ESSENTIAL ECONOMICS

Yanco Solar Farm Project

Economic Impact Assessment

FINAL

Prepared for

Ib vogt Gmbh

by

Essential Economics Pty Ltd

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Authorship

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EXECUTIVE SUMMARY

Ib vogt Gmbh have commissioned Essential Economics Pty Ltd to prepare an Economic Impact Assessment for the proposed 72 Mega Watt (MW) Yanco Solar Farm development to be located 7 kms south of Leeton, in the Riverina region of New South Wales.

The solar farm will be located across a 205ha property and, subject to planning approval and financing, the facility is expected to be operational by mid-2020.

The main findings of this study are summarised as follows.

Regional Economic Context

1 The Study Area (which comprises the municipalities of Griffith, Leeton, Narrandera and Wagga Wagga) has a resident population of approximately 108,000 persons (2016) and this is expected to reach approximately 120,000 persons by 2036, representing a modest average annual growth rate of 0.6% over the period. However, significant population decline is forecast for Narrandera Shire (-1,180 persons), while the population of Leeton Shire is projected to remain virtually static over the period 2016-36; therefore, major projects which stimulate new investment and jobs should be encouraged in terms of supporting the local economy.

2 Leeton and Narrandera shires are among the most disadvantaged municipalities in NSW, based on ABS SEIFA data for 2016. This factor highlights the need for new investment, jobs and economic stimulus to support these local economies.

3 The Study Area currently has an unemployment rate of 5.9% which is well-above the NSW unemployment rate of 4.8% (June 2018). Importantly, unemployment rates in Leeton Shire (6.2%) and Narrandera Shire (8.6%) are significantly above the State average. The Study Area currently has 3,420 unemployed persons. In this regard, construction of the Yanco Solar Farm project provides new short-term and ongoing employment opportunities for the region's labour force participants.

4 The Study Area's occupational and business structures indicate that a good base exists to service the needs of the solar farm project, including approximately 16,750 construction-related workers (including 2,000 workers in Leeton Shire) and approximately 2,000 construction and transport businesses (including 200 businesses in Leeton Shire).

5 The township of Leeton, given its close proximity to the Yanco site, will service many project needs such as accommodation, trade supplies and transport services, machinery hire and repairs, retail services etc, with Narrandera also providing a supporting project role especially in terms of labour supply and accommodation. The major regional centres of Wagga Wagga and Griffith may also have a role in providing higher-order services to the project.

Economic Impact Assessment

6 The Yanco Solar Farm project will involve approximately $75 million in investment during the construction phase and will support 120 direct FTE positions and 190 indirect FTE positions over the construction period. Once operational, 5 direct FTE positions and 15 indirect FTE positions will be supported by the facility.

7 Allowing for the project to be carefully managed around the region's peak times for harvesting activity and the scheduling of other major infrastructure projects in the region, accessing adequate labour supply should not present an issue for the project, noting the peak local employment requirement for the project (70 jobs) represents less than 1% of workers occupied in construction-related activities in the Study Area or 4% of local workers occupied in these activities.

8 Potential concurrent infrastructure projects in the local area – including the Leeton Solar Farm project – are unlikely to impact on labour and resources required to support the Yanco Solar Farm project for the following reasons:

- Different construction time frames/ staging associated with approved projects (i.e. Leeton Solar Farm)
- Other solar farm projects may not be developed around the same time as the Yanco project, noting the need to secure planning approval, network connection, end customers and financing to move to project construction
- The large construction-base available in Leeton Shire (i.e. 2,000 construction-related workers and 200 construction-related businesses) which can support a pipeline of infrastructure projects, with further resources available across the Study Area.

9 The project will provide significant participation opportunities for businesses and workers located in the Study Area, having regard for the good match of skills and resources available. In this regard, the proponent and organisations such as the Industry Capability Network could be involved in ensuring maximum local inputs are secured.

10 The 'external' project labour requirement would be expected to generate an accommodation need for 50 project workers at the peak of the project and sufficient capacity exists to house these workers across a range of accommodation options, including motels, hotels, serviced apartments, caravan parks and private rentals. Given the relatively low occupancy rates observed for Leeton and Narrandera commercial accommodation establishments, the construction phase of the project will be beneficial for these businesses.

11 Construction workers would be expected to inject approximately $560,000 in additional spending into the local economy over the construction phase, supporting around 2-3 jobs in the service sector in Leeton and Narrandera LGAs.

12 Approximately 205ha of productive agricultural land (orange and grape growing) will be lost to accommodate the solar farm. This represents less than 0.1% of irrigated agricultural land in the Murrumbidgee Irrigation Area . Up to $1.2 million pa in horticultural production might be lost; however, the wholesale value of clean electricity

production from the site is estimated at $10.0 million per year. The number of jobs lost through existing agricultural activities (including supply chain jobs) will be replaced by a similar number of new jobs associated with solar farm activities (including supply chain jobs).

13 Council rates revenue associated with the development and operation of the solar farm will be subject to negotiations between Leeton Shire Council and the proponent; however, net financial benefits to Council are likely to be significant over the 30-year project lifecycle.

14 The proposed developer contributions can be directed to new community infrastructures and programs.

15 Ongoing economic stimulus associated with returns to the host landowner, potential Community Fund payment, and the estimated uplift in Council rates, is approximately $14.3 million over 30 years (adjusted for CPI @ 2.5% pa).

16 The project has the capacity to supply sufficient clean energy to power approximately 36,500 homes and, in the process, to reduce C02 emissions by 51,000 tonnes per year.

17 Once operational, the Yanco Solar Farm could potentially support small-scale tourism and educational opportunities in the future.

INTRODUCTION

Background

Ib vogt Gmbh have commissioned Essential Economics Pty Ltd to prepare an Economic Impact Assessment for the proposed Yanco Solar Farm development to be located 7 km south of Leeton, New South Wales.

The proposed development will be situated on a 205ha site which involves a single landholding spread across several lots. The solar farm will have a capacity of 72 MW powered by up to 200,000 photovoltaics panels. Subject to State planning approval and project financing, construction of the Yanco Solar Farm is anticipated to commence in mid-2019, with the facility fully operational by mid-2020.

Objectives

The objectives of this project are:

- To highlight likely local and regional economic benefits arising from the project.
- To identify potential economic impacts associated with the project.

This Report

This report contains the following chapters:

Chapter 1: **Project Context**
Presents a description of site location, project components, policy context and definition of the Study Area.

Chapter 2: **Regional Economic Profile**
Presents an overview of population, labour force, occupational structure, business structure and township services, including an audit of available commercial accommodation in the Study Area.

Chapter 3: **Economic Impact Assessment of Proposed Project**
Presents an assessment of the economic impacts of the proposed development including investment, employment, business participation, local wage stimulus, impact on accommodation, impact on agricultural activities, local economic stimulus, financial returns to Council and the community, and environmental benefits.

1 PROJECT CONTEXT

1.1 Site Location

The proposed Yanco Solar Farm will be developed on a site in located approximately 7 km south-west of Leeton and 1 km west of the Yanco, in the Riverina region of NSW.

The subject site has been selected for the following key reasons:

- Excellent solar exposure
- Excellent access to local and major roads
- Excellent access to the grid transmission network
- Likely low level of environmental impact – the site has been largely cleared and heavily disturbed by cultivation and cropping.

The subject site is well-connected to a number of major regional centres and townships, including:

- Leeton – approximately a 5-minute drive to the north-west
- Narrandera – approximately a 20-minute drive to the south-east
- Griffith – approximately a 60-minute drive to the north-west
- Wagga Wagga – approximately a 90-minute drive to the south-east.

These regional centres and townships, to differing extents, are likely to play important roles in supporting the requirements of the project.

The subject site, which comprises several lots and a single landowner, is approximately 205ha in area and is currently used for horticultural purposes (grape and orange growing) under the Farming Zone (FZ). It is estimated the majority of the irrigated site will be utilised for solar farm infrastructure.

The solar farm site is located in the Leeton Shire Council. The Yanco Solar Farm is classed as a State Significant project and will require approval by the NSW Department of Planning and Environment.

