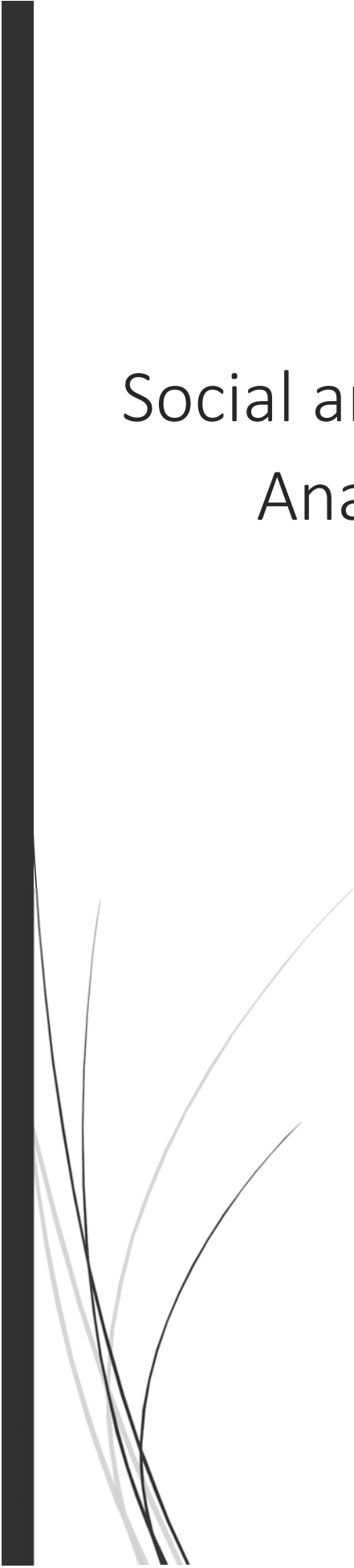


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Appendix K

Social and Economic Impact Analysis Working Paper

New Grafton Correctional Centre SSDA 7413
INFRASTRUCTURE NSW

Deloitte Access Economics

Social and Economic
Impact Analysis of
the New Grafton
Correctional Centre

Infrastructure NSW

July 2016

Deloitte Access Economics Pty Ltd
ACN: 149 633 116

Level 19, 60 Station Road
Parramatta
NSW 2150

Tel: +61 2 9840 7000
Fax: +61 2 9840 7001
www.deloitte.com.au

Greg Lake
Project Director
New Grafton Correctional Centre
Infrastructure NSW
PO Box R220
Royal Exchange
NSW 1225

12 July 2016

Dear Greg

Social and Economic Impact Analysis of the New Grafton Correctional Centre

I am pleased to provide this social and economic impact analysis on the proposed New Grafton Correction Centre project.

This report is a detailed analysis of the social and economic impact on the Northern Rivers regional economy from delivering the proposed 1,700 bed facility compared to the base case or 'business-as-usual' scenario where there is no new project.

This analysis will be used for the purposes of informing the NSW Government of the economic and social impacts of the proposed project.

If you have any questions about this report please do not hesitate to contact me.

Yours sincerely,



Theo Psychogios
Partner
Deloitte Access Economics

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Glossary

ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
BITRE	Bureau of Infrastructure, Transport and Regional Economics
CBA	Cost Benefit Analysis
CNSW	Corrections New South Wales
C-D	Cobb-Douglas
CGE	Computable General Equilibrium
CPI	Consumer Price Index
CRESH	Constant Ratios of Elasticities Substitution, Homothetic
DE	Department of Employment
DJ	Department of Justice
DoCS	Department of Community Services
DPE	Department of Planning and Environment
EIA	Economic Impact Analysis
EIS	Environmental Impact Statement
EP&A	Environmental Planning and Assessment Act
FTE	Full Time Equivalent
GDP	Gross Domestic Product
GRP	Gross Regional Product
IO	Input Output
LGA	Local Government Area
LHD	Local Health District
NGCC	New Grafton Correction Centre
NPV	Net Present Value
NSW	New South Wales
RCMB	Rural City of Murray Bridge
RGEM	Regional General Equilibrium Model
SEARs	Secretary's Environmental Assessment Requirements
SEQ	South East Queensland
SSD	State Significant Development

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Executive Summary

Deloitte Access Economics has been commissioned by Infrastructure NSW on behalf of Corrective Services NSW (CSNSW), a division of the Department of Justice (DJ), to undertake a Social and Economic Impact Analysis (EIA) of the New Grafton Correctional Centre ("NGCC" or "the Project").

Engagement summary

Deloitte Access Economics has been engaged to analyse the impact of the Project with a capacity of 1,700 beds against a base case, where the Project does not proceed.

Infrastructure NSW (INSW) has required that the Study Area for the analysis is the Northern Rivers region of NSW that will be modelled through Deloitte Access Economics Regional General Equilibrium Model (DAE-RGEM).

In accordance with the *EP&A Act*, an Environmental Impact Statement (EIS) is required for the Project, and this assessment has been completed as a prerequisite for the EIS, as determined by the Secretary's Environmental Assessment Requirements (SEARs) issued 21 December 2015.

Project summary

The Project will be located approximately 12.5 km southeast of Grafton and 3 km northeast of the Grafton Airport. Construction is expected to start in mid-2017 and be completed by the mid-2020.

Operations are assumed to begin at the completion of the construction phase for a period of up to 25 years after the completion of construction. It is assumed that the Project will be operating at maximum capacity through the life of its operations. Given current and forecast capacity shortfalls within the NSW correctional services network, the existing Old Grafton Gaol is assumed to continue at full capacity under the baseline and modelled scenario.

Analysis summary

The findings of this report are summarised as follows:

- The Project case delivers a positive economic impact to the Northern Rivers region of approximately \$557 million in value added (in NPV terms) between 2016 and 2040, representing an increase in the regional economy of 0.45%.
- In full operation, the Project is forecast to directly employ 580 to 600 FTE staff in the proposed 1,700 bed facility.
- Since some of these new jobs replace others in the region via local labour market effects, the *net* employment created in the Northern Rivers regional economy is more modest. Under the Project scenario, at least an additional 105 FTE jobs will be created in the regional economy. This is equal to 0.10% of the regional work force.

- The benefits of the Project are primarily derived from the increase in new capital and operational expenditure within the Northern Rivers region, which results in direct employment in the construction and correctional services sector and indirect employment in associated sectors.
- Operational expenditure in the correctional services sector is more labour-intensive than capital expenditure in the construction sector, and hence dollar-for-dollar employs more people within the regional economy.
- The peak year for regional economic impacts from the Project will be 2018-19 at the peak of the construction phase, when the Project will deliver \$89 million in value added to the regional economy, equal to 0.93% of the baseline economy.
- Total employment creation will peak under the Project in the construction phase in 2018-19 at an additional 157 FTE jobs, or 0.16% of the baseline work force.
- Realised regional economic impacts may be greater than the modelled benefits if regional unemployment remains persistently high, and as a result there is less competition within the regional labour market.
- While the economic impacts are large for the Northern Rivers region, the *net* economic impacts are likely to be significantly lower, if the opportunity costs associated with employing more labour and capital to increase output is considered.
- Given the Project's location near the town of Grafton, most of the additional economic activity and employment generated by the Project will be within the Clarence Valley LGA.
- Although the Project is publicly-funded, the modelled negative impact on the Northern Rivers region of increased taxation is minimal, as the Northern Rivers region makes up approximately 2% of the NSW Government's tax base.
- It is considered very unlikely that the negative externalities treated qualitatively in this analysis would be of a scale that would exceed the modelled economic impacts of the Project.
- There are some concerns about the negative impact the Project might have on the capacity of social and community services in Grafton to service any additional demand associated with parolees or inmates' families.
- Potential costs associated with decreasing perceptions of safety and security are offset by other considerations, such as the Grafton community's capacity to support the existing gaol, and the decision to locate the Project away from the Grafton town area, thereby minimising any negative impacts on immediately adjacent landholders.
- An additional benefit of the Project is that it will likely deliver a slightly positive impact on housing demand in Grafton and the surrounding area.
- Transport infrastructure projects in the Grafton area will more than compensate for any additional traffic to and from the Project site.

Overall summary

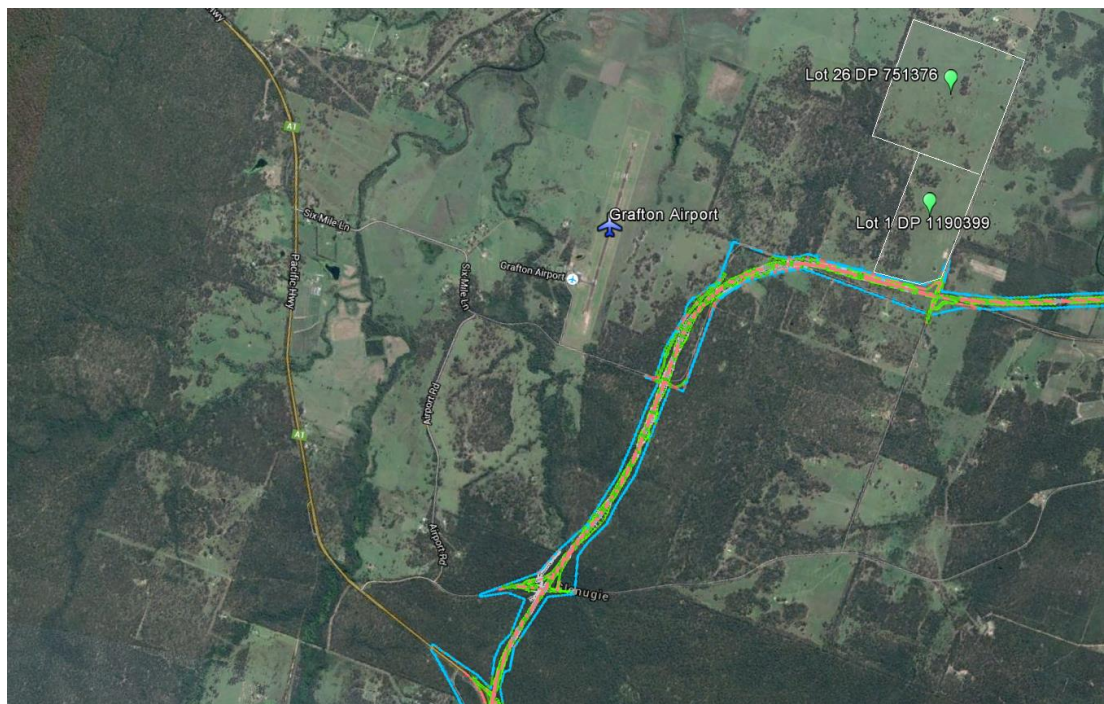
Overall, the Project is expected to generate significant positive social and economic impacts to the Northern Rivers region through the generation of additional employment and economic activity.

1 Introduction

The Project is planned to be located on a 195 hectare greenfield site at 313 Avenue Road, Lavadia, which is approximately 12.5 km southeast of Grafton and 3 km northeast of the Grafton Airport (Figure 1.1). The site consists of adjacent Lot 26 DP 751376 and Lot 1 DP 1190399. The site is within the Clarence Valley LGA. The selected site is adjacent to the new route for the upgraded Pacific Highway project expected to be completed by 2020.

The Project will be part of a phased program of infrastructure expansion designed to meet the overall needs of the correctional services system with respect to efficiency and growth agendas.

Figure 1.1: Selected Site for the Project and planned route for Pacific Highway upgrade



Source: Deloitte Access Economics; NSW Valuer General; Roads and Maritime Services

The Project falls within the requirements of a State Significant Development (SSD) under Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011* as the capital investment value of the correctional centre exceeds \$30 million.

