

Attachment 8

Project Need Assessment

Project Need Assessment

Client:	Hanson Construction Materials Pty Ltd	Project:	Extension to Wolffdene Quarry
File Ref.:	1001_DA2_310_014		
Development Proposal:	Development Application for a Development Permit for a Material Change of Use (MCU) – Extension to Extractive Industry and Environmental Authority for Associated Environmentally Relevant Activities (ERAs) 16(2)(c) and 16(3)(c) on land situated at Harts Road, Luscombe (the Site)		

1.1 Product Demand and Market Characteristics

1.1.1 Introduction

This development application seeks the inclusion of additional land into the existing quarry for securing the long term production capacity of the quarry so that it can continue to supply high quality construction materials well into the future. In particular the approval will provide access to higher quality extractive resources, improve the operational efficiency through optimised staging of extraction and improve environmental management by providing additional buffer lands.

Importantly, the volumes and type of materials extracted, haulage volumes (truck numbers), processing output and product distribution will not change as a result of this application.

Therefore this project does not require a typical need assessment associated with a new quarry establishing in the market place or a project which seeks to increase their market share (ie. justification of need for a new competitor). Rather, this assessment provides commentary on the market characteristics to support the long term viability of the existing quarry and to provide a description of quarry products uses.

1.1.2 Quarried Products Uses and Specification

The term heavy construction material is used to denote all quarried hardrock, sand, gravel, and other earth materials which are extracted in bulk and used for construction purposes.

Natural construction materials are extracted from deposits of hard, durable, and dense rock (hardrock quarries) and from deposits of sand and gravel (gravel and sand extraction).

Hardrock quarries produce road screenings, coarse and fine concrete aggregate, manufactured sand, road base, armour rock, rip rap, railway ballast, drainage materials, landscaping materials, filters and fills. The great bulk of quarried products is used in road construction (embankments, sub-base, base, wearing course, asphalt, screenings, drainage media, shoulder gravels) and in concrete and concrete products (aggregates).

Hardrock deposits are preferred for the manufacture of road base, asphalt aggregate, and road surface screenings.

Quarried products require characteristics that ensure serviceability for the engineered design life. In general, a rock suitable for use as coarse aggregate should be sound, high strength, durable, resistant to abrasion and chemical attack, and be relatively free of deleterious materials. Crushing behaviour, density, hardness and other characteristics such as surface characteristics, colour, and skid resistance, are important factors for particular uses eg. skid resistant road surfacing.

Quarried products are required in every major infrastructure and urban development project proposed for south east Queensland.

Cement Concrete and Aggregates Australia (CCAA) published a pamphlet in November 2005 entitled "*Striving for Smart Resource Utilisation*". The pamphlet provides examples of the use of quarried products in major projects and household construction.

For example, the proposed redevelopment of the Brisbane Airport, including runway, taxiways, terminal buildings and aeronautical infrastructure, will require:

- between 15 million tonnes and 20 million tonnes of extractive material
- up to 25 million tonnes of sand for the runway pad
- around 325 tonnes of aggregates for every linear metre of the new runway.

One kilometre of highway requires 25 000 tonnes of crushed rock.

One kilometre of suburban road requires:

- 5 000 tonnes of crushed rock
- 750 tonnes of concrete for footpaths, kerbs and gutters
- 450 tonnes of asphalt for road surfacing.

One kilometre of railway requires 2 000 tonnes of aggregate.

A high-rise building can use up to 1 000 tonnes of aggregate per floor.

Construction of a typical house, including driveway and landscaping, uses about 100 tonnes of aggregate.

1.1.3 Market Area

Quarry market areas are dynamic and depend on integrated investments, product characteristics, competition and many other factors.

In simplistic terms the market area for the quarry can be viewed as consisting of two main segments; road base market and the aggregates market. Road bases have traditionally been cheaper than aggregates and quality requirements vary. Hence the cost of transport of road bases is more significant and the market area for a particular quarry is more restricted than for high quality or specialist aggregates.