1.2 Project Description

The proposal involves the construction of a photovoltaic array which would generate approximately 72 MW (DC) or 60 MW (AC) of renewable energy.

The proposal infrastructure includes:

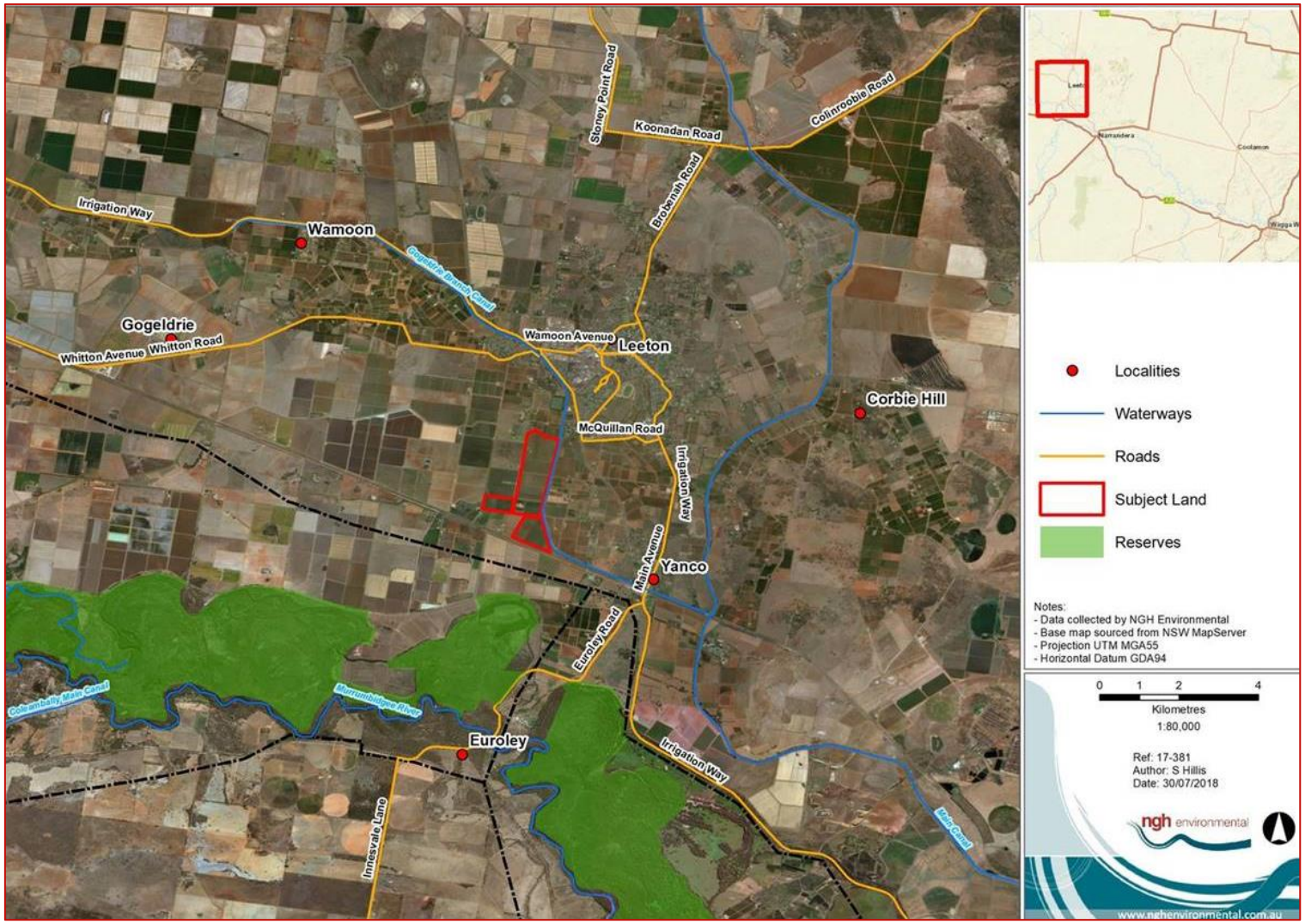
- Approximately 205,000 PV solar arrays mounted on single axis tracking systems.

- Electrical cables and conduits.
- Inverter/transformer units, containerised, distributed across the site.
- Battery storage units, containerised, distributed across the site.
- Control room and switchgear to connect the solar farm to a new underground powerline, including synchronous condenser, other associated structures, lightening protection masts, control and protection equipment
- Communications tower (20m high), adjacent to the control room.
- Site office, compounds, parking, access tracks and perimeter fencing.
- Operations and maintenance buildings with associated car parking.
- Site access points via Toorak Road and Research Road.
- Internal access tracks.
- Lighting, CCTV system, security fencing.
- An underground 33 kV powerline.
- Vegetative screening.

The proponent is looking at facilitating grazing on the site, under the solar structure.

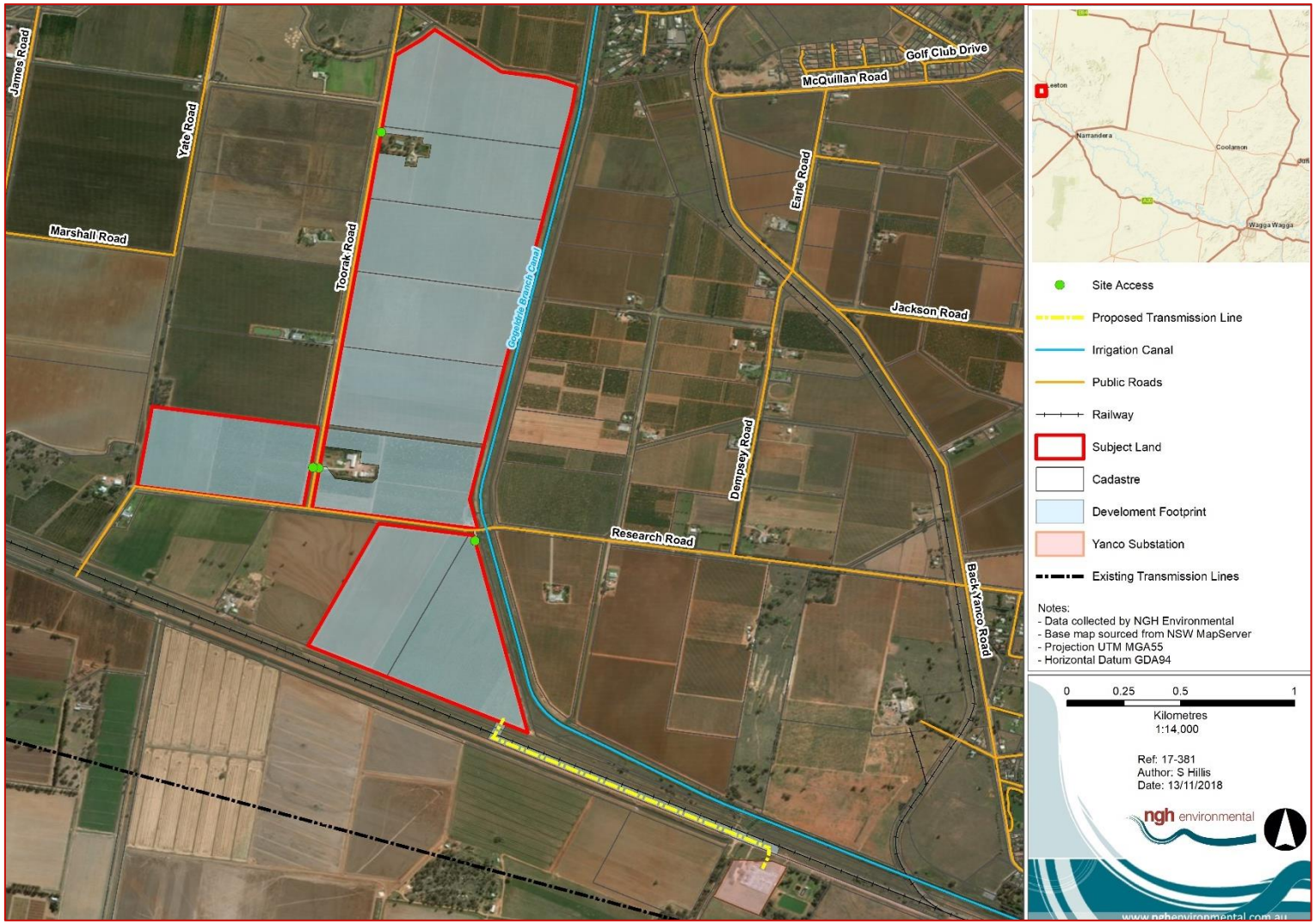
The Yanco Solar Facility location is outlined in Figure 1.1 and the development footprint is shown in Figure 1.2.