The current first stage SSD application (the Proposal) for the site seeks approval for:

- A concept proposal for the New Grafton Correctional Centre; and
- First stage site clearance and preparatory works for the Project.

The Proposal will be assessed under Division 4.1 of the *Environment Planning & Assessment Act 1979 (EP&A Act)*, with the Minister the relevant consent authority. In accordance with

the *EP&A Act* an Environmental Impact Statement (EIS) is required for the Project. The objective of the environmental assessment is to ensure that approval bodies, government authorities (including local councils), the applicant and the broader public have sufficient material to properly consider the potential environmental consequences of a proposal (NSW Government, 2000).

The *EP&A Act* and *EP&A Regulations* requires the Secretary of NSW Department of Planning and Environment (DPE) to issue Environmental Assessment Requirements (SEARs) for this SSD (*EP&A Act*, cl 78A(8A), *EP&A Regulation*, Schedule 2, Clause 3). The *EP&A Act* requires the consent authority to apply Section 79C considerations in the evaluation process, including the likely social and economic impacts of any development on the locality as specified specifically in Section 79(c)(1)(b).

This report therefore undertakes an analysis of the regional impacts of the capital works program and ongoing expenditure associated with the Project within an economic impact analysis framework, which is then used as an input into an overall social and economic evaluation of both quantitative and qualitative benefits and costs, including any distributional impacts.

The 1,700 bed Project case is assessed relative to a base case. This base case, or ‘business-as-usual’, involves no new development and the continuation of operations at the Old Grafton Gaol at capacity. The quantifiable benefits and costs of the Project scenario has been estimated within the computable general equilibrium (CGE) framework. Compared to a partial analysis framework, this captures the flow-on impacts on other sectors and agents in the economy.

The impact results, which include macro-economic metrics such as Gross Regional Product (GRP), are then used as inputs into the social and economic evaluation to determine the overall economic impact on the Study Area.

1.1 Report structure

The first four chapters of this report are structured in accordance with the general economic evaluation guidelines. The structure of this report is as follows:

- Chapter 2 outlines the methodology employed in this report, including how the approach used aligns to the NSW Government economic evaluation guidelines.
- Chapter 3 provides a background of the Northern Rivers region, presenting a brief demographic, industry and employment profile of the region.
- Chapter 4 details the Project and defines the base case and the Project case.
- Chapter 5 presents the results of an analysis of the economic impacts of the Project on the regional economy, using Computable General Equilibrium (CGE) modelling.
- Chapter 6 presents the results of the comprehensive social and economic assessment of all anticipated quantitative and qualitative impacts, including distributional impacts.
- Appendix A presents an overview of the CGE model.

2 Methodology

The Social and Economic Impact Assessment (EIA) involves both quantitative and qualitative evaluation of economic impacts. Deloitte Access Economics have established a methodology for undertaking this EIA through two key elements:

1. an economic impact assessment using CGE modelling, whose results are used as inputs into
2. an overall social and economic evaluation considering quantitative and qualitative assessment of total Project benefits and costs, including distributional impacts.

The assessment determines the economic impacts of the Project within the Study Area, relying on the range of guidelines and requirements set out by the former NSW Department of Urban Affairs and Planning (2002) and NSW Treasury (2007). These two stages are different, but closely related. In this context, the economic impact assessment results from an input into the social and economic evaluation. This chapter reviews the two elements of analysis, the underlying guidelines and requirements, before discussing how these have been applied to develop the methodology.

2.1 Economic impact assessment

The Project is likely to impact on the regional economy through increasing the ongoing economic activity in the region through both the construction and operations of the facilities. These expenditure profiles are used as inputs to 'shock' the regional economy and to determine the overall economic impact.

Economic impact assessments determine the economy wide effects of a Project and report changes in macro-economic metrics such as Gross Regional Product (GRP), employment, investment and private consumption.

It should also be noted that economic impact assessments are a substitute for Input-Output (IO) modelling. Both approaches can provide estimates of increases in economic output, value added and employment in the broader economy flowing from the Project. However, economic impact assessments use a more complex set of techniques and involves different assumptions about the state of the economy. One central difference between the two approaches is that IO modelling generally assumes that there is a large pool of resources available in the economy to meet increases in demand.

In contrast, economic impact assessments generally assume that the economy and sectors within the economy are competing for the use of resources. This means that increases in demand from the Project may result in effects such as increased prices in other markets and crowding out effects (rather than just increased output). More detail on the techniques and framework used in economic impact assessments can be found in Section 5.2 and Appendix B.

While the results from economic impact assessments are important metrics, they do not adjust for the cost of all resources used to create that activity and “are of limited use in assisting Government to make funding decisions” standalone.¹ However, economic impact “modelling results can then be used to enhance the results of CBAs”, and the two can be integrated and improve evaluation.²

2.2 Social and economic evaluation

Social and economic evaluation aims to provide a comprehensive assessment of the quantitative and qualitative impacts of the Project, including distributional impacts. Distributional impacts are those that might result in uneven benefits or costs across the community within the Study Area. As the social and economic evaluation is a comprehensive assessment, the quantified impacts identified in the economic impact assessment are just an input into that process. Importantly, impacts that are assessed qualitatively are not necessarily less significant than those assessed quantitatively, only that they are incapable for being accurately measured or forecast.

2.2.1 Government guidelines for economic evaluation

A number of Government guidelines exist for economic evaluation of projects in NSW. These guidelines cover conceptual issues such as how environmental consequences should be treated as well as practical issues, such as what discount rates should be used in what circumstances. The following documents have been used as the most relevant guidelines for this economic evaluation:

- NSW Department of Urban Affairs and Planning (2002), “Guideline for economic effects and evaluation in EIA”
- NSW Treasury (2007), “NSW Government Guidelines for Economic Appraisal”.

2.2.2 Secretary’s Environmental Assessment Requirements (SEARs)

In addition to the guidelines listed above, for this project there are also specific requirements set out in the Secretary’s Environment Assessment Requirements (SEARs). The SEARs for the Proposal were issued on 21 December 2015 and set out Project specific issues that the EIS for the Proposal must cover. Under the SEARs published for the Project, a requirement of the EIS is an evaluation of Social and Economic Impact that will “address both social and economic costs and benefits of the proposal through a specialist social and economic assessment.”³

As noted in Section 1, this report addresses the requirement for a detailed assessment of the social and economic implications of the Project on the Northern Rivers region.

¹ NSW Treasury, (2007). *NSW Government Guidelines for Economic Appraisal*. Page 13.

² Layman, B. (2004). *CGE Modelling as a Tool for Evaluating Proposals for Project Assistance: A View from the Trenches*. Pg 18.

³ Key Issue No. 5 within DPE. (2015). *Secretary’s Environmental Assessment Requirements – New Grafton Correctional Centre (SSD – 7413)*.

While the remainder of the requirements cover topics beyond the scope of an economic assessment, there are particular areas which are relevant to the evaluation methodology.

2.2.3 Implications of these guidelines

Together, these two documents set the baseline requirements for this social and economic assessment. Overall they require that the EIA should be carried out using a set of standard approaches and also must include consideration of certain topics.

Looking first at the standard approach, the guidelines suggest that the EIA should involve:

- defining the spatial boundaries of analysis (e.g. local, regional, state, national)
- identification of the base case and scenario(s) to be analysed
- identification of the social and economic impacts of the Project
- identification of costs and benefits
- quantification of costs and benefits, where possible
- qualitative assessment of unquantifiable costs and benefits
- consolidation of values by applying a discount rate.

This standard approach will be applied throughout this report. The definition of the spatial boundaries of analysis is covered in Section 3. Sections 5 and 6 then covers the identification, discussion, quantification and consolidation of costs and benefits of the Project.

First, the social and economic impacts are examined as part of this report. Second, other externalities are detailed that might be considered as social or economic impacts of the Project. These externalities that would be examined separately as part of the wider EIS process may include increased environmental pollution and impacts on biodiversity.

Moreover the guidelines suggest that the EIA must contain analysis of a broad range of issues, costs, benefits and distributional matters. The issues examined broadly fall into two main categories:

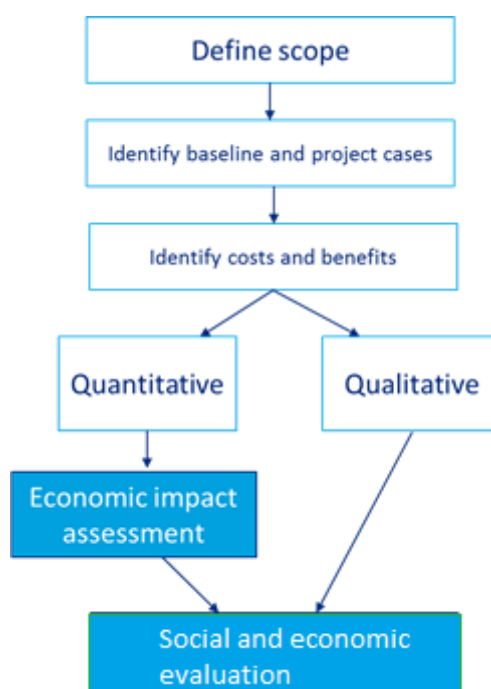
- **Flow-on effects from capital investment and operating expenditure:** as with the externalities, regional flow-on effects involve parties who are not directly involved in the development or ongoing operation of the Project, however encompass market based responses to the presence of the Project. *As they involve appropriate price adjustments, these impacts involve economic rather than social benefits or costs.* Flow-on effects are indirect impacts due to adjustments in the economy, such as price movements, that depend upon initial market based responses or direct impact which occur first. For example, if the Project increases demand for a certain type of labour this may affect the price of labour in the region which will have flow-on consequences for other local industries. These are not externalities, but are rather seen as the mechanisms by which the economy re-adjusts in response to changed patterns of supply and demand. Key effects here include: increases in demand and wages for local workers, or increases in the demand for locally-sourced goods and services. These impacts are assessed primarily in Section 5.
- **Externalities:** these externalities cover areas where the Project will create costs or benefits, which cannot be captured in current market transactions, for third parties not

involved in the development or ongoing operation of the Project. As noted in the Department of Urban Affairs and Planning guidelines, quantification problems can arise if the benefits and costs relate to goods and services which are non-traded in traditional markets.⁴ *Externalities are impacts with socialised benefits or costs.* Key externalities here include social impacts from additional traffic or concerns within the community about safety and security. These impacts are assessed primarily in Section 6.

2.3 Our evaluation methodology

Taking the above guidelines together creates a complex set of requirements which encompass topics that might not be handled well within a traditional cost benefit analysis (CBA). Benefits and costs associated with the CGE modelling is not amenable to a traditional CBA framework as it involves complex transfers of costs and benefits between groups within the regional economy which cancel each other out. It is for this reason that Deloitte Access Economics has employed the following methodology (Figure 2.1) that addresses both quantitative and qualitative impacts of the Project within a comprehensive evaluation framework.

Figure 2.1: Outline of methodology



Source: Deloitte Access Economics

The methodology has been designed to clearly separate the issues identified in the guidelines and requirements based on how they can be analysed from an economic point of view.

⁴ NSW Department of Urban Affairs and Planning (2002). *Guideline for economic effects and evaluation in EIA*.

An economic impact assessment measures the overall net effect of the Project on key economic variables like GRP and employment. These effects can be quantified from the use of CGE modelling of the impact of the capital works program and ongoing expenditure derived from the ongoing operation of the Project.

The economic evaluation is designed to capture the more qualitative impacts of the Project, including both distributional impacts of the Project on adjacent residents, and how they relate to the quantifiable impacts from the CGE modelling. Where qualitative analysis is necessary, the likely size and geographic scope of the impact will be assessed based on the available economic literature and research. Critically, the assessment will seek to identify what benefits or costs from the Project are likely to accrue to the community of the Northern Rivers region, and if so, which parts of the community are likely to be impacted.

