table 11 [2004:179]).	10.59 Ha affected (SLR, 2024). Total cost range ≈ $4,522 to $6,248. Upper bound assumed as conservative estimate.
Valuation – potential impact on threatened species that are species credit species.	Jakobsson K. & Dragun A. (2001) The worth of a possum: valuing species with the contingent valuation method. *Environmental and Resource Economics* 19, 211-227. Value escalated by 2.5% p.a. (as midpoint of RBA long-run inflation target range). 2024 valuation $257/household/p.a., preservation of 700 species of flora & fauna (Victoria).	Implied cost of $0.37 per species; 12 species (1 flora, 11 fauna), $4.44 p.a. Total per year $101,547.
Count of households[53]	(Taree – Gloucester SA3, ABS Census 2021).	22,871 households

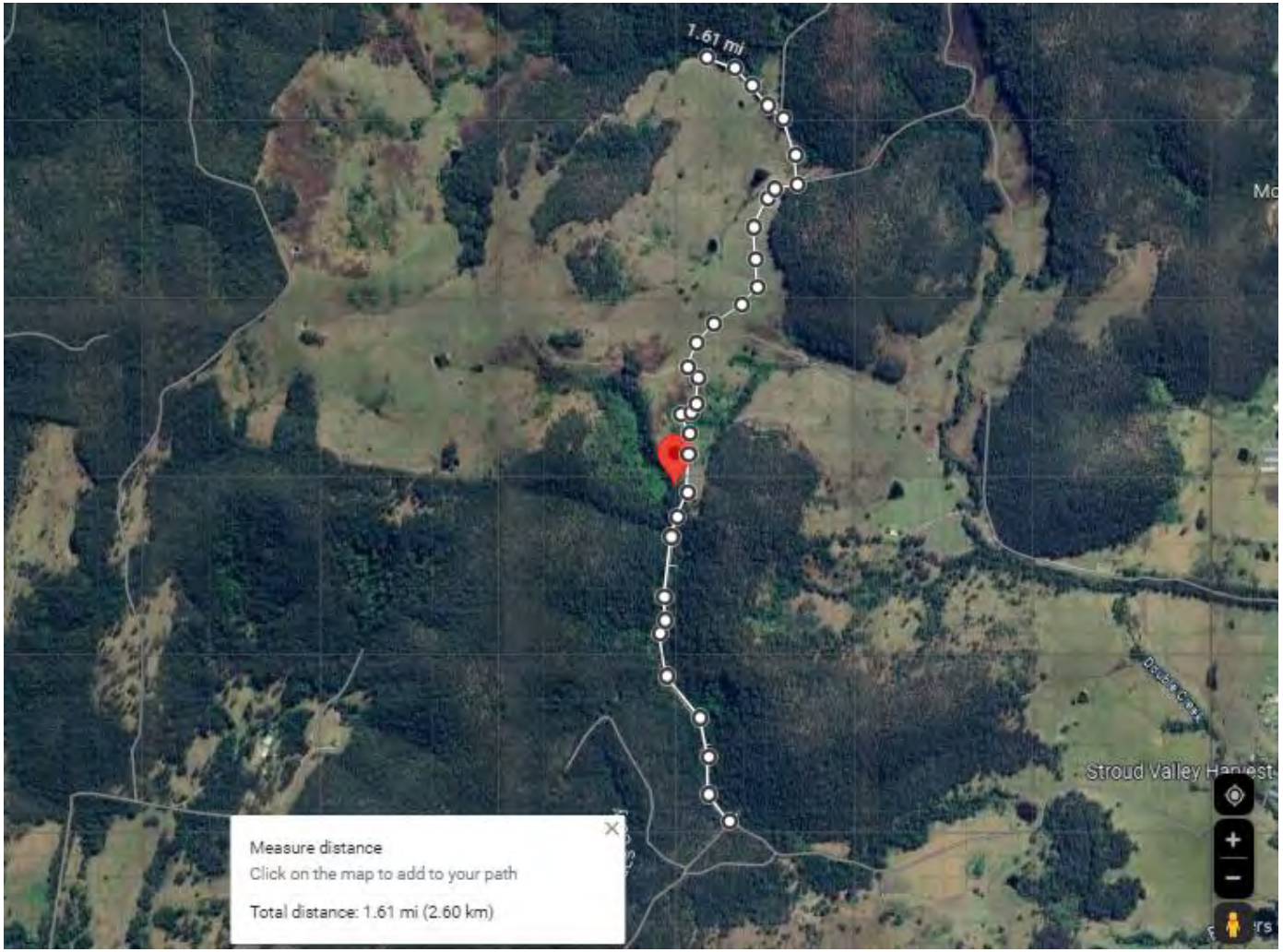
[53] As recorded in ABS 2021 SA3 Census data 'Household composition'.