Figure 1.1: Yanco Solar Farm – Site Location



Source: Ib vogt Gmbh

Figure 1.2: Yanco Solar Farm – Preliminary Site Layout



Source: Ib vogt Gmbh

1.3 Policy Context

Federal and State policy are important factors in influencing demand and investment in the renewable energy sector, as noted below.

Paris Climate Accord

The Paris Accord is a comprehensive international climate agreement to which Australia is a party. The Accord provides a framework for participating nations to set themselves nationally-determined contributions (NDCs), beginning in 2020, with review at five-year intervals. The agreement sets out a global consensus to limit temperature increases to below two degrees Celsius when compared to pre-industrial levels; an additional goal is to maintain this increase at less than one and a half degrees Celsius. NDCs do not have any set lower limit but are required to progress over time (beginning with the intended NDC pledged during the Paris conference), and to be 'ambitious'. Australia's current targets are a reduction in emissions by five percent from 2000 levels by 2020, and by 26-28 percent below 2005 levels by 2030.

Federal Renewable Energy Target

The Renewable Energy Target (RET) is an Australian Government scheme designed to reduce emissions of greenhouse gases in the electricity sector and to encourage the additional generation of electricity from sustainable and renewable sources.

The RET works by allowing both large-scale power stations and the owners of small-scale systems to create certificates for every megawatt hour of power they generate. Certificates are then purchased by electricity retailers who sell the electricity to householders and businesses. These electricity retailers also have legal obligations under the RET to surrender certificates to the Clean Energy Regulator, in percentages set by regulation each year. This creates a market which provides financial incentives to both large-scale renewable energy power stations and to the owners of small-scale renewable energy systems.

In June 2015, the Australian Parliament passed the Renewable Energy (Electricity) Amendment Bill 2015. As part of the amendment bill, the large-scale RET was reduced from 41,000 GWh to 33,000 GWh in 2020, with interim and post-2020 targets adjusted accordingly.

Finkel Report and National Energy Guarantee

The Independent Review into the Future Security of the National Electricity Market, released in June 2017, is a report commissioned by the Federal Government in order to establish a framework for the development of the Australian energy sector. Also known as the Finkel Report, it recommends the use of a Clean Energy Target (CET) scheme to stimulate renewable energy production throughout the National Electricity Market (NEM). This would likely replace the present Federal RET scheme due to expire in 2020, and would result in a more technology-neutral allocation of renewable energy generation certificates; any generator producing energy at a level of pollution below a benchmark rate would be eligible as opposed to only specific technologies as with the RET scheme. The report modelled outcomes utilising this type of scheme to achieve the trajectory committed to by the Federal Government by 2030 and determined that renewable energy would constitute approximately 42 percent of the NEM at

this time. Other policies including an Emissions Intensity Scheme and lifetime limits on coal-powered generation were considered, with the report deeming CET the most effective based on their model.

The Federal Government response to the Finkel Report formed the basis of the proposed National Energy Guarantee scheme which included the following main components:

- No subsidies for renewable or any other kind of energy generators
- Power companies will be forced to guarantee on-demand electricity from coal, gas, hydro, or batteries that store renewable energy
- Power companies will also be forced to keep carbon dioxide emissions below a certain level through the purchase of low emissions generated energy.

The National Energy Guarantee scheme was ultimately not put to a vote in Federal Parliament, and will not proceed in this term of Parliament. In this regard, it is widely accepted across the energy sector that a national policy vacuum in this area currently exists.

NSW Renewable Energy Action Plan 2013

The NSW Renewable Energy Action Plan (2013) provides a framework to enable the State to meet the RET target through a range of 24 actions associated with:

- Attracting investment and projects
- Building community support
- Attracting and growing expertise in renewable energy technology.

While the NSW Government does not mandate a specific renewable energy target for the State, unlike Victoria and Queensland which both have 50 per cent renewable energy targets by 2030, it does have an aspirational target of zero emissions by 2050.

The NSW Renewable Energy Action Plan Annual Report monitors implementation of the Plan and reports on progress to meeting the 2020 RET target. The 2016 Annual Report (latest available) notes that 17 of the 24 actions have been implemented, with the further seven substantially progressed, and notes the percentage of renewable energy in the state's electricity mix has more than doubled over the past six years, underpinned by large-scale solar and wind farm projects.

NSW Large Scale Solar Energy Guidelines 2018

The final version of the NSW Large scale Solar Energy Guidelines were recently issued by the NSW Govt (attached). Page 12 notes the following:

> *"Social and economic impacts: Impacts, both positive and negative (including how they are distributed), of the proposed development on potentially affected people and groups. This includes workforce*

accommodation, job creation opportunities, and flow-on economic impacts to local communities."

This EIA report addresses these impacts.

1.4 Study Area

The principal Study Area for the project has been defined as the Local Government Areas (LGAs) of:

- Griffith City Council
- Leeton Shire Council
- Narrandera Shire Council
- Wagga Wagga City Council.

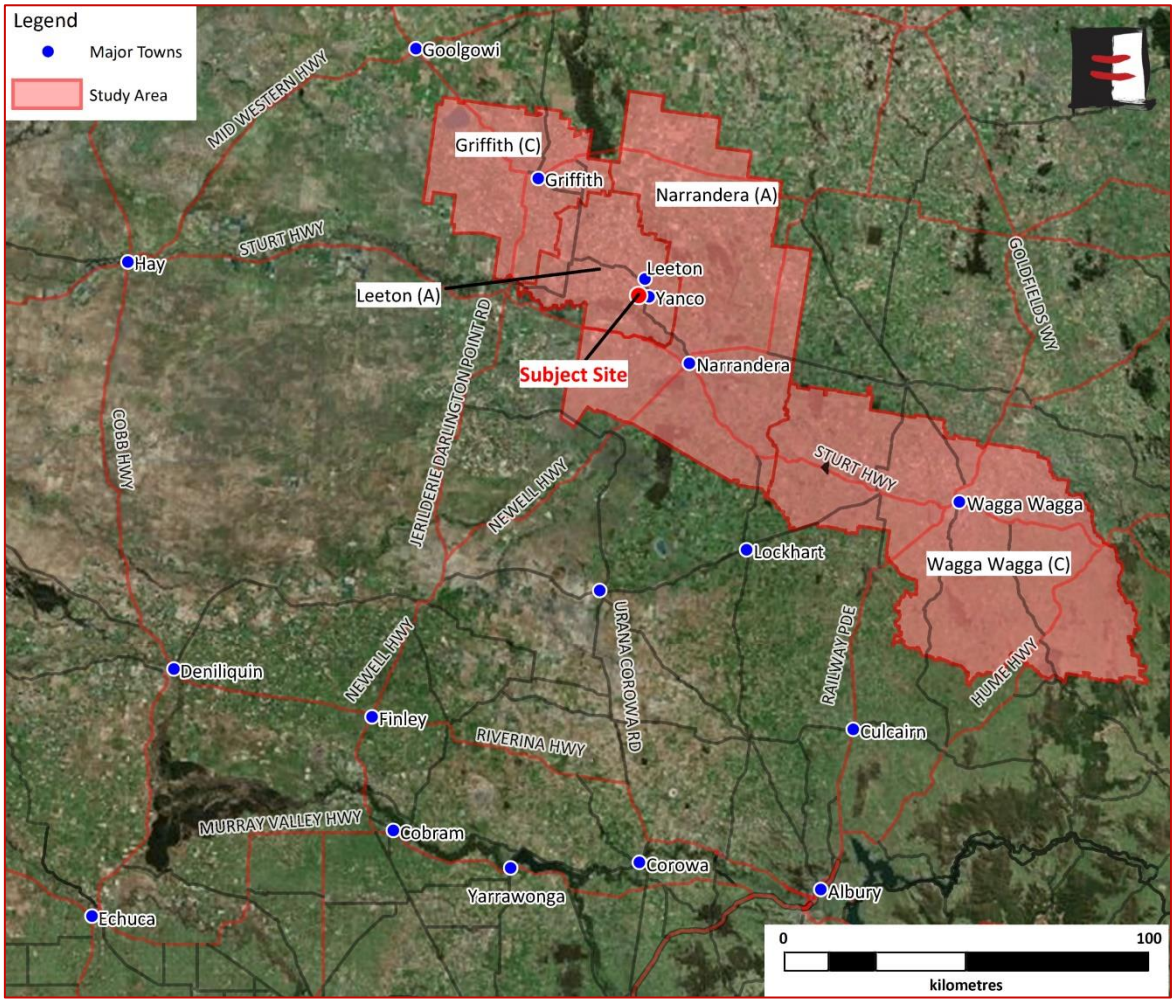
The main townships in these LGAs are generally located within an hour's drive of the Subject Site (apart from Wagga Wagga).