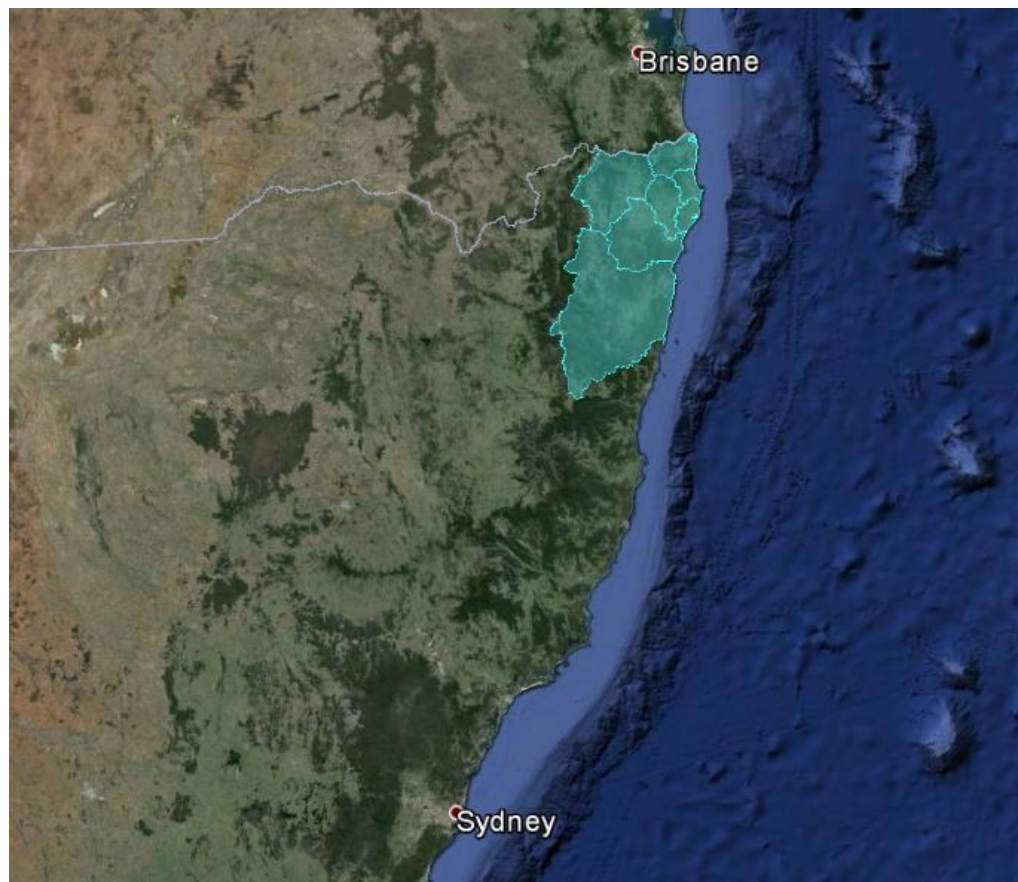
3 Background on Study Area

This chapter provides an overview of the economic and demographic characteristics of the location of the Project. The Northern Rivers region is used as the unit of analysis in this chapter as it provides an appropriate scale on which to give a picture of local social and economic conditions.

The Northern Rivers region is located on the northern coast of New South Wales, located between 590 kilometres and 820 kilometres north of Sydney. At its most northern point, the region is 102 kilometres south south-east of Brisbane. It consists of the following seven LGAs (in order of population): Tweed Shire, Clarence Valley, Lismore City, Ballina Shire, Byron Bay Shire, Richmond Valley Shire and Kyogle Shire.

The region is bounded by the LGAs of Coffs Harbour, Bellingen and Armidale Dumaresq to the south, Guyra, Glenn Innes Severn, and Tenterfield to the west, the state of Queensland to the north, and the Pacific Ocean to the east.

Figure 3.1: Northern Rivers Region



Source: Deloitte Access Economics

3.1 People

At the time of the 2011 Census, the population of the Northern Rivers region was 277,284, which amounts to a 7.3% increase in population from 2001. This is lower than the population increase state wide which was 9.1%. The average age across the region is approximately 44 years, which is significantly older than the NSW average of 38 years.

Table 3.1: Population characteristics of Northern Rivers region, 2011

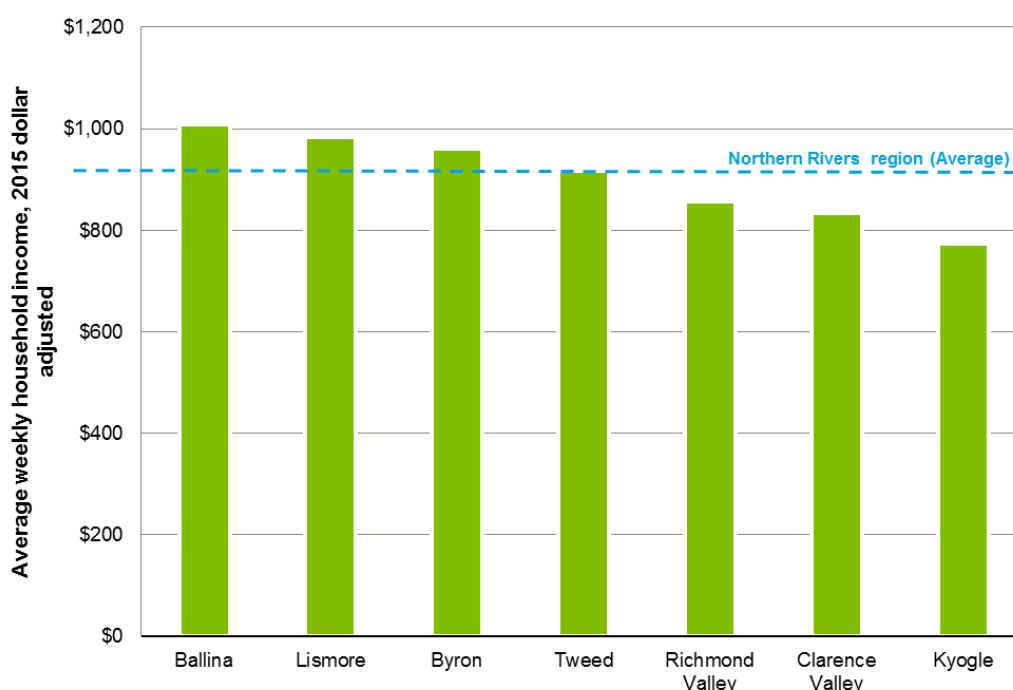
	Northern Rivers	NSW
Population	277,284	6,917,658
Total occupied private dwellings	108,120	2,471,299
Mean household size	2.4	2.6
Median age	44	38
Median weekly household income	\$920	\$1,342
Median monthly mortgage repayment	\$1,690	\$2,161
Median weekly rent payment	\$284	\$325

Source: ABS, 2011 Census

Note: All dollar values reflect real figures adjusted using ABS CPI to 2015 dollars.

The median weekly household income in the Northern Rivers region is \$920 in 2015 dollars, which is considerably lower than the NSW average of \$1,342. Chart 3.1 below provides a break-down of the average wages in each of the Northern Rivers sub-regions.

Chart 3.1: Northern Rivers sub-regional average weekly household income, 2015 dollar adjusted



Source: ABS, 2011 Census

3.2 Educational attainment

The average educational attainment within the eligible workforce in the Northern Rivers is lower than the NSW average, as evidenced by Table 3.2 below. For example, in the 2011 Census, only 27.9% of the employed population indicated they held a tertiary level qualification, compared with 38.4% of the NSW population.

Table 3.2: Highest level of education attained, as a percentage of total employed persons

Highest level of education*	Northern Rivers	NSW
Postgraduate degree level	2.5%	6.2%
Graduate diploma and graduate certificate level	2.1%	2.1%
Bachelor degree level	14.0%	19.7%
Advanced diploma and diploma level	9.3%	10.5%
Certificate level	28.1%	22.2%

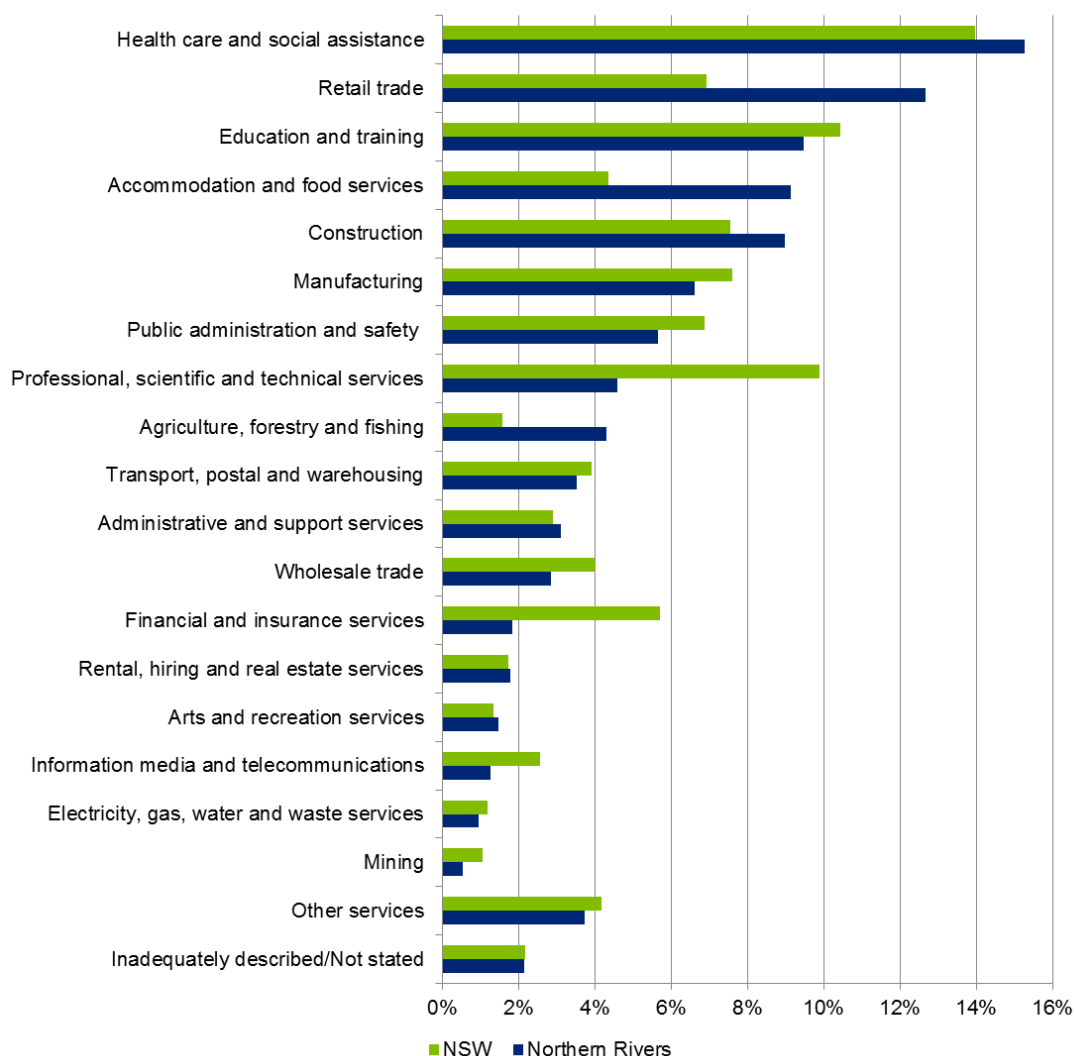
*Count of employed persons aged 15 years and over with a qualification

Source: ABS, 2011 Census

3.3 Industries of employment

Health care and social assistance is the major industry of employment in the Northern Rivers region, employing 15.3% of the employed population. This is higher than in NSW generally, where only 14.0% of the employed population work in the health care and social assistance sector. The retail trade and education and training sectors are the next highest employers, at 12.7% and 9.5% respectively. The largest differences between employment patterns in the Northern Rivers region and NSW as a whole are observed in the relative dependence on retail and accommodation and food services in the Northern Rivers region, compared with greater proportional employment in professional, scientific and technical services and financial and insurance services in wider NSW.