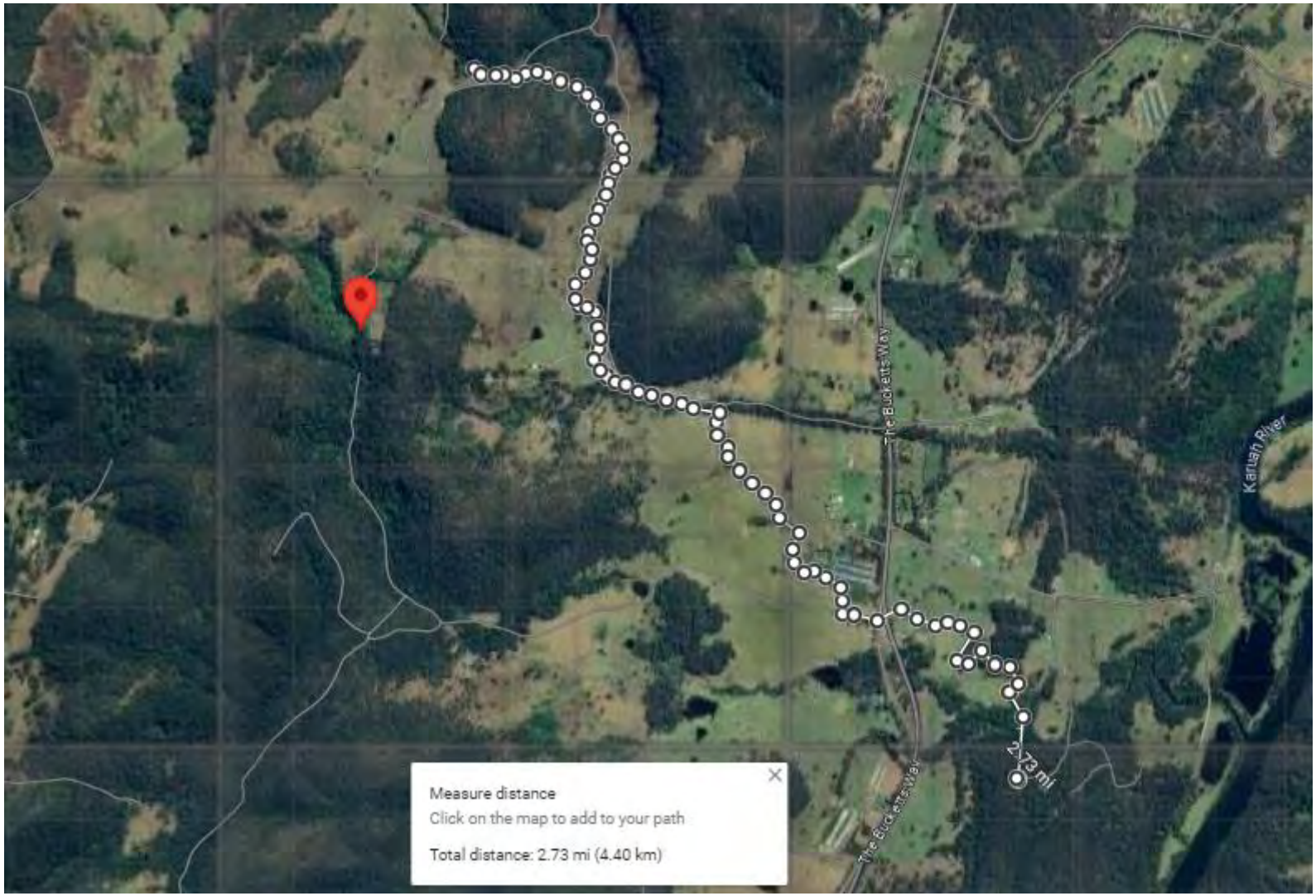
Surface water

Assumption	Source	Comments/derived estimate
Valuation	DPE[54] Technical Notes 2018 (Mazur & Bennett) *Healthy Waterways*	$1.22 to $1.60 per household per year for 5 years for each kilometre. Upper bound assumed as conservative estimate.
Extent of affected waterways	Refer to Diagrams A4.1 and A4.2. Approximately 4.4km of Double Creek and Brewers Creek (refer to descriptions in SWIA Section 4.3.2 (2024:25).	$7.04 (upper bound assumed) ∴ $161,012 for 5 years: Multiplied by 12 for Project life & residual effects= $1,932,142 ∴ $26,835 p.a. LEA =
Count of households	ABS Census 2021. CBA (Great Lakes SA3). LEA (Bulahdelah – Stroud SA2)	SA3:- 22,871 households. LEA:- 3,156 (13.8% of SA3).