These LGAs, to differing extents, all have the potential to contribute to the project and derive economic benefits from both the construction and ongoing phases of the project.

The Shire of Leeton is considered in terms of local impacts.

This Study Area is illustrated in Figure 1.3.

Figure 1.3: Yanco Solar Farm – Study Area



Source: Essential Economics

1.5 Summary

1 Ib vogt Gmbh is proposing the construction of the 72 MW Yanco Solar Farm located approximately 7 km south of Leeton in the NSW Riverina.

2 The solar farm facility will be located across a single farming property (orange and grape growing) comprising 205ha in size.

3 Subject to planning approval by the NSW Department of Planning and Environment and project financing, it is anticipated construction of the solar farm could start in mid-2019, and the facility may be operational by mid-2020.

4 The revised Federal RET (2015) has provided greater investment certainty within the sector in the short-term (i.e. 2020). However, with the proposed National Energy Guarantee now not proceeding, longer-term investment uncertainty remains. At a state level, the NSW Renewable Energy Action Plan (2013) provides guidance to investment in the sector, although specific state renewable energy targets are not mandated.

5 This economic impact study will provide an understanding of potential economic benefits and impacts arising for the local and regional economies and communities through the construction and operational stages of the Yanco Solar Farm project.

2 REGIONAL ECONOMIC PROFILE

2.1 Population

The population of the Study Area totalled approximately 107,910 persons as of June 2016 (ABS Estimated Resident Population).

Over the period 2016-2036 population growth in the Study Area is expected to be very modest, averaging just +0.6% pa (or +12,6900 persons over 20 years) compared to the NSW average growth rate of 1.3% pa over the 20-year period. These estimates, which are shown in Table 2.1, are based on official population forecasts prepared by the NSW Government.

Population growth in the Study Area is underpinned by the Wagga Wagga City Council whose population is forecast to increase by +13,860 persons over the 20-year period, offsetting population losses or stagnation in the Study Area's other three LGAs. Of particular note is the projected population contraction in the Narrandera Shire Council area of -1,180 persons over the period, representing a decline in population of -1.1% pa over 20 years. Population growth is also projected to be virtually static between 2016 and 2036 in the municipalities immediately north on Narrandera Shire, i.e. Leeton Shire (+0.1% pa) and Griffith City (-0.1% pa).

These population projections for the LGAs of Griffith, Leeton and Narrandera highlight economic trends experienced in many rural areas over recent years, especially those with a high reliance on the agricultural sector and which have been negatively impacted variously by drought, an uncompetitive exchange rate, and an ageing labour force.

In this context the proposed Yanco Solar Farm will provide an alternative drought-proofed, guaranteed income to the host landowner for 30 years (agreement period), while the construction and operational phases of the project will provide an economic stimulus (jobs, project contracts, new spending etc) to the regional economy, including small towns and rural settlements such as Leeton, Narrandera and Yanco.

Table 2.1: Population – Study Area, 2016-2036

Municipality	2016[1] No. Persons	2036[2] No. Persons	Change 2016-36	AAGR 2016-36
Griffith City Council	26,420	26,150	-270	-0.1%
Leeton Shire Council	11,420	11,700	+280	+0.1%
Narrandera Shire Council	5,980	4,800	-1,180	-1.1%
Wagga Wagga City Council	64,090	77,950	+13,860	+1.0%
Study Area	**107,910**	**120,600**	**+12,690**	**+0.6%**
New South Wales	**7,739,270**	**9,925,550**	**+2,186,280**	**+1.3%**

Source: [1] ABS, 3218.0 Regional Population Growth, Australia; [2] 2016 New South Wales State and Local Government Area Population Projections (Main Series), NSW Department of Planning & Environment

Notes: AAGR = Annual Average Growth Rate
Figures rounded

2.2 Relative Disadvantage

Every five years the ABS prepare a series of indices relating to the social advantage and disadvantage status for each municipality in Australia. These indicators are known as Socio-Economic Indexes for Area (SEIFA) and are based on data compiled from the Census of Population and Housing. The Index of Relative Socio-Economic Advantage and Disadvantage is a broad measure of disadvantage based on 16 input variables, including low household incomes, jobless parents with dependent children, dwellings without internet access etc.

SEIFA data 2016, shown in Table 2.2, shows Leeton Shire ranks 35th and Narrandera Shire 23rd in terms of disadvantage out of NSW's 129 LGAs. This data highlights the need for investment projects which provide both short and long-term economic stimulus for these communities.

Note, when reading the data in Table 2.2 the lower the ranking and decile, the higher the level of disadvantage.

Table 2.2: ABS SEIFA Index of Relative Socio-Economic Advantage and Disadvantage – Selected LGAs, 2016

	2016	
LGA	Ranking 1 to 129 (NSW LGAs)	Decile 1 to 10
Griffith City Council	48	4
Leeton Shire Council	35	3
Narrandera Shire Council	23	2
Wagga Wagga City Council	88	7

Source: ABS SEIFA Indices, 2016

2.3 Labour Force

As of June 2018 (latest available) the Study Area had an unemployment rate of 5.9% which is well above the NSW unemployment rate of 4.8%.

The unemployment rate in Leeton Shire, in which the project is to be located, is relatively high (6.2%), while neighbouring Narrandera Shire has an even higher unemployment rate (8.6%). This data highlights the need for local investment projects to provide new employment opportunities for resident jobseekers.

As Table 2.3 shows, in June 2018 the Study Area's labour force totalled 58,060 persons, including 3,420 persons who were unemployed.

The Yanco Solar Farm project is likely to require 190 workers over the construction period, with some of these workers being sourced from outside the Study Area (e.g. management, specialists). In the context of the relatively large labour market and the number of job seekers currently unemployed, the Yanco Solar Farm project is unlikely to cause labour supply issues,

rather provide new short-term opportunities for labour force participants (including existing unemployed persons – subject to appropriate skills match).

It is recognised, however, that the Study Area is underpinned by the agricultural sector and that significant labour resources are required on a seasonal basis for harvesting and related activities. Additionally, a number of major infrastructure projects will potentially be developed at the same time as the construction of the Yanco Solar Farm; implications will therefore need to be considered in terms of regional labour supply.

These labour supply factors are further explored in Chapter 3.

Table 2.3: Labour Force – Study Area, June 2018

Municipality / Area	Employed	Unemployed	Total Labour Force	Unemployment Rate
	No.	No.	No.	Percentage
Griffith City Council	13,660	690	14,350	4.8%
Leeton Shire Council	5,480	360	5,840	6.2%
Narrandera Shire Council	2,660	250	2,910	8.6%
Wagga Wagga City Council	32,840	2,120	34,960	6.1%
Study Area	**54,640**	**3,420**	**58,060**	**5.9%**
New South Wales	**3,949,500**	**200,600**	**4,150,100**	**4.8%**

Source: Australian Government Department of Employment, *Small Area Labour Markets – September Quarter 2018*
Figures rounded

2.4 Occupational Structure

The skills base of the Study Area is reflected in its occupational structure. ABS Census data for 2016 shows 35% of Study Area workers were occupied in activities generally associated with the types of skills required for the construction of a solar farm (i.e. technicians and trades workers, machinery operators & drivers, and labourers).