Chart 3.2: Industry of employment in the Northern Rivers region and New South Wales



Source: ABS, 2011 Census

3.3.2 Healthcare and social assistance

In the Northern Rivers, the healthcare and social assistance sector employs 15,926 people, which is a 68.8% growth in the sector's employment since 2001. Healthcare and social assistance includes employment in hospitals (both government and private), medical, pathology and other allied health centre, residential and aged care, child and disabled care, youth welfare, counselling services and other social assistance. Public healthcare facilities in the Northern Rivers region are provided by the Northern NSW Local Health District (LHD). Within the LHD there are 14 hospital facilities at Ballina, Bonalbo, Byron Bay, Casino, Coraki, Grafton, Kyogle, Lismore, Maclean, Mullumbimby, Murwillumbah, Nimbin, Tweed Heads, and Urbenville. There is a major private hospital in Lismore (St. Vincent's) with 196 beds

which is the largest private hospital in rural New South Wales.⁵ By comparison, Grafton Base Hospital currently operates 103 beds.

3.3.3 Retail trade

Retail trade is the second largest employer in the Northern Rivers region, with 13,224 people working in that sector. Large retail precincts are located in Tweed Heads, Byron Bay, Lismore, Grafton and Ballina. The regional retail sector, particularly in coastal towns, is significantly reliant on tourism income generated over the summer and school holiday periods.

3.4 Unemployment

According to Department of Employment (DE) small area labour markets data, the total labour force for the September 2015 quarter in the Northern Rivers region was 127,294 and the unemployment rate was 9.2%. This represents a significant increase from an unemployment rate of 6.9% in December 2010, and is significantly higher than for NSW (6.3% in September 2015). Chart 3.3 illustrates a general trend towards rising unemployment across the Northern Rivers region, except the Clarence Valley LGA where unemployment has dropped marginally since the beginning of 2015⁶.

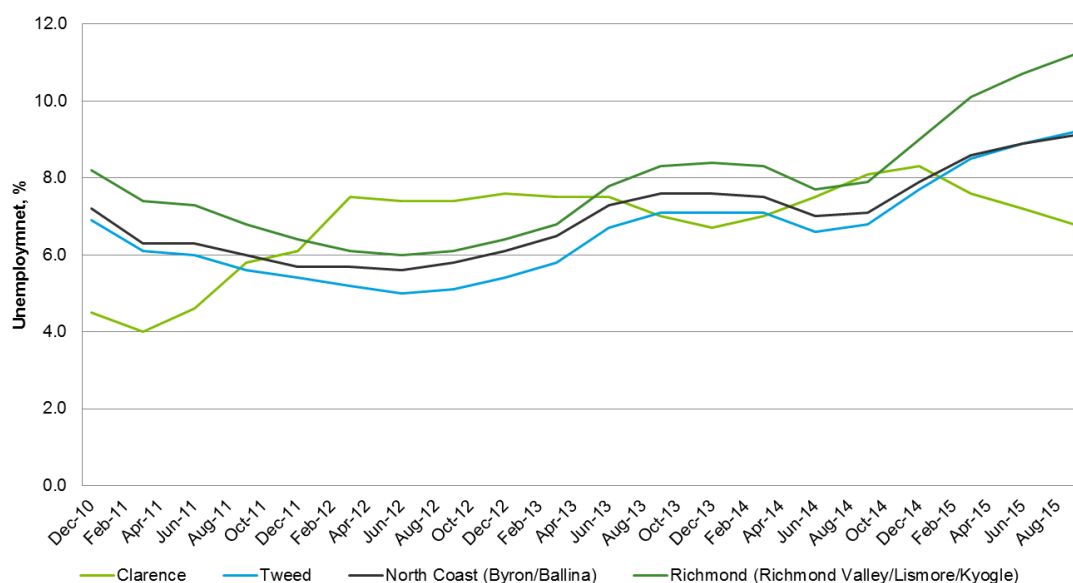
The relative paucity of employment in the Northern Rivers region is alleviated somewhat by those who commute to their employment in South East Queensland (SEQ). In 2006 there were 6,327 residents in Tweed LGA, or approximately 20% of the employed population in the sub-region, who commuted to a fixed address in SEQ for employment. An additional 278 people commuted to SEQ from Lismore, Casino, Ballina and surrounds.⁷

⁵ Australian Health Directory (2016). Available at: <http://www.healthdirectory.com.au/> [Accessed 3 Mar. 2016].

⁶ The DE unemployment estimate is constructed by apportioning the ABS' employment statistics based on the size of the labour market in the Northern Rivers sub-regions. This methodology has the potential to overestimate the Northern Rivers unemployment rate due to movements in other small area labour markets. As a point of comparison, the 2011 Census indicated that the unemployment rate of Northern Rivers' residents was 5.9%. This is broadly in line with the trends displayed through the DE estimates, and suggests that while a margin for error applies, the rates displayed in Chart 3.3 is a plausible account of the unemployment pattern in the Northern Rivers sub-regions over the past five year period.

⁷ BITRE (2013). *Population growth, jobs growth and commuting flows in South East Queensland*. Canberra: Department of Infrastructure and Transport, p.223.

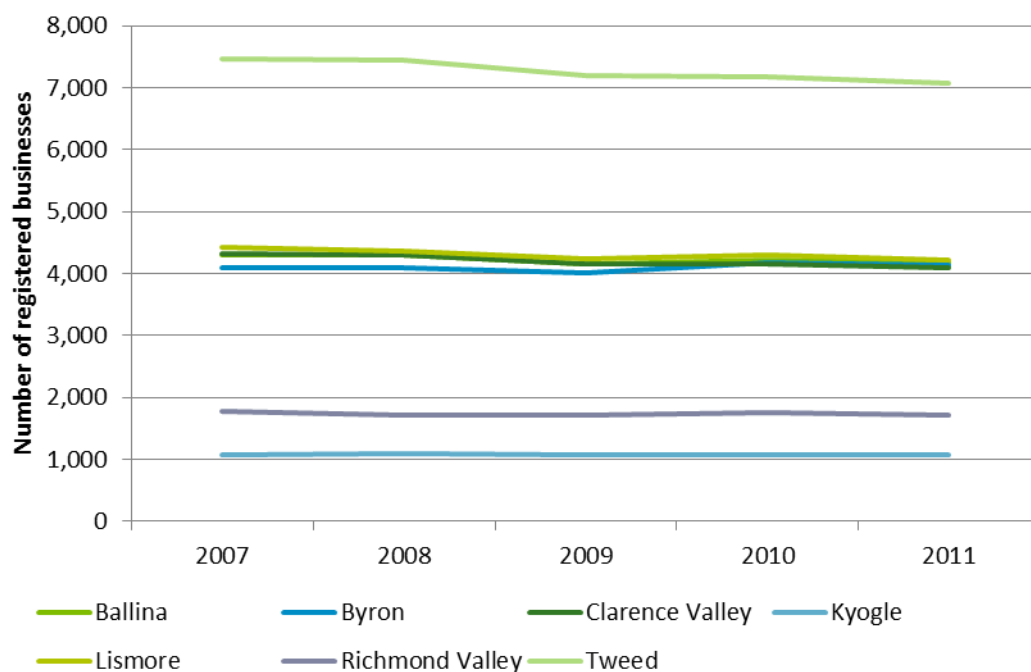
Chart 3.3: Unemployment rate in Northern Rivers sub-regions



Source: DE 2016, Small Area Labour Market

3.5 Local business

According to the ABS, the total number of businesses registered in the Northern Rivers region decreased from 29,454 to 28,479 over the period 2007 to 2011. The largest proportion of this decrease came from the Tweed LGA with 408 less registered businesses, followed by declines in the Clarence Valley LGA and Lismore LGA. Byron LGA recorded an increasing number of business registrations with a net increase of 45 business registrations.



Source: ABS, 2011 Census

4 The New Grafton Correctional Centre Project

As described above, the purpose of an EIA is to provide a structured approach to assessing what benefits and costs the Project is likely to have within a regionally defined economy. The first step, as outlined above, is to determine the scope of the economic evaluation.

4.1 Scope of evaluation

The completion of the EIA requires a consideration of geographic scope of the analysis. This is important as it draws a line for which benefits and costs are included in the analysis and which are excluded.

As the EIA is being developed to follow NSW Government guidelines, the scope of the analysis would generally be the State of NSW. However, the fact that the guidelines and requirements discussed in Section 2 do not fit neatly into a traditional CBA framework means that the analysis will sometimes require consideration of effects for particular groups within the scope. Whenever this is the case, an attempt will be made to clearly identify which parties are being analysed and where they are likely to be located.

To carry out this economic assessment, the costs and benefits associated with the Project are compared to those under a baseline, or 'business as usual', scenario. This comparison allows for an incremental analysis, to reach a clear conclusion on the net benefits of the Project. Accordingly, for the purposes of the EIA, it is important to clearly define the baseline case and the Project case.

As outlined in Section 1, the Project is intended to be the major correctional centre for Northern NSW, and a remand centre for inmates transported from smaller correctional centres throughout that area. The baseline case and Project case are defined in turn below.

4.2 Baseline case

Under the baseline case, the development for the Project does not proceed in the Clarence Valley LGA. It is assumed that no alternative correctional centres projects are developed within the region either. The proposed site for the Project is not acquired by the NSW Government and continues to be used for its current purposes for the life of the project period until 2040.

The Old Grafton Gaol is expected to continue operating under the baseline scenario. As the facility cannot be easily refurbished or easily repurposed given its age, it is expected to remain operational for the project period. Whilst a potential re-use of the existing facility may be considered at a later date, all re-use options for the site currently remain unexamined. Furthermore, given the long-term capacity constraints within the NSW

correctional system and inmate population forecasts, the long-term continued use of the site at its current capacity of 280 inmates is a reasonable assumption.⁸

4.3 Project case

Under the Project case, development for a 1,700 bed correctional centre proceeds.⁹ The private sector will be responsible for the design and financing of the Project during 2016, with construction expected to start in mid-2017 (assumed April 2017). Construction is expected to take up to 36 months, and be completed by mid-2020 (assumed end of March 2020). In addition to the private sector construction for the Project site itself, the State will fund initial infrastructure upgrades, including road, water, electrical and telecommunication connections to the site.

Operations are assumed to begin at the completion of the construction phase until the end of the maximum possible duration of 25 years to 2040. It is assumed that the Project will be operating at maximum capacity through the life of its operations. Over this operational period the private sector will provide all operational services and facility maintenance services. It is assumed that transportation between DJ facilities, tertiary health care, forensic mental health care services will continue to be provided by the State.

In the Project case, the facility is expected to operate on an “8 hour out of cell regime” where all inmates will be locked down by the day shift before commencement of the afternoon shift, and 65% of the inmate population will be engaged in meaningful activity at any time during the day. This is expected to include participation in education programs, inmates services, including cleaning and laundry, and other industry work programs.

Given the constraints in the NSW corrections network, the Old Grafton Gaol is expected to continue operating at the same capacity as in the baseline case even once the Project becomes operational. For the purposes of defining the inputs into the CGE model, the bed configuration under the 1,700 bed Project case is summarised in Table 4.1.