[54] Department of Planning and Environment, now DPHI.

Diagram A4.1: Double Creek and Brewers Creek




The Bucketts Way
Karuah River
2.73 mi
Measure distance
Click on the map to add to your path
Total distance: 2.73 mi (4.40 km)

Air quality

Assumption	Source	Comments/derived estimate
Valuation	PAE Holmes (2013): Methodology for valuing the health impacts of changes in particle emissions – final report. Prepared for NSW Environment Protection Authority (EPA).	Unit damage cost, not in any SUA (NSW)[55] $360 damage cost/tonne of $PM_{2.5}$ (reported in 2011 dollars). Escalated by 2.5% p.a., 2024 estimate $496/tonne.
Emissions volume $PM_{2.5}$	Annual emissions not calculated in AQIA. Estimate derived from data accumulated by Aigis Group, sample of previous Projects.	Estimates range between 0.25 to 0.5 tonnes $PM_{2.5}$ per 1,000,00 tonnes output per year. Average reported in base assessment. Varies by Projected production.

Traffic & transport

Assumption	Source	Comments/derived estimate
Valuation	United Kingdom Department for Transport, Local Government and Regions DTLR (1999): "The Environmental Costs and Benefits of Supply of Aggregates (Phase 2)", EVRI reference number 02169 – 161043 (Exchange rate AUD$1: GBP£0.4188, RBA, June 1999)	1999 $24 – $37/household. Escalated by 2.5% p.a., 2024 estimate $48 - $75/household. Upper bound used $75/household. 3,198 households in POAs 2425, 2422 & 2415[56]. $239,850 p.a. Per annum cost is variable based on production schedule.

[55] PAE Holmes identifies these areas as having a population density of 1.3 people per km^2. The population density for the Bulahdelah – Stroud SA2 was 2.3 people per km^2 in 2022 (as currently published in ABS Data by Region < https://dbr.abs.gov.au/ >

[56] These are the three POAs through which The Bucketts Way passes between the Pacific Highway at Twelve Mile Creek and Gloucester and surrounds. Households in these POAs are assessed as the most frequent users of The Bucketts Way. Diagrams are provided on page 67.


Gloucester
Nabiac
Forster
Dungog
2425
Bulahdelah
Port Stephens
Great
Lakes Marine
Park
Clarence Town
Seaham
Gloucester
2415
Dungog
Bulahdelah
Clarence Town
2422
Taree
Gloucester
Nabiac

Noise & vibration

Assumption	Source	Comments/derived estimate
Valuation	Day B, Bateman I & Lake I (2010): "Estimating the Demand for Peace and Quiet Using Property Market Data" EVRI reference number: 06153-105312 (Exchange rate AUD$1: GBP£0.4482, RBA, June 1997)	1997 $56 – $117/household. Escalated by 2.5% p.a., 2024 estimate $109 - $228/household. Upper bound used $228/household.
Noise emissions	NVIA (Advitech 2024).	Site emissions vary by Project stage (exceedances and number of affected receivers). Schedule presented in Excel workbook). Road noise assessed for 146 potentially sensitive noise receivers (households within 600m of haulage route).

Annexure 6: Carbon pricing assumptions

Table A5.1

Assumption	Source	Comments/derived estimate
Exchange rate AUD:USD	RBA (long term average 1/2010-2/2024)	AUD 1 = USD 0.8031
Exchange rate AUD:EUR	RBA (long term average 1/2010-2/2024)	AUD 1 = EUR 0.6708
Carbon price EU ETS auction price as of 15.11.24	European Emissions Exchange Primary Market Auction, refer to July data, Figure A5.	EUR 66.78 = AUD 99.55 ($100)/ tCO^2-e[57]
Australian Carbon Credit Unit (ACCU), June quarter 2024 (generic spot price)	Australian Government Clean Energy Regulator (CER) (June quarter 2024 Carbon Market Report)[58]	AUD 33.47 ($34)/ tCO^2-e
Average price adopted in analysis		**AUD 67 ($67)/ tCO^2-e**
Total cost estimate	Aigis Group 2024	1,000 iteration bounded Monte Carlo Simulation of NPVs calculated using lower and upper bound prices (rounded), as above (results in Tables A5.1 and A5.2)
Carbon equivalent emissions	Advitech, AQIA & GHG report, August 2024	AQIA/GHG report Table 19, Table 20
LEA attribution LGA/NSW pop	ABS DBR ERP 2023 (ABS 2024)	96,579/8,342,285 = 0.0116
LEA attribution SA2/NSW pop	ABS DBR ERP 2023 (ABS 2024)	5,361/8,342,285 = 0.000643