The Study Area's representation in these occupations is well above the State average of 28%, indicating a generally suitable occupational base for the proposed project. In total numbers, approximately 16,760 workers in the Study Area are occupied in construction-related activities.

At a local level, Leeton Shire has approximately 2,000 resident workers occupied in construction-related activities, which represents 42% of the workforce, and this is considerably higher than the State average.

This data, which is shown in Table 2.4, highlights the strong and relevant local and regional workforce which is present to service the construction phase of the project.

Table 2.4: Occupational Structure – Study Area, 2016

	Griffith City Council		Leeton Shire Council		Narrandera Shire Council		Wagga Wagga City Council		Study Area		NSW
Occupational Type	No.	Share	No.	Share	No.	Share	No.	Share	No.	Share	Share
Managers	1,804	15.4%	738	15.7%	499	21.5%	3,634	12.2%	6,675	13.7%	13.5%
Labourers	2,098	17.9%	902	19.1%	393	16.9%	3,072	10.3%	6,465	13.3%	8.8%
Technicians and Trades Workers	1,611	13.8%	650	13.8%	289	12.4%	4,667	15.6%	7,217	14.9%	12.7%
Professionals	1,547	13.2%	632	13.4%	277	11.9%	5,877	19.7%	8,333	17.2%	23.6%
Clerical and Administrative Workers	1,373	11.7%	511	10.8%	242	10.4%	3,657	12.3%	5,783	11.9%	13.8%
Community and Personal Service Workers	1,036	8.8%	382	8.1%	222	9.6%	3,868	13.0%	5,508	11.3%	10.4%
Machinery Operators and Drivers	800	6.8%	442	9.4%	206	8.9%	1,627	5.5%	3,075	6.3%	6.1%
Sales Workers	1,240	10.6%	357	7.6%	154	6.6%	3,061	10.3%	4,812	9.9%	9.2%
Not stated /inadequately described	206	1.8%	99	2.1%	40	1.7%	374	1.3%	719	1.5%	1.9%
Total	**11,715**	**100.0%**	**4,713**	**100.0%**	**2,322**	**100.0%**	**29,837**	**100.0%**	**48,587**	**100.0%**	**100.0%**

Source: ABS Census of Population and Housing 2011

2.5 Business Structure

One of the more tangible benefits of a major investment project, such as the proposed Yanco Solar Farm, is the extent to which local and regional businesses can participate in the project through project contracts and other service provision.

ABS Business Count data for 2017 (latest available) shows the Study Area comprises 1,560 construction businesses, with a further 500 businesses associated with transport, postal and warehousing service; these two sectors account for 2,060 businesses or 20% of all businesses located in the Study Area.

Locally, Leeton Shire has approximately 200 businesses associated with construction-related activities (including transportation), which represents 21% of all Shire businesses.

This data, which is shown in Table 2.5, indicates a strong local and regional presence of the types of firms that are likely to be well-placed to service aspects of the project. This opportunity is explored in more detail in the following Chapter.

Table 2.5: Business Structure – Study Area, 2017

	Griffith City Council		Leeton Shire Council		Narrandera Shire Council		Wagga Wagga City Council		Study Area		NSW
Industry Sector	No.	Share	No.	Share	No.	Share	No.	Share	No.	Share	Share
Agriculture, Forestry and Fishing	1,023	32.2%	315	33.0%	218	37.9%	873	16.2%	2,429	24.0%	7.3%
Mining	6	0.2%	4	0.4%	0	0.0%	5	0.1%	15	0.1%	0.2%
Manufacturing	148	4.7%	42	4.4%	12	2.1%	192	3.6%	394	3.9%	3.6%
Electricity, Gas, Water and Waste Services	8	0.3%	3	0.3%	5	0.9%	19	0.4%	35	0.3%	0.3%
Construction	396	12.5%	144	15.1%	69	12.0%	946	17.5%	1,555	15.4%	15.5%
Wholesale Trade	123	3.9%	29	3.0%	9	1.6%	150	2.8%	311	3.1%	3.8%
Retail Trade	180	5.7%	65	6.8%	38	6.6%	288	5.3%	571	5.7%	6.1%
Accommodation and Food Services	78	2.5%	42	4.4%	30	5.2%	223	4.1%	373	3.7%	4.2%
Transport, Postal and Warehousing	119	3.7%	52	5.4%	37	6.4%	289	5.4%	497	4.9%	6.3%
Information Media and Telecommunications	5	0.2%	0	0.0%	0	0.0%	24	0.4%	29	0.3%	1.2%
Financial and Insurance Services	208	6.6%	40	4.2%	20	3.5%	549	10.2%	817	8.1%	9.1%
Rental, Hiring and Real Estate Services	363	11.4%	56	5.9%	26	4.5%	552	10.2%	997	9.9%	11.1%
Professional, Scientific and Technical Services	146	4.6%	46	4.8%	22	3.8%	338	6.3%	552	5.5%	13.0%
Administrative and Support Services	86	2.7%	17	1.8%	19	3.3%	151	2.8%	273	2.7%	4.0%
Public Administration and Safety	5	0.2%	3	0.3%	3	0.5%	14	0.3%	25	0.2%	0.4%
Education and Training	14	0.4%	4	0.4%	3	0.5%	56	1.0%	77	0.8%	1.4%
Health Care and Social Assistance	98	3.1%	33	3.5%	19	3.3%	360	6.7%	510	5.0%	5.9%
Arts and Recreation Services	9	0.3%	4	0.4%	11	1.9%	52	1.0%	76	0.8%	1.3%
Other Services	140	4.4%	52	5.4%	31	5.4%	274	5.1%	497	4.9%	4.0%
Industry not classified	19	0.6%	4	0.4%	3	0.5%	42	0.8%	68	0.7%	1.4%
Total	**3,174**	**100.0%**	**955**	**100.0%**	**575**	**100.0%**	**5,397**	**100.0%**	**10,101**	**100.0%**	**100.0**

Source: ABS Counts of Australian Businesses, including Entries and Exits, June 2013 to June 2017

2.6 Township Services Capacity

Commercial Accommodation

The ability to accommodate non-local workers (i.e. those who are not resident in the Study Area or not living within a daily commutable distance) is a key consideration for major construction projects, especially in regional and rural areas underpinned by agricultural activity that are subject to seasonal demand for labour (e.g. harvesting). Concurrent infrastructure projects also need to be considered when assessing the adequacy of accommodation for a particular construction project (refer to section 3.3).

As Table 2.6 highlights, the Study Area has a reasonable supply of commercial accommodation as measured by the ABS Tourism Accommodation series for year-ending June 2016 (latest available). This data, which identifies supply for hotels, motels and apartments with 15 rooms or more, shows the Study Area contained 49 establishments and 1,450 rooms as of June 2016.

Room occupancy rates in the Study Area (61%) can be considered below average compared to the NSW average room occupancy rate of 68%, indicating the solar farm project will boost the commercial accommodation sector, especially during off-peak periods.

Importantly, room occupancy rates for establishments located in Leeton and Narrandera shires are particularly low at 45% and 52% respectively. This indicates a specific opportunity exists for these particular businesses to improve trading over the construction period of the project.

Accommodation requirements and impacts associated with the project are further discussed in section 3.5.

Table 2.6: Hotel, Motel and Apartments Accommodation (with 15 Rooms or more) – Study Area, Year-Ending June 2016

Location	No. of Establishments	No. of Rooms	Room Nights Available	Room Nights Occupied	Room Occupancy Rate
Narrandera Shire Council	5	130	48,000	25,000	52.1%
Leeton Shire Council	4	115	42,000	19,000	45.2%
Wagga Wagga City Council	30	860	315,000	204,000	64.8%
Griffith City Council	10	342	125,000	77,000	61.6%
Study Area	49	1,447	530,000	325,000	61.3%
NSW	**1,424**	**75,235**	**27,212,000**	**18,573,000**	**68.3%**

Source: Destination NSW – based on ABS Tourism Accommodation, Australia 2015-16

In addition to commercial accommodation outlined above, the Study Area also provides a range of additional options which might be used for worker accommodation, including the following options located close to the subject site:

- Caravan/ Holiday parks providing cabins, such as:
  - Leeton Caravan Park, Leeton
  - Oasis Caravan Park, Leeton

  - Narrandera Caravan Park, Narrandera
  - Lake Talbot Tourist Park , Narrandera
- Boutique serviced apartments (e.g. B & J's Accommodation, Leeton)
- Bed and Breakfast facilities
- Guest houses
- Pubs/hotels (e.g. Yanco Hotel).