Table 4.1: Bed configuration under Project case

Bed configuration	1,700 bed option
Secure – male	688
Residential – Male	720
Secure – Female	200
Residential - Female	100
Total beds	1,708

Source: Macksam Consultancy; Deloitte Access Economics

⁸ The most recent forecast by NSW Bureau of Crime Statistics and Research (BOSCAR) in April 2015 suggests that, other things being equal, NSW appears likely to experience further significant increases in the size of its prison population both in the short/medium-term and over the longer term. This outcome is likely even if age-specific rates of imprisonment remain constant at current levels, instead of steadily increasing as they have over the last 30 odd years (see Figure 6).

⁹ Assumptions made about project roles and timing may change, but for the purposes of defining the inputs into the CGE model, the stated assumptions were used.

4.3.2 Project capital and operational expenditure

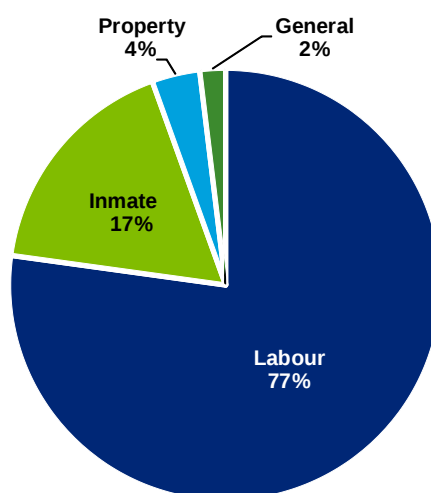
Subject to detail design as part of a later stage of development, the 1,700 bed facility is expected to be located across two perimeters, one for secure male and female beds in two zones, and one for residential male and female beds.

Benchmarking against recent state funded correctional centre projects in Australia, such as the Ravenhall Correctional Centre and Eastern Goldfields regional prison, the option is estimated to cost the private sector between \$695 to \$715 million in real 2015-16 dollars for construction, and the NSW Government, between \$55 to \$65 million.¹⁰ **Construction is estimated to cost between \$750 to 780 million in total, and will be completed in March 2020.**

Once the site becomes operational, it is estimated that an annual operating expenditure of \$80 to \$85 million in 2015-16 dollars, and 580 to 600 full-time equivalent (FTE) jobs are required at the Project (Macksam Consultancy, 2016). Labour is estimated to make up the largest component of operating costs, representing approximately 77% of total annual costs. This is followed by inmate costs on a range of goods and services, including food, bedding, and medical supplies, which makes up 17% of total costs, and property related items, including maintenance, electricity and water fees, at 4%.

The breakdown in operating expenditure by category is given below in Chart 4.1.

Chart 4.1: Estimated operational expenditure breakdown by category



Source: Macksam Consultancy; Deloitte Access Economics

Accounting for the annual \$2.0 to 2.5 million in industry net income expected from the inmate work program, *net* operational expenditure is expected to be \$77.5 to \$83.0 million per annum. These estimates were based on information supplied by the Department in

¹⁰ Benchmarked capital cost data for comparable correctional centre developments were sourced from publicly available data sources, with escalation applied for construction and labour inputs to adjust to 2015-16 dollars.

particular staffing models, labour and non-labour costs for the South Coast, Mid North Coast and Silverwater Women's Correctional Centres.

These estimates do not include costs on maintenance, costs associated with transporting inmates to court, hospital or other centres, or regional and corporate costs external to the centre. Based on CNSW assumptions on transport and management costs, Deloitte Access Economics estimates that these costs will equal an additional \$2.0 million per annum. **The projected real net operating cost estimate under the 1,700 bed option will be \$80 to \$85 million per annum.**

4.3.3 Project construction timing

For the purposes of the inputs into the CGE model, the project timing assumptions for the Project's construction include:

- a construction start date of April 2017;
- up to 36 month construction period so that construction would be completed by 31 March 2020;
- fees including professional fees for planning and procurement and land acquisition etc. will be incurred over a period from January 2016 to November 2020; and
- operations are assumed to commence in April 2020.

4.4 Summary

Table 4.2 summarises the key elements of difference between the baseline scenario and Project case scenario.

Table 4.2: Comparison of Baseline and Project case

Key Features	Baseline case	Project case
Old Grafton Gaol	Continues operating at current capacity	
NGCC land	Land to continue its present use	The land has been acquired by the State and converted into a correctional centre to serve the Northern NSW region
Construction and infrastructure investment/activity (private)	None	\$695 - \$715 million to build the Project
Construction and infrastructure investment/activity (state)		\$55 - 65 million for site acquisition, and connect public infrastructure including roads, water, electricity, and telecommunication to the site.
NGCC inmate population	None	1,700 inmates
Additional <i>net</i> operational expenditure (private)	None	\$80 – 85 million per annum assuming full capacity
Additional workforce numbers	None	580 - 600 FTE jobs during operational phase

Source: MBM; Macksam Consultancy; CNSW; Deloitte Access Economics

5 Economic impact assessment

This chapter examines the economic impact of building and operating the Project to 2039-40 on the local economy in the Northern Rivers region.¹¹ The approach uses computable general equilibrium (CGE) modelling to estimate how the Project's capital investment and operational expenses are distributed across the regional economy over time.

Over the period 2015-16 to 2039-40, total construction and operation expenditure of the Project is estimated to equal to \$1,200 to \$1,300 million in NPV terms.¹² **The resultant total Gross Regional Product (GRP) impact to the Northern Rivers region is projected at \$557 million over the same period. The Project is also projected to impact employment in the region, with a maximum additional 157 FTE jobs created in the local economy under the Project scenario compared to the baseline.**

More detail on the analytical framework and methodology and impacts to the Northern Rivers region are outlined below.

5.1 Analytical methodology

This study adopts a bottom up framework to determine the likely size and timing of the additional activity generated by the construction and operation of the Project in the Northern Rivers region. Available data on the expected capital expenditure and the operational activity, including size and breakdown by industry, has been taken from MBM, Macksam Consultancy, and CNSW.

The economy-wide impacts of the Project have then been projected using the Deloitte Access Economics Regional General Equilibrium Model (DAE-RGEM). The model is effectively a representation of the Australian economy, broken down by regions, sectors, and the demand and supply side of each market. It projects macroeconomic aggregates such as GRP, employment and wages for the Project case scenario against the baseline case for each of the modelling years from 2015-16 to 2039-40.

The model has been disaggregated and customised to match the attributes of the Northern Rivers area regional economy. To disaggregate the Northern Rivers modelling region from the rest of NSW, information was used from the most recent 2011 Australian Bureau of Statistics (ABS) Census on the workforce population.

For the purpose of the modelling, the Northern Rivers region incorporates the following seven Local Government Areas (LGAs): Ballina, Byron, Clarence Valley, Kyogle, Lismore, Richmond Valley, and Tweed.

¹² NPV calculations assume a real discount rate of 7%, as consistent with NSW Government guidelines.

The results from the economic impact analysis are presented as percentage and absolute deviations in output and employment from the baseline case. The broad approach to the economic impact analysis is shown in Figure 5.1.

Figure 5.1: Modelling framework

Financial year	2016	...	2019	2020	...	2040
Construction						
Operation						
	<i>Captures the magnitude and timing of capital expenditure required for the project</i>			<i>Captures the operating expenditure over the life of the project, reflecting the supply sectors affected</i>		

Based on the capital and operational expenditures, the impact of the construction and operations of the Project transmit through the economy through three channels:

- **Direct impacts** — the economic gains associated with ‘core’ operations, namely the construction and expenditure on labour and intermediate goods and services at the Project. This is modelled through ‘shocking’ the respective affected industries based on the likely composition of inputs that a correctional centre requires (Chart 4.1).
- **Indirect, induced and crowding out impacts** — the economic gains in related upstream or downstream industries where the benefits associated with increased economic activity are typically the highest. As outlined above, the CGE modelling also captures any crowding out of activity in other sectors of the economy as a result of the Project.
- **Taxation impacts** – given part of the Project involves State Costs, a corresponding increase in New South Wales taxation is required so that over the long run, Government budget balance is maintained. The Northern Rivers region will bear a share equal to its contribution to state taxation, which is estimated at approximately 2%.

The DAE-RGEM is a form of Computable General Equilibrium (CGE) Modelling, which alongside the Input Output (IO) multiplier analysis, is one of the main techniques are used to measure the economic impacts of major projects.

CGE analysis is an extension of IO analysis, in that it is based on a database that incorporates input output tables and the transactional detail between economic agents. However, unlike IO analysis, CGE models also incorporate a system of equations and modelling parameters, based on a widely accepted body of economic theory, that model competition for resources (particularly in labour and capital markets) between economic agents and allows for economy-wide modelling impacts incorporating any crowding out impacts of the development.

More technical detail regarding CGE modelling can be found in Appendix A.

5.2 Modelling and sensitivities

Project case

The Project case outlined in Section 4.3 will be compared against the baseline case outlined in Section 4.2. The key parameters that characterise the incremental gains to the Northern Rivers economy above and beyond what would have occurred in the baseline are summarised in Table 4.2.

The timing of the shock profile for the Project's privately funded construction expenditure is based on a construction 'S-shape' profile, where the majority of investment is concentrated during the middle of the construction period. Together with state funded construction, total capital expenditure is expected to equal \$750 - 780 million in the Project case.

The shock profile during operations is expected to equal \$80 - 85 million in the Project case. While the net industry expenditure saves the operational costs for the private sector partner, they have been added back in to better reflect the actual level of activity occurring within the region.

A one-off setup cost of \$2.5 - \$3.0 million, consisting of commissions, staff training and other professional services, is also likely to be incurred under the Project scenario (Macksam Consultancy, 2016). This cost is incurred in the first financial year of operations.

Sensitivities

For the Project case, sensitivity analysis was conducted through changes to the labour supply elasticity. The labour supply elasticity determines the rate at which the local labour market responds to changes in the wage rate. For instance, an elasticity of 0.5 means that for a one percent increase in the wage rate, the labour supply will increase by 0.5 percent in response.

International literature, including a meta-analysis of 239 elasticity estimates from 32 international studies (not including Australia) suggest a range of 0 to 0.4 for men (mostly 0.0 to 0.2) and 0.3 to 0.6 for women.¹³ The elasticity is typically found to be lower in men as relatively more men are already working and can only increase their working hours at the intensive margin (work more hours) in response to a wage increase, while more women are able to increase their hours by moving both the intensive and extensive margins (move into the workforce). **In the central sensitivity, a labour supply elasticity of 0.1 has been used.**

The encouraged/discouraged worker effect has been found to be a major determinant of labour supply for both sexes and all age groups whereby changes in the unemployment rate, or of the unemployment to population ratio, shift the labour supply curve.¹⁴ A higher unemployment rate creates a greater pool of free labour that are free to move into the

¹³ Evers, M., de Mooij, R., and van Vuuren, D. (2005). "What explains the variation in estimates of labour supply elasticities?", CPB Discussion Paper, No. 51.

¹⁴ Freebairn, J. (1998). *Microeconomics of the Australian Market*.