The principal market area encompasses the Gold Coast, Brisbane, Logan, Redlands, Scenic Rim regions and northern New South Wales.

1.1.4 Transport Costs

The majority of quarried products are carted in tri-axle trailer, tip truck and dog and truck configurations. Transport costs can be a significant proportion of the total cost to the end user, particularly for road base products.

For example the cost of transporting road base for a distance of 60 kilometres compared with 30 kilometres could add an additional 25 – 30% to the total cost of construction materials.

It is for this reason that it is critical that quarries are located as close as possible to markets to reduce transport costs and to reduce costs for the building and construction industry and end user.

1.1.5 Economic Outlook

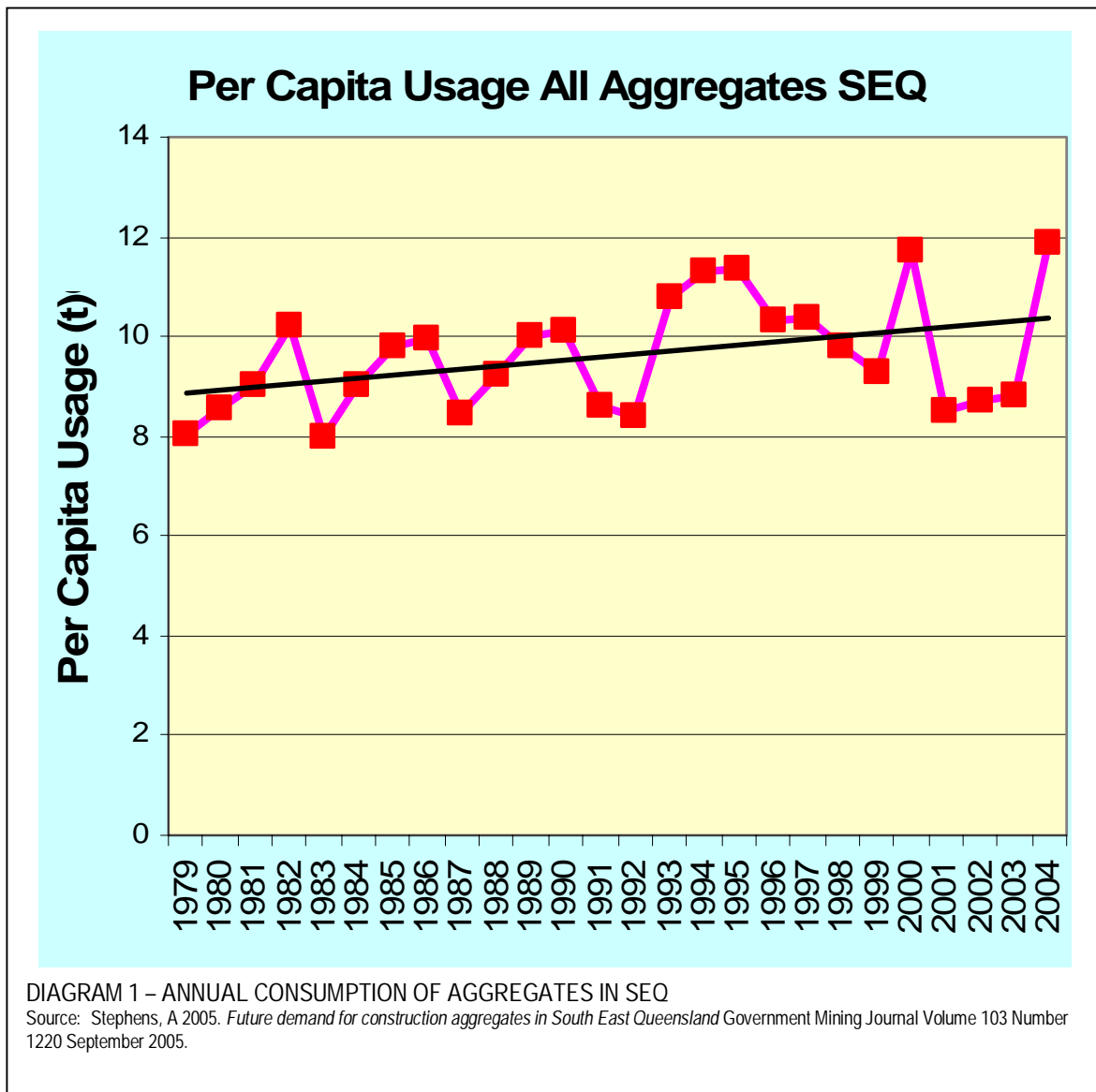
Both selling prices and production levels are related to prevailing economic condition. Although there is a broad relationship in the growth in gross State product, population and other economic indicators, the demand for quarry products is susceptible to economic cycles and the level of construction activity.