Private Accommodation

Private accommodation is often used to support construction worker needs and this could be through leasing of holiday homes and investment properties, either privately or through real estate agents. ABS Census data for 2016 indicates the Study Area has an above-average level of vacant dwellings. As Table 2.7 shows, 10.6% of Study Area dwellings were unoccupied at the Census, which is above the average for NSW (9.9%). Of particular importance is the relatively high dwelling occupancy rate in Leeton and Narrandera shires of 11.7% and 15.0% respectively, indicating potential private accommodation opportunities for local homeowners.

Shared private housing accommodation is one potential option for the solar farm project, and this is further explored in section 3.5.

Table 2.7: Unoccupied Dwellings – Study Area, June 2016

Location	Occupied Dwellings	Unoccupied Dwellings	Total Dwellings	Unoccupied Dwelling Share
Narrandera Shire Council	2,150	380	2,530	15.0%
Leeton Shire Council	3,860	510	4,370	11.7%
Wagga Wagga City Council	22,390	2,540	24,930	10.2%
Griffith City Council	8,500	940	9,440	10.0%
Study Area	**36,900**	**4,370**	**41,270**	**10.6%**
New South Wales	**2,604,320**	**284,740**	**2,889,060**	**9.9%**

Source: ABS Census of Population and Housing, 2016

Township Services

In addition to accommodation, workers locating temporarily to the Study Area will require a wide range of other convenience services, and the project will also need to source trade and other services from businesses located in the immediate region. The following paragraphs provide an overview of the services located in the main townships and regional centres in the Study Area – Narrandera, Leeton, Wagga Wagga and Griffith. Other smaller settlements such as Yanco, Whitton, and Lockhart are likely to support the project in some capacity, especially with regard to labour supply. The information is ordered in relation to proximity to the subject site.

Leeton

Figure 2.1: Images of Leeton Town Centre

Source: www.bing.com

The Leeton Township has a population of approximately 6,900 persons and is located approximately 7km north-west of the subject site, or a 10-minute drive along Irrigation Way.

Leeton's key services include:

- Freight and transport services (Leetons Fast Freight, Preston's Leeton, De Paoli Transport)
- Auto mechanics (Leeton Auto Electrics, Russell Auto Electrical, Lanhams of Leeton)
- Construction firms (Leeton Equipment Hire, Cregan Crane Hire, David Boots Sand and Gravel, Area Pre-Mix, Milbrae Quarries)
- Engineering services (Associated Civil & Mechanical Engineering Enterprises, Barraclough Engineering, Southern Central Engineering)
- Trade Suppliers (Leeton Mitre 10, Leeton Builders Supplies & Concrete Manufacturers)
- Fuel supplies (Mobil, Shell, Caltex, Shell, BP)
- Commercial and private accommodation (see above Tables)
- Retail services - including Woolworths and IGA supermarkets
- Cafes and restaurants
- Entertainment (hotels, clubs, sports and recreational facilities)
- Banks and financial institutions (Westpac, St. George, NAB, and ANZ)
- Real estate agents (Amato Real Estate, Glen Preston Real Estate, Raine & Horne, Breed & Hutchinson)
- Postal services (Australia Post)
- Employment agencies (Sureway Employment and Training, Eworks Employment Solutions)

- Medical and emergency services including:
  - Leeton District Hospital, with an emergency department
  - Leeton Medical Practice
  - NSW Fire & Rescue Services
  - Leeton Police Station
  - Leeton State Emergency Services (SES) unit.

Narrandera

Figure 2.2: Images of Narrandera Town Centre

Source: www.bing.com

Narrandera, with a population of approximately 3,750 persons, is the main service centre for the municipality and provides a range of services likely to be required to support a major infrastructure project such as the proposed solar farm. The Narrandera Township is located approximately 25km south-east of the subject site, or a 20-minute drive along Irrigation Way.

Narrandera's key services include:

- Freight and transport services (Days Transport and Logistics, Paul Duncan Transport, Patersons Transport, Plummer's Freight Service, Hayllar Transport)
- Auto mechanics (Narrandera Auto Repairs, N & T Automotive Repairs)
- Construction firms (Holcim Australia, Area Pre-Mix Concrete)
- Engineering services (Rombola Engineering)
- Trade Suppliers (Mitre 10, Home, Timber & Hardware)
- Fuel supplies (Mobil, Shell, Metro Petroleum)
- Commercial and private accommodation (see above Tables)
- Retail services - including Coles and IGA supermarkets
- Cafes and restaurants

- Entertainment (hotels, clubs, sports and recreational facilities)
- Banks and financial institutions (Bendigo Bank and Commonwealth Bank)
- Real estate agents (Narrandera Real Estate Services, Elders, Ray White Temora & Narrandera)
- Postal services (Australia Post)
- Employment agencies (Summit Employment and Training)
- Medical and emergency services including:
  - Narrandera District Hospital, with an emergency department
  - Narrandera Medical Centre
  - NSW Fire & Rescue Services
  - Narrandera Police Station
  - Narrandera State Emergency Services (SES) unit.

Griffith

Figure 2.3: Images of Griffith Town Centre

Source: www.bing.com

Griffith is a major regional centre located in the Murrumbidgee Irrigation District in the north-western part of the Riverina, with a resident population of approximately 19,000 people (Urban Centre).

Griffith is located approximately 65km north of the subject site or a 60-minute drive time via the Irrigation Way. Given the City's regional role, Griffith is likely to provide a range of key services to the project.

Griffith's key services include:

- Good range of commercial and private accommodations options
- Freight and transport services (Griffin Transport, Rodneys Transport Services, Pacific National)

- Construction firms (MIA Crane Service, Asset Building Systems, GNC Concreting, Area Pre-Mix Concrete)
- Auto mechanics (Gradys Automotive, Wyangan Automotive)
- Trade suppliers (Bunnings)
- Employment agencies (Sureway Employment & Training, Workfront People Solutions)
- Good range of retail services including supermarkets and shopping centres
- Most major banks and financial institutions
- Major medical and emergency facilities.

Wagga Wagga

Figure 2.4: Images of Wagga Wagga Town Centre

Source: www.bing.com

Wagga Wagga is a major regional centre and the largest inland city in NSW, with a resident population of approximately 48,000 people (Urban Centre).

Wagga Wagga is located approximately 120km south-east of the subject site or an 80-minute drive time via Irrigation Way/Sturt Highway. Wagga Wagga has a major regional airport which provides 120 flights between Wagga Wagga, Sydney and Melbourne each week and will be beneficial for metropolitan and interstate project workers. In view of the City's relatively close location to the subject site and important regional role, Wagga Wagga is likely to provide a wide range of key services to the project.

Wagga Wagga's key services include:

- Wagga Wagga Regional Airport, including car rental services (Avis, Budget, Hertz, Thrifty)
- Freight and transport services, including the Riverina Freight and Logistics Hub, and major operators such as Camdec Logistics and Toll Regional
- Large range of commercial and private accommodation options
- Wide range of construction and civil engineering firms, including firms specialising in major construction projects such as ICG and Ladex Construction Group

- Major trade suppliers (Bunnings Warehouse, Mitre 10)
- Major automotive mechanics
- Employment agencies (Workforce on Tap, Sureway Employment & Training, GTES, Workfront People Solutions)
- Major retail services including shopping centres and department stores
- Entertainment (hotels, clubs, sports and recreational facilities)
- All major banks and financial institutions
- All major medical and emergency facilities, including Wagga Wagga Base Hospital.