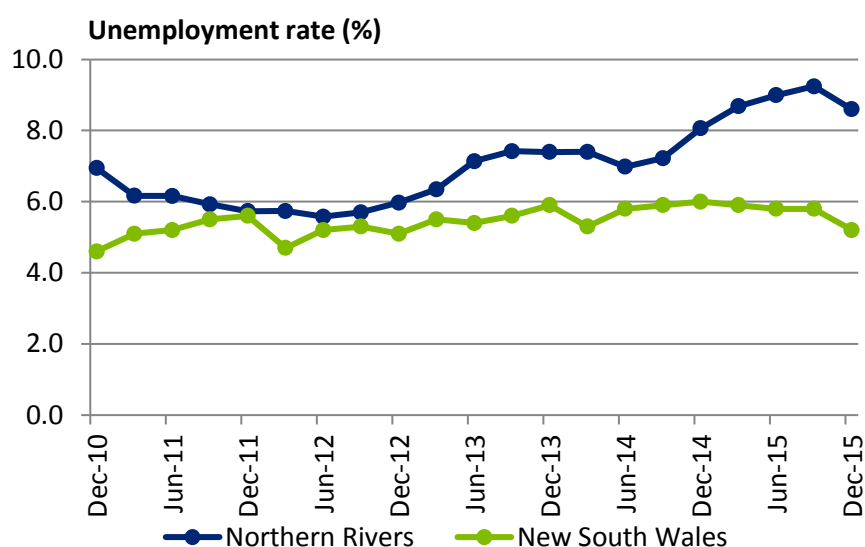
labour market and increase the total hours supplied in response to a change in the wage rate.

While the unemployment rate in the Northern Rivers had been consistent with that of the broader NSW economy, there has been a growing divergence since 2013.¹⁵ In December 2015, the unemployment rate in the Northern Rivers was 8.6%, compared to 5.2% for NSW.

To the extent that the higher unemployment rate in the Northern Rivers region persist through the modelling period, the labour supply elasticity is likely to be higher. For illustrative purposes, **an indicative labour supply elasticity of 0.3 has been tested in the high sensitivity.**

In practice, the employment impacts for the local residents are also likely to depend on the match between the skills held by the unemployed population in the Northern Rivers economy and the new jobs created by the Project. If there is a skills mismatch, it is likely that the Project could attract suitable workers from other regions.

Chart 5.1: Unemployment rate at regional and State levels, 2010-15



Source: ABS; DE; Deloitte Access Economics

5.3 GRP and employment impacts

The following results show the key aggregate economic impacts of the Project over the modelling period 2015-16 to 2039-40 on the regional Northern Rivers economy under **central labour elasticity** assumptions. Results are given in real 2015-16 dollars.

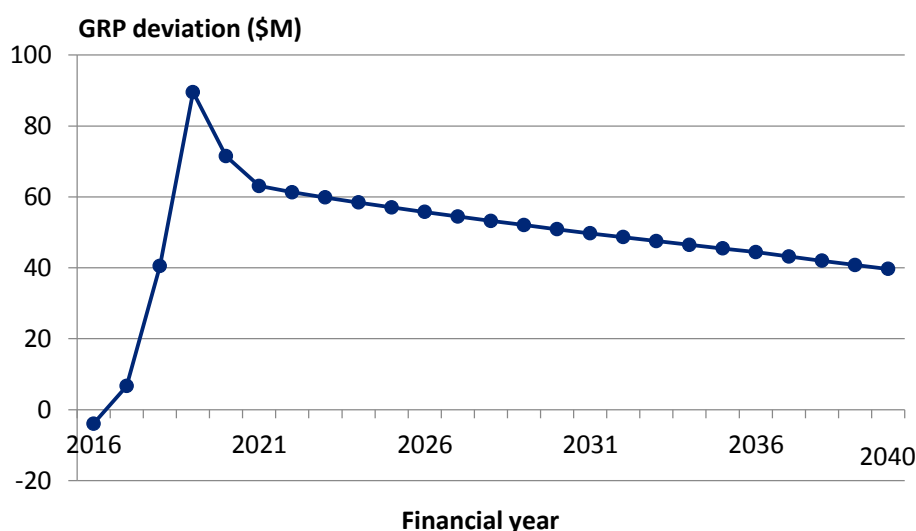
¹⁵ The unemployment rate for the Northern Rivers region has been calculated as the average of the individual LGA unemployment rates, weighted by the respective sizes of the labour force in those LGAs.

Economic impacts – GRP

The Project is projected to have a sustained positive economic impact on the Northern Rivers region. Chart 5.2 depicts the additional economic activity generated in the Northern Rivers region as a result of the Project. At the peak of construction in 2018-19, GRP is expected to increase by \$89 million, equivalent to 0.93% of the baseline GRP.

During the first full year of operations at the Project in 2020-21, GRP is projected to increase by \$63 million, equal to 0.63% of GRP. This decreases to \$40 million by the end of the modelling period in 2039-40, equal to 0.29% of the baseline GRP.

Chart 5.2: GRP impacts in the Northern Rivers region, FY2016-40



Source: Deloitte Access Economics

While the impacts have been modelled for the entire Northern Rivers region, the majority of economic activity will be concentrated in the Clarence Valley LGA, where the Project is to be located. The degree of economic activity dispersed in the other LGAs is likely to depend on the extent to which those areas are linked to the Clarence Valley through supply linkages.

Employment

Chart 5.3 depicts the additional regional employment generated by the Project in the Northern Rivers region. The additional employment includes those employed directly at the Project, contractors and Project suppliers and accounts for any crowding out in other sectors of the economy.

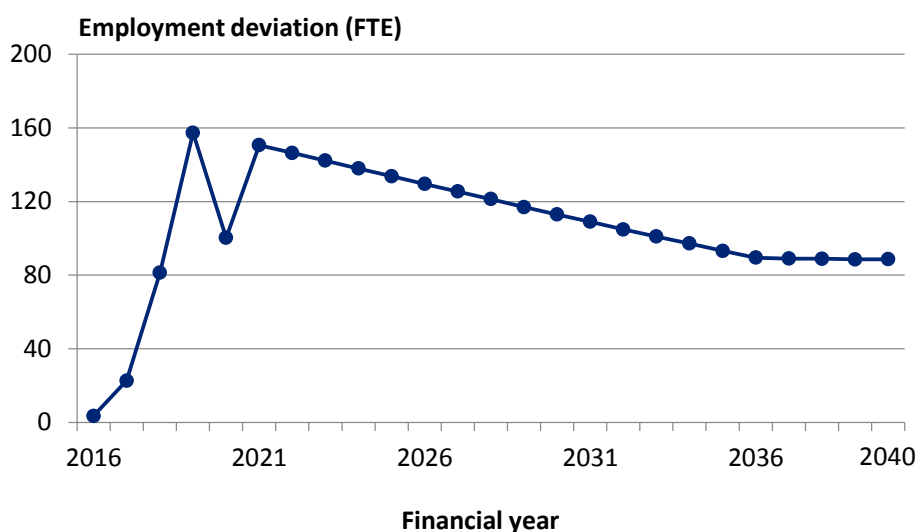
Total projected regional employment peaks in 2018-19 during construction, with an additional 157 FTE jobs created in the Northern Rivers. This is equivalent to 0.16% of the local work force.

As construction winds down in 2019-20, new jobs fall to 100 (0.10% of the work force), before jumping to 151 (0.15% of the work force) in 2020-21 as the Project becomes

operational. This is because the correctional services sector is more labour intensive compared to the construction sector for each dollar of expenditure. The economy-wide employment increase is less than the 580 - 600 FTE staff expected to be employed in the the facility is likely to draw some of those workers from other sectors in the region.

By the end of operations in 2039-40, employment is projected to be higher by 88 FTE jobs compared to the baseline economy, equal to 0.10% of the baseline work force.

Chart 5.3: Employment impacts in the Northern Rivers region, FY2016-40



Source: Deloitte Access Economics

Net present value

To frame the cumulative economic impacts of the Project, the stream of GRP gains from 2015-16 to 2039-40 is converted to present terms using the NSW Treasury real discount rate of 7.0%. **In total, the net present value (NPV) of future GRP gains is estimated to be \$557 million in the Project case. Over the same period, an average of 105 additional FTE jobs will be added to the Northern Rivers economy.** A summary of the net impacts both cumulatively and at five year intervals on the Northern Rivers economy is outlined in Table 5.1.

Table 5.1: Regional economic impacts, FY2016-2040 (NPV)

Financial year	2016-40	2016	2020	2025	2030	2035	2040
<i>Project scenario - 1,700 bed option</i>							
GRP deviation (\$M)	557	-4	71	57	51	45	40
Deviation from the baseline (%)	0.45	-0.04	0.73	0.53	0.44	0.36	0.29
Employment deviation (FTE)	105	3	100	134	113	93	89
Deviation from the baseline (%)	0.10	0.00	0.10	0.13	0.10	0.08	0.08

Source: Deloitte Access Economics

5.4 Sensitivity analysis

The following section outlines the economic impacts under the modelling scenario for the central and high labour supply elasticities. The high sensitivity case can be thought of as the potential impacts for the Northern Rivers region if 1) the higher unemployment rates persist in the region (creating a greater pool of additional new labour supply); and 2) the skills of those unemployed residents matches those required by the new direct and indirect jobs created by the Project construction and operations.

Consequently, under a high labour supply elasticity scenario, more local FTE employment is created as a result of the Project as that facility's positive employment impact can draw on currently unutilised resources, and has a relatively diminished negative impact on other existing local employment.

Under the high sensitivity, GRP in the Northern Rivers region could increase by a cumulative \$702 million in NPV terms under the 1,700 bed Project case. There is also expected to be more additional jobs created in the local Northern Rivers region, with an average of **298 FTE jobs is added per annum over the modelling period.**

Table 5.2 outlines the cumulative GRP impact of the two sensitivities over the modelling period.

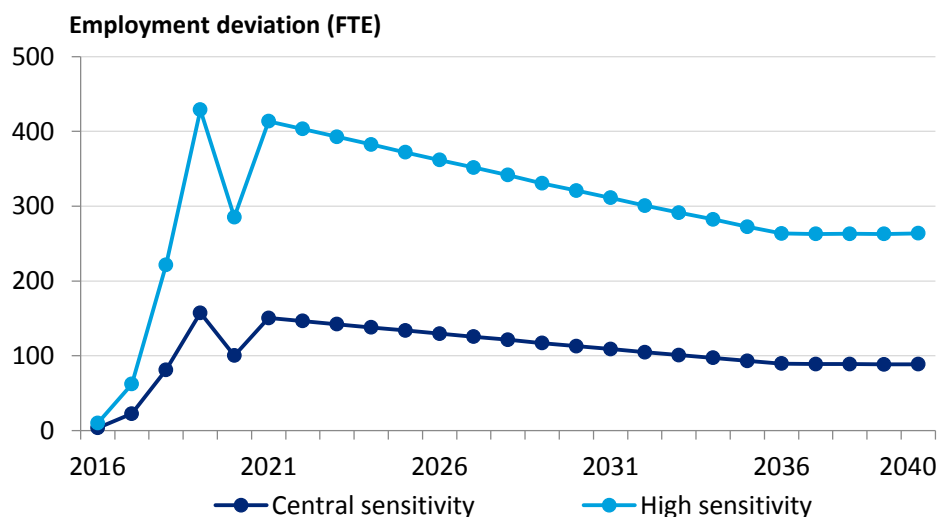
Table 5.2: Regional GRP impacts under sensitivities, FY2016-2040 (NPV)

Cumulative impact	Central	High
<i>GRP deviation (\$m)</i>		
Project case	557	702
<i>GRP deviation (%)</i>		
Project case	0.45	0.56

Source: Deloitte Access Economics

Chart 5.4 outlines the total regional employment impacts of the Project under the different sensitivities in the Northern Rivers Region. A higher labour elasticity would lead to a maximum increase of FTE jobs by 429 in 2018-19, or 0.43% of the regional work force.

Chart 5.4: Regional employment impacts under sensitivities, FY2016-40



Source: Deloitte Access Economics

5.5 Increased resource costs

The above results from the economic impact assessment consider the benefits that are likely to occur in the Northern Rivers region as a result of the Project. However, it does not take into consideration the cost of additional resources, such as labour and capital, required to produce the extra output. For instance, the Project case is forecast to employ additional people in the region, who would have otherwise:

- been unemployed
- working in alternative employment
- living outside the Project Area.