The Queensland State government has identified the need to manage growth in South East Queensland which has experienced high and sustained growth since the 1980's growing at an average of 55,300 persons each year between 1986 and 2004. A number of strategies have been put in place to manage the anticipated growth including the South East Queensland Regional Plan 2009 – 2031 (SEQ Regional Plan) and the Infrastructure Plan and Program.

The SEQ Regional Plan predicts an increase of population from 2.5 million to 4.4 million which will necessitate an additional 745,000 dwellings. It is expected that the increased population and new housing projections will translate to an increase in infrastructure and construction activity in South East Queensland which in turn will increase demand for quarry products.

1.1.6 Demand

Annual per capita consumption of aggregates in South East Queensland has trended upwards from approximately 9 tonnes per person in 1979 to approximately 11 tonnes per person in 2004. Refer to DIAGRAM 1 – ANNUAL CONSUMPTION OF AGGREGATES IN SEQ.



Based on the population projections of the SEQ Regional Plan and an average use of 11 tonnes per person per annum, it is expected that cumulative consumption of quarry products in South East Queensland will increase significantly. Refer to DIAGRAM 2 – CUMULATIVE RESOURCES VS CONSUMPTION 2005-2028 (High population forecast).

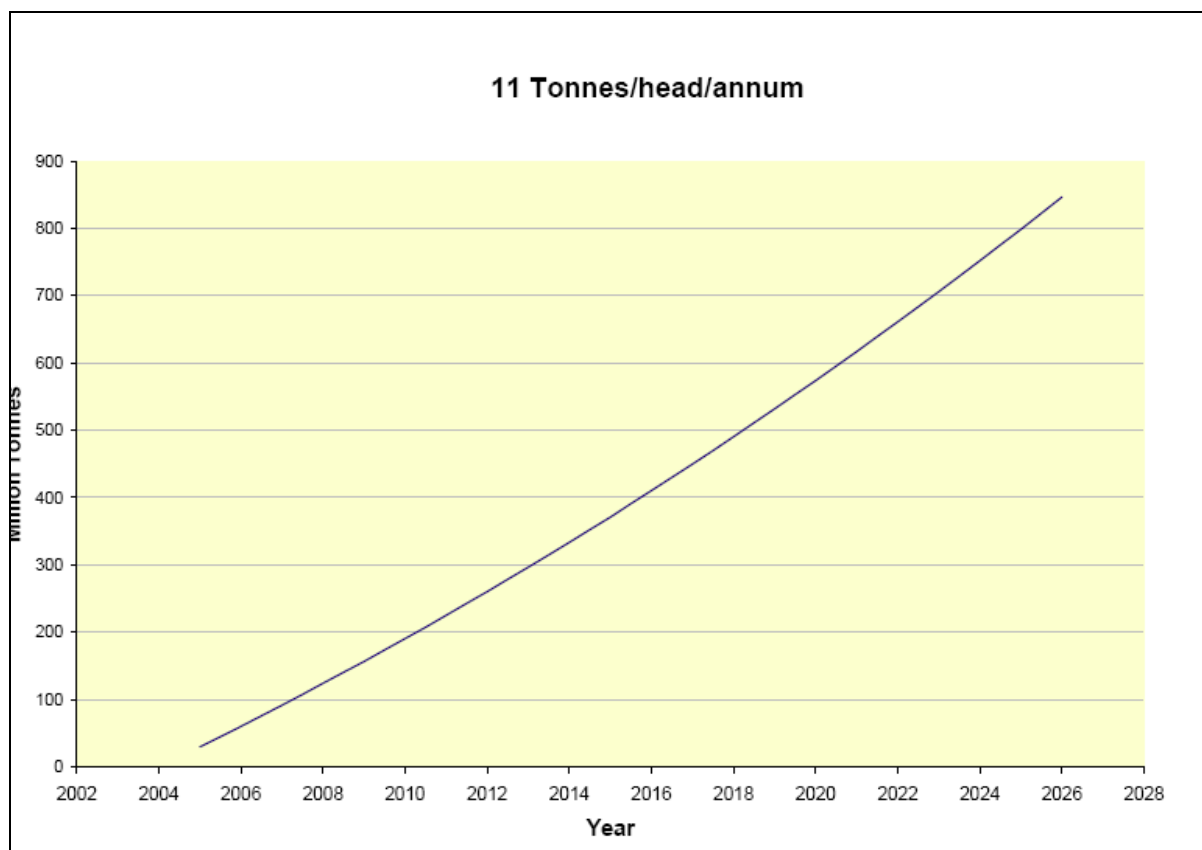


DIAGRAM 2 – CUMULATIVE RESOURCES VS CONSUMPTION 2005-2028

Source: Cement Concrete and Aggregates Australia Report for Availability of Extractive Resources in Southeast Queensland Summary Report August 2007 prepared by GHD.