2.7 Conclusions

The key findings of this Regional Economic Profile are as follows:

1 The Study Area has a resident population of approximately 108,000 persons (2016), which is expected to reach approximately 120,000 persons by 2036, representing a modest average annual growth rate of 0.6% over the period. However, significant population decline is forecast for Narrandera Shire (-1,180 persons), while the population of Leeton Shire is projected to remain virtually static over the period 2016-36; therefore, major projects which stimulate new investment and jobs should be encouraged in terms of supporting the local economy.

2 Leeton and Narrandera LGAs are among the most disadvantaged municipalities in NSW based on ABS SEIFA data for 2016. This factor highlights the need for new investment, jobs and economic stimulus to support these local economies.

3 The Study Area currently has an unemployment rate of 5.9% which is well above the NSW unemployment rate of 4.8% (June 2018). Importantly, unemployment rates in Leeton Shire (6.2%) and Narrandera Shire (8.6%) are significantly above the State average. The Study Area currently has 3,420 unemployed persons. In this regard, construction of the Yanco Solar Farm project provides new short-term employment opportunities for the region's labour force participants, with a small amount of ongoing employment also supported once the facility is operational (refer to section 3.2).

4 The Study Area's occupational and business structures indicate a good base exists to service the needs of the solar farm project, including approximately 16,750 construction-related workers (including 2,000 workers in Leeton Shire) and approximately 2,000 construction and transport businesses (including 200 businesses in Leeton Shire).

5 The township of Leeton, given its close proximity to the Yanco site, will service many project needs such as accommodation, trade supplies and transport services, machinery hire and repairs, retail services etc. Narrandera will also provide a supporting project role, especially in terms of labour supply and accommodation. The major regional centres of Wagga Wagga and Griffith may also have a role in providing higher-order services to the project.

3 ECONOMIC IMPACT ASSESSMENT

3.1 Project Investment

The total construction cost for the Yanco Solar Farm project is estimated to be approximately $75 million, according to information provided by the proponent. The major investment cost is associated with the purchase of PV panels and associated equipment, although significant investment is also required for civil, electrical and grid connection works. Additional investment will be required with regard to project management, financing, insurance and other project costs.

3.2 Project Employment

Construction Phase

Project employment is assessed in terms of Direct jobs (i.e., site-related) and Indirect (or flow-on) jobs in the local and wider economies (i.e., jobs that are generated by the employment multiplier as funds circulate around the economy between various industry sectors).

Direct Construction Employment

Ib vogt Gmbh estimate 120 Full Time Equivalent (FTE) jobs will be supported during the construction of the Yanco Solar Farm, with the construction phase expected to be approximately 9-12 months.

Construction-related jobs are expected to be associated with a wide-range of on and off-site activities, including:

- Landscaping
- Fencing
- Security
- Catering
- Trenching / digging / land clearing
- Fixing (mainly of PV panels to racking framework)
- Piling
- Roads / laneways
- Electrical works (cabling and connections).

As highlighted in Chapter 2, the business structure of the Study Area indicates that an appropriate mix of these types of services is available both locally and regionally. It is

reasonable to expect, therefore, that local and regional businesses will be well-positioned to secure contracts during the construction phase of the project.

Indirect Construction Employment

In addition to direct employment, significant employment will be generated indirectly through the employment multiplier effect. By applying an industry-standard multiplier for the construction industry of 2.6 (based on ABS Input-Output tables), the project is estimated to generate an additional 190 FTE jobs over the construction period.

Indirect or flow-on jobs (which capture industry and consumption effects) include those supported locally and in the wider economy (including in other states), as the economic effects of the capital investment flow through the economy. Indirect employment creation within the region would include jobs supported through catering, accommodation, trade supplies, fuel supplies, transportation, food and drink etc.

Total Construction Employment

In summary, approximately 310 FTE jobs (120 FTE direct jobs and 190 FTE indirect jobs) are expected to be generated by the Yanco Solar Farm project during the 9-12 month construction phase.

The amount of local employment required at the peak of the project is estimated by the proponent to be approximately 70 FTE jobs. This represents less than 1% of the Study Area's 16,760 workers who are occupied in construction-related activities, or 4% of Leeton Shire's construction-related workforce of 1,990 workers. This data shows the project is unlikely present a constraint to labour supply at a local or regional level.

Operational Phase

Direct Operational Employment

Ib vogt Gmbh indicate that approximately 5 FTE jobs will be supported on an ongoing basis through the operation and maintenance of the Yanco Solar Farm, including employment supported locally and centrally at Head Office. Three ongoing local FTE jobs are likely to be supported associated with:

- Landscaping / ground care
- Panel cleaning
- Electrical / technical services
- Security services.

Indirect Operational Employment

A number of additional jobs will also be supported indirectly through the employment multiplier effect. By applying an industry-standard multiplier for the electricity industry of 3.9 (based on ABS Input-Output tables) to the direct operational and maintenance jobs, a further

15 permanent FTE jobs (rounded) would be generated in the wider State and national economies, although some of these jobs would be generated locally through existing supply chains.

For the purposes of this assessment it is assumed that 10% of indirect jobs are created in the Study Area. This equates to approximately 1.5 ongoing new FTE positions or a total of 4.5 FTE jobs when added to direct local employment (3 FTE jobs).

Operational-related employment is for the lifetime of the project (i.e., at least 30 years); therefore, although job creation might be considered relatively small, it represents new long-term employment opportunities at a local, regional and state-wide level.

Total Operational Employment

In summary, approximately 20 FTE jobs (5 direct FTE positions and 15 indirect FTE positions) are expected to be generated by the Yanco Solar Farm project through its ongoing operations, including 4.5 FTE positions created locally.

3.3 Cumulative Assessment

Over coming years, the Yanco Solar Farm project may need to compete for labour and resources with proposed infrastructure projects in the Study Area and broader region. These projects are focused on renewable energy facilities, as summarised below.

Leeton Solar Farm

The Leeton Solar Farm is a 29MW facility being developed by Photon Energy Australia on Fivebough Road, Leeton approximately 7km north-east of the Subject Site.

The project been approved by Council and initial construction work is underway. It is expected construction of the solar farm will be completed by mid-2019 and the facility will be fully operational by late 2019. If these timelines are achieved, no cumulative impacts would arise with the Yanco Solar Farm project.

http://www.photonenergy.com.au/current-projects/leeton

Avonlie Solar Farm

The Avonlie Solar Farm is a 200MW facility being developed by RES Australia on a 550ha site, located 20km south of Narrandera and approximately 30km south of the Subject Site. The $250 million project is currently seeing development approval through the SEARs process and, as such, the timing of construction is unclear, noting project financing will also need to be secured prior to the development commencing.

http://www.avonlie-solarfarm.com

Sandigo Solar Farm

The Sandigo Solar Farm is a 100MW facility being developed by ESCO Pacific on a 310ha site, located 28km south of Narrandera and approximately 35km south of the Subject Site. The $125 million project was approved by the NSW Minister for Planning and Environment in July 2018 and is expected to be constructed in the coming years.

http://www.sandigosolarfarm.com.au

Riverina Solar Farm

The Riverina Solar Farm is a 40MW facility being developed by Environmental Property Services (Aust) Pty Ltd at 248 Ross Road, Yoogali, approximately 39km north-west of the Subject Site and 6km south east of Griffith.

The project was approved by the Minister for Planning and Environment in 2016. The project has recently started construction and is expected to be completed prior to construction of the Yanco Solar Farm commencing.

http://www.riverinasolar.com/updates

Yarrabee Solar Farm

The Yarrabee Solar Farm is a 900MW project being developed by Reach Solar Energy located approximately 23 km southwest of Narrandera in Western NSW and approximately 26km south of the Subject Site. The $1 billion project is currently being assessed for approval by the NSW Minister for Planning and Environment and, as such, the timing of construction is unclear, noting project financing will also need to be secured prior to the development commencing.

http://www.yarrabeesolar.com

Other Projects

Discussions with Leeton Shire Council confirm no large-scale infrastructure projects are planned in the short-term (i.e. over the period when the Yanco Solar Farm is likely to be constructed).

Summary

It appears that approved and proposed infrastructure projects do not represent a major challenge for the Yanco Solar Farm project, either in terms of resource requirements or timing conflicts with other major regional projects.