The opportunity cost of what those individuals would have been otherwise doing in the baseline case, must be considered to estimate the *net benefit* to the Northern Rivers region. For instance, this could be the cost of foregone leisure for those currently unemployed or foregone wages for those working elsewhere. Similarly, given that capital will be flowing into the region, it is likely that the additional returns to the capital will also flow out of the region.

Consequently, if the additional resource costs are accounted for in the above results, the *net economic impact* of the Project case on the Northern Rivers regional economy is likely to be significantly diminished.

6 Social and economic evaluation

Alongside the economic impact assessment, as described in the previous section, Deloitte Access Economics has conducted a social and economic evaluation of the Project case over a baseline case where the Project does not proceed within the Northern Rivers region.

Recognising that the additional economic impacts, as projected in the previous section, are not costless, this section accounts for the additional resource costs associated with the Project. The economic evaluation then assesses the *net* economic cost or benefit of the proposal to the Northern Rivers economy. Further specifications for the spatial boundaries of analysis and the identification of the baseline and project cases can be found in Section 4.

6.1 Identification of costs and benefits

The next step of in the assessment is to identify the economic, social, and environmental costs and benefits considered within the analysis (Table 6.1). Where possible, the quantifiable economic costs and benefits have been examined within a CGE framework. However, where it is difficult to place a value on a particular cost or benefit of the Project, a qualitative analysis has been undertaken as recommended in economic evaluation guidelines such as NSW Treasury (2007).

Table 6.1: Costs and benefits summary

Type	Costs	Benefits
Economic	Increased resource costs+ Foregone site use*	Increased regional economic activity+
Social	Concerns over safety and security* Impact on social and community services*	Impact on housing demand* Increased infrastructure supply*
Environmental	Air quality impacts or carbon emissions # Ground or surface water impacts # Visual amenity # Noise impacts # Biodiversity – flora and fauna # Aboriginal or historic heritage #	

Source: Deloitte Access Economics

* Item has been considered qualitatively

+ Item has been estimated through a CGE framework

Item has not been assessed within EIA, given the scope of wider EIS

Some externalities that might in practice incorporate some social or economic impacts of the Project have not been assessed as part of this evaluation. This is because they involve externalities, particularly environmental impacts, which will be examined in specialist detail by as part of the wider EIS process. The additional environmental externalities are not limited by those listed in Table 6.1.

6.2 Analysing social and economic costs and benefits

This section describes each of the social and economic cost and benefit elements in turn, and how they are evaluated, either quantitatively or qualitatively.

6.2.1 Increased regional economic activity

Given that it is assumed in the baseline case that a correctional centre is not built in an alternative site within the Northern Rivers region, the Project case is expected to draw additional resources and activity to the region, above what would have occurred in the baseline case. This will occur through two channels:

- net additional construction activity over the period 2015-16 to 2020-21, as the Project is planned and built; and
- net additional operational activity over the period 2019-20 to 2039-40, as the Project becomes operational and creates additional demand for both jobs, as well as goods and services.

The likely size, timing, and composition of the direct activity stimulated is described in Section 4 and builds on previous projections (MBM, 2016; Macksam Consultancy, 2016; CNSW, 2016). These are then incorporated within a general equilibrium framework to allow a simulated Northern Rivers regional economy to respond to all of these effects at once, rather than a partial analysis of the flow-on economic impacts.

In addition to the direct benefits attributed to individuals employed at the facility, there are also expected to be other flow-on impacts for the regional economy. For instance, friends and relatives visiting the inmates may demand accommodation, food and other goods and services from businesses in the region. The extent to which impacts are likely to remain within the economy will depend on the extent to which intermediate inputs for the correctional centre are sourced from within the region.

6.2.2 Increased resource costs

The additional economic activity, measured as additional gross regional product and described in Section 6.2.1, is not costless. The additional activity requires additional resources to produce. For example, housing additional inmates will require labour and capital in the form of guards and road infrastructure to transport them to and from the facilities. The payments to these resources are termed the 'resource costs'.

Dwyer et al. (2005) describe the use of CGE models to derive net benefits of economic activity. Broadly, they subtract the cost of incremental resources used from the incremental GRP to determine the economic impact or rent to the economy. This EIA has considered the

cost of incremental capital and labour used in both the construction and operation phases of the Project case within Section 5.5.

6.2.3 Qualitative costs and benefits

There are also a number of cost and benefit elements that are less suitable for quantitative analysis in this economic evaluation, for a variety of reasons. These elements still should be factored into the cost-benefit framework, and so are outlined qualitatively below.

This section draws upon publicly available research from both within Australia, and more broadly from around the world. In particular, research on development of the Lithgow Correctional Centre and Mid North Coast Correctional Centre has been used as benchmarks given relative similarities in their location and communities. Where differences in the context may lead to differing social impacts for the local community, they have been noted in the relevant sections.

6.2.4 Foregone site use

Che (2005) considered the effect of economic development in the rural town of Forest, Pennsylvania, as a result of the development of correctional centre. He noted that the proposal to develop a correctional centre steeply divided the community, particularly those who appreciated its amenity as a “countryside” location. As staff who have relocated to the town demand for “city” goods, services and amenities, economic development may come with urbanisation. This might be considered a social cost to existing residents of the town.

However, given Grafton’s long co-existence with the existing Old Grafton Gaol, and strong community opposition to its downgrade from 240 inmate beds to just 60 in 2012, causing 92 jobs to be cut (Patty, 2012), this is less likely to be an issue.

The development of the Project has required the NSW Government to acquire the 195-hectare site from its former owners. Given that the State Government has fully compensated the owner based on independent valuations, any redistributive impact of this acquisition would likely be negligible when viewed from a regional level.

On the Project site itself, there may be consequences surrounding the development of agricultural land. However, the town and the New South Wales Government have been alert to mitigation measures in their selection of the site and development of the facility, so any effects are likely to be small.

6.2.5 Concerns over safety and security

Residents of rural and regional towns with proposed correctional centres are often concerned over an associated increase in the risk of crime. Fears of escapes, along with an assumption that the families of inmates, or former inmates will move to the area, contribute to this stigma. However, the empirical evidence does not support these concerns. For instance, NSW DoCS (1998) found that crime in Lithgow has not increased since the opening of correctional centre, and that it was very rare for families of inmates, or inmates who have served their sentences, to move into the area.

Madoc-Jones (2009) reviewed international literature from the United States and the United Kingdom literature and came to similar conclusions. Indeed, it was noted that even if such a risk did exist, it would be balanced by the increased presence of law enforcement personnel and the general deterrent effect of a correctional centre being nearby.

Furthermore, a significant benefit of developing the Project 12.5 kilometres outside of the Grafton township is to significantly diminish any safety and security concerns of the new facility amongst Grafton residents, and particularly when compared to any real or perceived risk that already exists from having the Old Grafton Gaol within the township already. Moreover any actual risks associated with inmates in a secure facility is low to non-existent. In the last three years, NSW only recorded one escape per year from secure facilities state-wide.¹⁶

Given that the Old Grafton Gaol has operated since 1893, and the proposal to develop the Project was welcomed by representatives from both State and local government (Kidd & Farrow-Smith, 2015), **it is likely that the local community would be less concerned over safety and security issues compared to other communities.**

6.2.6 Impact on housing demand

Many residents in proposed correctional centre locations express concern over the possible negative effect of correctional centre development on housing demand and real estate prices more generally. The natural tendency is to expect the stigma attached to the correctional centre to make properties socially undesirable. Unsurprisingly, NSW DoCS (1998) found that owners of properties closest to the then proposed Lithgow correctional centre expressed the most concern over the development.

While it is possible for property prices in the immediate vicinity of the Project (ie. less than one kilometre) to fall, it is also likely for Project case to stimulate additional demand for housing, and raise property values within the region. For instance, staff employed directly at the facility may move into the area. Indeed, 76% of the staff at the Lithgow Correctional Centre who were recruited from outside the area now reside in the area (NSW DoCS, 1998). These relocating employees may move to the Grafton area from within or outside the Northern Rivers region (for example, Coffs Harbour), but either way any pronounced uplift in housing demand is likely to be greatest in nearby areas where any potential negative stigma (to the extent that it exists) is likely be most pronounced.

Demand for housing is also likely to increase indirectly as economic activity disperses through the economy, with Madoc-Jones (2009) noting that improvements in local income were likely balance the immediate negative impact on housing prices from correctional centre developments. Indeed, the higher than State average unemployment rate of 8.6%, within the Northern Rivers region combined with the current decline in median house prices in the Clarence Valley SA3 region – a fall of 10.3% over the year to September 2015 – suggest that the construction and operations of the Project and creation of new jobs could have a positive effect on housing demand.

¹⁶ Productivity Commission, (2016). *Report on Government Services 2016 Volume C: Justice*. Canberra.

Overall, there is expected to be a minimal to slightly positive impact on housing demand and property prices at the net regional level.

6.2.7 Impact on demand for social and community services

The Project is likely to increase supply both directly and indirectly for a range of social and community services, including health care, and education.

For instance, both the inmates themselves – through TAFE education programs – and the family of new staff are likely to demand additional education services. However, given that the Grafton region is currently served by six junior schools, three secondary schools, two independent K-12 schools, and also hosts the North Coast TAFE campus, it is likely to be well-placed to meet the additional demand.

NSW DoCS (2009) also found that the development of correctional services in Lithgow placed strain on some community services. For instance, the hostel for women and children operated by the local Society of St Vincent de Paul often could not meet demand from inmate visitors. RCMB (2009) expressed similar concerns for the sector, already under pressure in the regional town of Murray Bridge in South Australia.

However, the research also found that the correctional centre development had limited impacts on demand for public housing, despite community perception that families of inmates would move to the area to “jump the queue” for public housing.

Consequently, the expansion of a correctional centre is likely to come with additional funding needs for community services. Some organisations may face a trade-off between serving people in the community and providing assistance to parolees and their families. However, awareness of these consequences from the outset allows community organisations and governments to mitigate these issues from the outset.

To the extent that additional demand for these social and community services by the Project displaces the use by residents of the Northern Rivers region, there is likely to be a net negative impact.

6.2.8 Impact on infrastructure supply

NSW DoCS (2009) found that the opening of the Lithgow Correctional Centre generally had a minimal impact on the town’s infrastructure. Most visitors to the facility arrived by private motor vehicle, and the local bus servicing the centre was poorly utilised. Though the local hospital did not face capacity constraints, a new hospital was being built with isolation rooms to better serve the needs of patients in corrective custody. The local caravan park was expanding, in part due to the presence of a correctional centre, but local hotels and motels generally had sufficient capacity to serve ongoing demand. The exception to this was the St Vincent de Paul hostel specifically serving visitors to the correctional centre. The police in the town also faced a larger workload, and resources were relocated to the town.

This suggests that the expansion of a correctional centre is unlikely on its own to exhaust capacity that already exists in town infrastructure. However, different types of “soft infrastructure” will be affected in varying ways.

It is noted that Roads and Maritime Services are also currently delivering a significant upgrade to the Pacific Highway¹⁷ which, when completed will deliver more than adequate additional traffic capacity for the additional trips taken by staff members, suppliers, law enforcement personnel and inmate transport vehicles to and from the Project. The upgrade involves both increasing the capacity of the highway to dual carriageway and the diversion of the highway east towards the Project so that it no longer will run through the Grafton township. The Grafton Bridge Project which will also provide additional capacity between Grafton and South Grafton when crossing the Clarence River. Additional congestion from trips taken to and from the Grafton township to the Project will be compensated for by the additional Grafton Bridge capacity, and the removal of non-local north-south travel and heavy vehicle movements from the old highway by the construction of Pacific Highway bypass. The upgrading of the highway to dual carriageway will be more than adequate to compensate for additional non-local trips to and from the site, such as inmate transportation or visitation.