Although accurate prediction of the future demand for quarried products is difficult due to the uncertainty and range of interdependent factors that apply and the susceptibility of the construction industry to economic cycles, in broad terms there is expected to be strong demand for construction materials in South East Queensland over the next 10 – 15 years.

1.1.7 Sources of Supply

As outlined above, this development application seeks approval for inclusion of additional land within the existing quarry footprint to maintain its existing production capacity rather than a new quarry or source of supply. Therefore this section simply provides commentary on the existing sources of supply for supporting the long term viability of the quarry.

The location of suitable resources is limited due to the constraints imposed by geology, access, land subdivision and environmental values in particular.

Ideally quarries should be conveniently located to limit heavy truck transport and so reduce end user costs and environmental and infrastructure costs associated with haulage.

Three large quarries have located in the Northern Darlington Range to supply not only the needs of the region but also the surrounding Local Authority Areas including, Brisbane City and northern New South Wales. Maintenance of the Hanson quarry provides competition in the market place to keep construction costs low.

Resources of quarry rock in Brisbane City south of the Brisbane River and in the Ipswich-Brisbane corridor have been depleted.

Since the closure of gravel extraction of the lower reaches of the Brisbane River, greater pressure has been placed on existing available resources. Quarries that have had their resources depleted include those at Pine Mountain Road (three of), Daisy Hill, Jimboomba, and Kingston.