[57] Rounded figures in parentheses are those used in estimation.
[58] CER June Quarter 2024 states: 'The generic ACCU spot price remained stable in Q2 2024 averaging $33.47'. 24 September 2024.
< https://cer.gov.au/markets/reports-and-data/quarterly-carbon-market-reports/quarterly-carbon-market-report-june-quarter-2024 >

Figure A5 European Energy Exchange (EEX) Emission Spot Primary Market prices

eex Public

More information

EEX Emissions market / Primary Mark

References					Prices					Volumes						
Date	Time	Auction Name	Contract	Status	Auction Price €/tCO2	Minimum Bid €/tCO2	Maximum Bid €/tCO2	Mean €/tCO2	Median €/tCO2	Auction Volume tCO2	Total Amount of Bids	Number of bids submitted	Number of successful bids	Average number of bids per bidder	Average bid size	Average volume bid per bidder
15.11.2024	11:00	Auction 4. Period DE	T3PA	successful	66.78	61.50	120.00	68.63	66.72	1,886,500	3,121,500	89	42	4.24	35,073	148,643
14.11.2024	11:00	Auction 4. Period CAP3 EU	T3PA	successful	67.15	61.50	120.00	67.90	66.92	3,287,500	5,440,500	110	30	4.78	49,459	236,543
13.11.2024	11:00	EUAA Auction CAP3 EU	EAA3	successful	65.86	61.00	120.00	66.50	65.70	899,500	2,363,000	60	19	4.29	39,383	168,786
12.11.2024	11:00	Auction 4. Period CAP3 EU	T3PA	successful	65.92	60.50	120.00	66.32	65.71	3,287,500	5,250,000	113	37	4.35	46,460	201,923
11.11.2024	11:00	Auction 4. Period CAP3 EU	T3PA	successful	67.60	60.50	120.00	68.03	67.59	3,287,500	4,630,000	104	52	4.52	44,519	201,304
08.11.2024	11:00	Auction 4. Period DE	T3PA	successful	66.20	60.50	120.00	66.50	65.97	1,886,500	4,022,000	100	28	4.55	40,220	182,818
07.11.2024	11:00	Auction 4. Period CAP3 EU	T3PA	successful	65.35	60.50	120.00	66.15	65.10	3,287,500	5,378,000	112	31	4.67	48,018	224,083

Source: < https://www.eex.com/en/market-data/environmental-markets/eua-primary-auction-spot-download

Table A5.2 GHG emissions valuations, high & low price & Scope 3

	4%	7%	10%
Lower bound ($34/tCO²-e)	$3,682,806	$5,263,574	$2,718,698
Upper bound ($96/tCO²-e)	$10,398,510	$14,861,856	$7,676,325
Scope 3 emissions ($65/tCO²-e)	$2,799,752	$4,036,214	$2,042,270

Annexure 7: Author declaration

Aigis Group firm profile

Aigis Group is a small consultancy firm based in Lake Macquarie, NSW. The firm was established in 2004, although the founding partners (Scott Holmes and Mark Sargent) had worked collaboratively on Projects since 2002, including social, economic and market research engagements. The firm was established on the basis of its ability to engage the skills of a group of consultants to augment the firm's internal skills as required, and maintains capacity to operate on that basis, as required.

The firm provides a range of research services, including the provision of economic and socioeconomic impact assessments to organisations in the public sector, property development, licensing, mining, and other industries. A summary list of relevant engagements can be provided on request.

Author profile

Dr Mark Sargent (MMktg, MBA[Merit], PhD) has been the firm's Principal Consultant since 2006, and is the author of this document. Mark's doctoral degree was in politics and specifically, regulatory policy. He has taught public policy at the University of Newcastle, and management at the TAFE Hunter Institute. He has also held a variety of past directorship roles. Mark is a past graduate of the Australian Institute of Company Directors (AICD), and an Affiliate Member (Allied Professional), of the Planning Institute of Australia (PIA).

Author declaration

The author warrants that:

1. The EA contains all information relevant to the EA for the Project, which was known to the author at the time of preparation.
2. That none of the information in the EA is false or misleading.

The author also requires that the reviewer/reader refers to the disclaimer forming part of the EA (page 2).

Mark Sargent
19 December 2024