It is unlikely that the Project will have a negative impact on infrastructure supply within the town, and the upgraded Pacific Highway may assist with reducing through traffic on local roads the Project.

6.2.9 Other social impacts

NSW DoCS (2009) found that the correctional centre provided stable employment for a small but notable portion of the Lithgow's labour force and there was little to no stigma attached to the town. It also noted that the local tourist association in Lithgow had no evidence of the correctional centre discouraging visitors.

Frayne (date unknown) conducted informal surveys with business owners in the town of Kempsey, New South Wales. A bare majority (55%) stated the correctional centre had a positive impact, but many more were concerned about other sources of economic disparity (for instance, drought).

Madoc-Jones (2009) considered the impact of distance on the relationship between a inmate and his or her social networks. Distance may prevent families and friends of inmates from making visits to the correctional centre, which can have negative consequences for psychological wellbeing. This may further contribute to recidivism among offenders. However, this can be counter-balanced against the benefit for inmates whose families live near the correctional centre.

6.3 Overall social and economic impacts

Overall the Project is expected to generate significant positive social and economic impacts to the Northern Rivers region through the generation of additional employment and economic activity. The additional employment and economic impacts to the Northern

¹⁷ The local Pacific Highway upgrade is part of the wider 155 kilometre Woolgoolga to Ballina - Pacific Highway upgrade project which will be completed by 2020. The project starts approximately six kilometres north of Woolgoolga (north of Coffs Harbour) and ends approximately six kilometres south of Ballina.

Rivers regional economy quantified in Section 5 are significant for the whole region and last throughout the duration of the Project period.

Employment benefits from the Project are particularly pronounced as operational expenditure in the correctional services sector is more labour-intensive than capital expenditure in the construction sector, and hence dollar-for-dollar employs more people within the regional economy. Positive economic impacts of the Project are likely to be most pronounced with the Clarence Valley LGA, due to its immediate proximity to the Project.

Potential costs to the regional economy are likely to be limited in scale and geographic scope. The decision to locate the Project 12.5 km outside of Grafton has the effect of minimising any costs experienced by immediately adjacent landholders. Similarly Grafton's existing status as a 'prison town' mitigates any negative perceptions that might arise within the community around safety and security issues.

There are some concerns about the negative impact the Project might have on the capacity of social and community services in Grafton to service any additional demand associated with parolees or inmates' families. Early awareness by community organisations and governments of the potential consequences for social and community services within Grafton will allow for additional resources to be deployed and for potential costs to mitigated.

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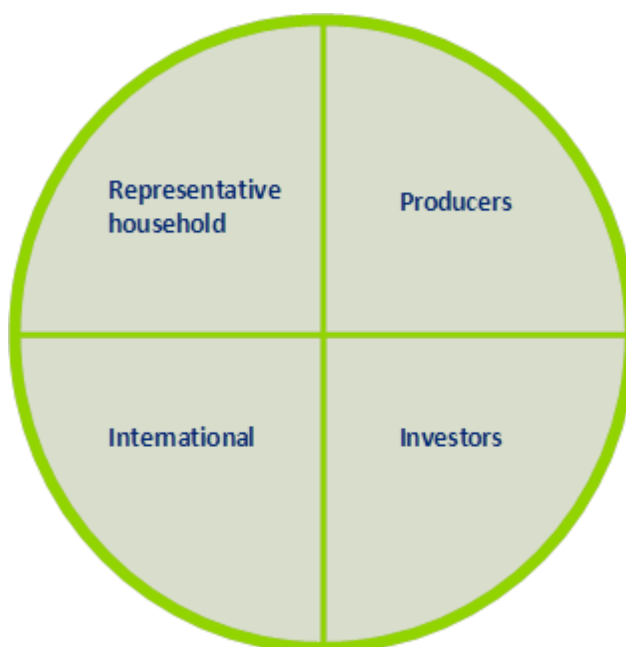
Appendix A: CGE modelling

The Deloitte Access Economics – Regional General Equilibrium Model (DAE-RGEM) is a large scale, dynamic, multi-region, multi-commodity computable general equilibrium model of the world economy. The model allows policy analysis in a single, robust, integrated economic framework. This model projects changes in macroeconomic aggregates such as GDP, employment, export volumes, investment and private consumption. At the sectoral level, detailed results such as output, exports, imports and employment are also produced.

The model is based upon a set of key underlying relationships between the various components of the model, each which represent a different group of agents in the economy. These relationships are solved simultaneously, and so there is no logical start or end point for describing how the model actually works.

Figure A.1 shows the key components of the model for an individual region. The components include a representative household, producers, investors and international (or linkages with the other regions in the model, including other Australian States and foreign regions). Below is a description of each component of the model and key linkages between components. Additional technical detail is also provided.

Figure A.1: Key components of DAE-RGEM



DAE-RGEM is based on a substantial body of accepted microeconomic theory. Key assumptions underpinning the model are:

- The model contains a 'regional consumer' that receives all income from factor payments (labour, capital, land and natural resources), taxes and net foreign income from borrowing (lending).
- Income is allocated across household consumption, government consumption and savings so as to maximise a Cobb-Douglas (C-D) utility function.
- Household consumption for composite goods is determined by minimising expenditure via a CDE (Constant Differences of Elasticities) expenditure function. For most regions, households can source consumption goods only from domestic and imported sources. In the Australian regions, households can also source goods from interstate. In all cases, the choice of commodities by source is determined by a CRESH (Constant Ratios of Elasticities Substitution, Homothetic) utility function.
- Government consumption for composite goods, and goods from different sources (domestic, imported and interstate), is determined by maximising utility via a C-D utility function.
- All savings generated in each region are used to purchase bonds whose price movements reflect movements in the price of creating capital.
- Producers supply goods by combining aggregate intermediate inputs and primary factors in fixed proportions (the Leontief assumption). Composite intermediate inputs are also combined in fixed proportions, whereas individual primary factors are combined using a CES production function.
- Producers are cost minimisers, and in doing so, choose between domestic, imported and interstate intermediate inputs via a CRESH production function.
- The model contains a more detailed treatment of the electricity sector that is based on the 'technology bundle' approach for general equilibrium modelling developed by ABARE (1996).
- The supply of labour is positively influenced by movements in the real wage rate governed by an elasticity of supply.
- Investment takes place in a global market and allows for different regions to have different rates of return that reflect different risk profiles and policy impediments to investment. A global investor ranks countries as investment destinations based on two factors: global investment and rates of return in a given region compared with global rates of return. Once the aggregate investment has been determined for Australia, aggregate investment in each Australian sub-region is determined by an Australian investor based on: Australian investment and rates of return in a given sub-region compared with the national rate of return.
- Once aggregate investment is determined in each region, the regional investor constructs capital goods by combining composite investment goods in fixed proportions, and minimises costs by choosing between domestic, imported and interstate sources for these goods via a CRESH production function.
- Prices are determined via market-clearing conditions that require sectoral output (supply) to equal the amount sold (demand) to final users (households and government), intermediate users (firms and investors), foreigners (international exports), and other Australian regions (interstate exports).

- For internationally-traded goods (imports and exports), the Armington assumption is applied whereby the same goods produced in different countries are treated as imperfect substitutes. But, in relative terms, imported goods from different regions are treated as closer substitutes than domestically-produced goods and imported composites. Goods traded interstate within the Australian regions are assumed to be closer substitutes again.
- The model accounts for greenhouse gas emissions from fossil fuel combustion. Taxes can be applied to emissions, which are converted to good-specific sales taxes that impact on demand. Emission quotas can be set by region and these can be traded, at a value equal to the carbon tax avoided, where a region's emissions fall below or exceed their quota.

The representative household

Each region in the model has a so-called representative household that receives and spends all income. The representative household allocates income across three different expenditure areas: private household consumption; government consumption; and savings.

Going clockwise around Figure A.1, the representative household interacts with producers in two ways. First, in allocating expenditure across household and government consumption, this sustains demand for production. Second, the representative household owns and receives all income from factor payments (labour, capital, land and natural resources) as well as net taxes. Factors of production are used by producers as inputs into production along with intermediate inputs. The level of production, as well as supply of factors, determines the amount of income generated in each region.

The representative household's relationship with investors is through the supply of investable funds – savings. The relationship between the representative household and the international sector is twofold. First, importers compete with domestic producers in consumption markets. Second, other regions in the model can lend (borrow) money from each other.

Some detail:

- The representative household allocates income across three different expenditure areas – private household consumption; government consumption; and savings – to maximise a Cobb-Douglas utility function.
- Private household consumption on composite goods is determined by minimising a CDE (Constant Differences of Elasticities) expenditure function. Private household consumption on composite goods from different sources is determined by a CRESH (Constant Ratios of Elasticities Substitution, Homothetic) utility function.
- Government consumption on composite goods, and composite goods from different sources, is determined by maximising a Cobb-Douglas utility function.
- All savings generated in each region are used to purchase bonds whose price movements reflect movements in the price of generating capital.

Producers

Apart from selling goods and services to households and government, producers sell products to each other (intermediate usage) and to investors. Intermediate usage is where

one producer supplies inputs to another's production. For example, coal producers supply inputs to the electricity sector.

Capital is an input into production. Investors react to the conditions facing producers in a region to determine the amount of investment. Generally, increases in production are accompanied by increased investment. In addition, the production of machinery, construction of buildings and the like that forms the basis of a region's capital stock, is undertaken by producers. In other words, investment demand adds to household and government expenditure from the representative household, to determine the demand for goods and services in a region.

Producers interact with international markets in two main ways. First, they compete with producers in overseas regions for export markets, as well as in their own region. Second, they use inputs from overseas in their production.

Some detail

- Sectoral output equals the amount demanded by consumers (households and government) and intermediate users (firms and investors) as well as exports.
- Intermediate inputs are assumed to be combined in fixed proportions at the composite level. As mentioned above, the exception to this is the electricity sector that is able to substitute different technologies (brown coal, black coal, oil, gas, hydropower and other renewables) using the 'technology bundle' approach developed by ABARE (1996).
- To minimise costs, producers substitute between domestic and imported intermediate inputs is governed by the Armington assumption as well as between primary factors of production (through a CES aggregator). Substitution between skilled and unskilled labour is also allowed (again via a CES function).
- The supply of labour is positively influenced by movements in the wage rate governed by an elasticity of supply (is assumed to be 0.2). This implies that changes influencing the demand for labour, positively or negatively, will impact both the level of employment and the wage rate. This is a typical labour market specification for a dynamic model such as DAE-RGEM. There are other labour market 'settings' that can be used. First, the labour market could take on long-run characteristics with aggregate employment being fixed and any changes to labour demand changes being absorbed through movements in the wage rate. Second, the labour market could take on short-run characteristics with fixed wages and flexible employment levels.

Investors

Investment takes place in a global market and allows for different regions to have different rates of return that reflect different risk profiles and policy impediments to investment. The global investor ranks countries as investment destination based on two factors: current economic growth and rates of return in a given region compared with global rates of return.

Some detail

- Once aggregate investment is determined in each region, the regional investor constructs capital goods by combining composite investment goods in fixed proportions, and minimises costs by choosing between domestic, imported and interstate sources for these goods via a CRESH production function.

International

Each of the components outlined above operate, simultaneously, in each region of the model. That is, for any simulation the model forecasts changes to trade and investment flows within, and between, regions subject to optimising behaviour by producers, consumers and investors. Of course, this implies some global conditions must be met such as global exports and global imports are the same and that global debt repayments equals global debt receipts each year.

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Contact us

Deloitte Access Economics
ACN: 149 633 116

Level 19
60 Station Street
Parramatta NSW 2150

Tel: +61 2 9840 7000
Fax: +61 2 9840 7001

www.deloitteaccesseconomics.com.au

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