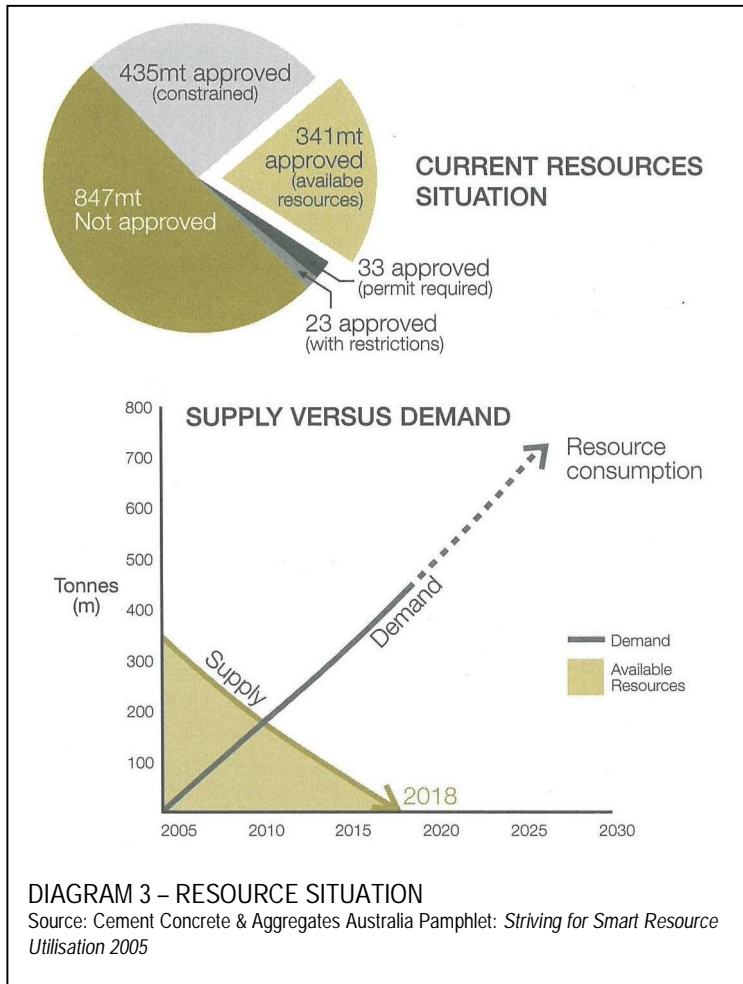
CCAA pamphlet "Striving for Smart Resource Utilisation" 2005 discusses the potential for a significant shortfall of available resources in the future.

There are some 1656 million tonnes of extractive resources identified in key resource areas in South East Queensland.

Around half the resources (855 million tonnes) are not currently approved for development.

Only 341 million tonnes of the resources approved for development are free from regulatory constraints. This represents around 20 per cent of the total identified resources in South East Queensland.

This scenario is presented graphically and is reproduced below (refer to DIAGRAM 3 – RESOURCE SITUATION).



Although market conditions have changed since the issue of the pamphlet, in general terms the long term shortage of approved quarry resources still represents a major constraint for the industry. It is anticipated that the issue of this approval will assist with alleviating the long term shortages of approved resources in the market place and possibly postpone the need to open new greenfield sites in the long term, especially in the local area.

1.1.8 Need for the Proposed Extension

The assessment of demand and supply above demonstrates that there is a critical need for continued approval and development of extractive resources to supply the market in a sustainable manner. It is important to assist operators to improve efficiencies so that cost savings can be passed on to consumers such as first home buyers, local governments, schools and hospitals. It is also important to maintain the number of operators in the industry to maintain healthy competition in the market place.

Because cartage costs are a significant proportion of the end user cost, quarries should be conveniently located to urban areas. Customer choice and competitive prices are essential for fair and equitable trading and provision of infrastructure and shelter.

Supporting the long term viability of the quarry Site will provide confidence to management to invest and improve quarry practices on the Site.

A comprehensive Site investigation which included core drilling and laboratory testing was carried out to provide certainty for detailed quarry development planning which in turn enabled environmental commitments to be fully evaluated.

The need for the project has been demonstrated by:

- proven reserves
- environmental feasibility
- technical and economic feasibility
- community need for economical sources of quarried product
- need for customer choice for service, scheduling and quality
- need for affordable housing and community infrastructure
- projected demand for quarried products which are widely used in building and construction
- continuing depletion of the existing inventory of resources
- unavailability of alternative sources
- sound planning
- natural resource management principles.