It is also important to recognise the significant level of resources and labour available in the broader region (including Griffiths and Wagga Wagga), low occupancy rates observed for local commercial accommodation facilities, and the relatively high levels of existing local unemployment.

Based on the timing of identified infrastructure projects in the Study Area, the Yanco Solar Farm project is likely to add the pipeline of important construction projects to be delivered

over the coming few years and, in doing so, provide an ongoing stimulus to the construction sector and local and regional economies.

3.4 Industry and Business Participation Opportunities

In terms of cost efficiencies (lower transport, labour costs etc), many large construction projects located in regional areas are (where possible) serviced from within the same region.

As identified above, the Study Area comprises approximately 1,560 construction firms and many other businesses associated with activities likely to be required for the project, such as transport operators, trade suppliers, vehicle and machinery hire, auto mechanics etc.

Within the Study Area the major regional centres of Wagga Wagga and Griffith have firms of sufficient scale that may be able to compete for larger project contracts.

In order to maximise local business participation, a number of strategies might be considered, such as widespread advertising of contracts in local media and directly through the proponent's website etc. Specifically, Ib vogt Gmbh keep a Contractors Book which collects names and details of local suppliers identified through the community consultation process.

The Industry Capability Network (ICN) is another organisation that often plays an important business facilitation role for major infrastructure projects, such as the proposed solar farm. The ICN is an independent, non-profit organisation funded by the Federal Government to support business opportunities, including linking suppliers to project contracts at a local level through its ICN Gateway website where details of work packages are advertised.

3.5 Housing and Commercial Accommodation Sector Impacts

Information supplied by the proponent indicates that up to 50 non-local staff may need to be accommodated locally at the project's peak. These staff will include occupations such as general management, project management and supervising engineers. Contract lengths will vary. This situation highlights the need for a number of types of accommodation which would be expected to range from higher-end options for professional staff on longer contracts, to convenient low-cost options for those on short-term contracts.

As highlighted in Chapter 2, the Study Area has a capacity of around 1,450 rooms in commercial accommodation establishment (hotels, motels and apartments with 15 rooms or more). Assuming each non-local worker requires individual accommodation, only approximately 3% of total accommodation stock would be required at peak times to service the project.

However, realistically non-local workers are likely to have a preference for accommodation close to the site, which would include establishments located in Leeton Shire and neighbouring Narrandera Shire.

ABS Tourism Accommodation data (refer to Table 2.6) shows that across Narrandera and Leeton shires the commercial accommodation sector (15 rooms or more) consists of nine establishments with 245 rooms. The room occupancy rate across these establishments is

approximately 50%, indicating significant capacity exists to host project workers locally. Narrandera and Leeton also provide additional cabin accommodation across four caravan/holiday parks, all of which are located within easy access to the subject site, with B&Bs, hotels, private rentals (holiday homes) or lodging with family or friends providing other potential options. Additionally, some workers may share motel rooms/ cabins/ houses etc to reduce personal costs.

This data indicates that adequate capacity exists locally to accommodate the numbers of non-local workers expected at the peak of the solar farm project, even allowing for increased demand from other regional infrastructure projects and seasonal demands (holiday periods, harvesting etc). Importantly, the influx of these workers will support higher occupancy rates and revenues for local accommodation operators (especially in Narrandera and Leeton) over the construction period, particularly during off-peak periods.

3.6 Local Wage Spending Stimulus

Ib vogt Gmbh estimate that 40% of the 190 jobs in construction (50 jobs) are likely to be sourced from outside the Study Area, particularly specialist and management positions.

This level of employment would equate to $1.0 million in wages (2018 dollars) on the basis that each non-local worker is employed for 3 months (on average) across the 9-12 month project and earns the average construction wage of $80,000 pa including on-costs (source: ABS, *Average Weekly Earnings 6302.0*, May 2018).

A considerable portion of these wages would be spent in the Study Area where the workers will be based. An estimated $560,000 in wage spending (2018 dollars) would likely be directed to local and regional businesses and service providers during the construction period. This estimate is based on reference to the ABS *Household Expenditure Survey* which indicates that approximately 75% of post-tax wages are likely to be spent by workers in the regional economy in view of the wide range of goods and services available in the Study Area. This spending would include the following:

- Housing expenditure, including spending on accommodation at hotels, motels, caravan/holiday parks B&Bs, and private rental dwellings
- Retail expenditure, including spending on supermarket items, clothing, books, homewares etc
- Recreation spending associated with day trips and excursions, gaming (lottery, sports betting, etc), purchases in pubs and clubs (although noting that expenditures at restaurants is included in the retail category)
- Personal, medical and other services, such as GP fees and local prescriptions, fuel, vehicle maintenance and so on.

This level of personal spending would support approximately 2-3 jobs in the local services sector (based on 1 job allocated for every $200,000 of induced spending), supporting jobs associated with retail, accommodation, trade supplies, cafes and restaurants, health care etc. These jobs are included in the 'indirect employment' estimates outlined in Section 3.2 above.

3.7 Impact on Agricultural Land

The potential impact of the Yanco Solar Farm on agricultural activity is noted as follows:

- Approximately 205 ha of irrigated productive farming land will be unable to be used during the lifetime of the solar farm. The land is irrigated through a mix of historical onsite bores and water purchased though licence.
- This situation will affect land used principally for fruit production (oranges and grapes), with fruit production currently estimated at 3,500 tonnes pa.
- The value of production lost is estimated at up to $1.2 million per year (good year) or an average of $850,000 over a longer term period (expressed in $2018 dollars). All production from the site supplies the domestic market (i.e. no exports). In comparison, it is estimated the wholesale value of clean electricity supply into the national grid from the Yanco Solar Farm could total $10.0 million per year.
- The number of jobs supported by existing onsite activities is estimated at 3 FTE jobs, which include 2 FTE onsite jobs and the equivalent of 1 FTE job for casual pickers during the harvesting (e.g. oranges). Vine picking is automated and does not require casual labour. A small amount of additional employment is supported through local transportation services and processing (oranges and grapes). In an employment context, the small loss of jobs associated with the ceasing of agricultural activities at the Subject Site is likely of be matched by the creation of new jobs to support solar farm operations at the site (refer to section 3.2)
- The Murrumbidgee Irrigation Area where the solar farm is located contains approximately 1700,000ha of irrigated agricultural land supply. In this regional context, the temporary loss of irrigated agricultural land associated with the Yanco Solar Farm amounts to just 0.1% of all irrigated agricultural land.
- The property owner will be compensated by the proponent/operator for hosting the solar farm through purchase of 50% of the site upfront and annual lease payments for the remaining 50% of the site, with these lease payments increasing in line with CPI over the 30-year agreement period. It is understood that these purchase/lease payments would result in significantly higher income to the landowner compared with continuation of horticultural activities across the subject site.
- Some small-scale agricultural activity will continue on the site during the operational phase of the solar farm. The proponent is exploring the possibility of facilitating sheep grazing on the site, under the solar structure. Additionally, grapevines (and potentially other fruit trees) will be used to screen parts of the solar farm.
- The land can be rehabilitated to its original condition at the end of the project when all above ground infrastructure is removed, allowing for irrigated agricultural activities to recommence.

3.8 Returns to Council and the Community

Council Rates Revenue

Unlike other states (such as Victoria), NSW does not currently have in place a legislative framework to guide rates payable for the operation of solar farms, although the NSW Valuer General's Policy No. 12 (valuation of land used as a wind farm) does provide guidelines specifically in relation to the operation of wind farms.

Revenues payable to Leeton Shire Council associated with the operation of the Yanco Solar Farm, therefore, will be subject to negotiation between Council and the proponent.

By way of illustrating potential revenue benefits to Council from the solar farm, if the proposed facility was developed in Victoria, an estimated $150,000 would be generated in 'net' Council rates over in Year 1 of solar farm operations under Victorian State guidelines. This net calculation reflects additional rates revenue to council when existing rates from the land are excluded.

This level of potential income presents an important increase in the rates base for the municipality – especially in an environment of rate pegging and forecast population decline in Leeton Shire, which further erodes the amount of rates revenue collected in the future.

Unlike a new residential development (where Council incurs costs such as garbage collection; maintenance of parks, open space, roads, footpaths; provision of community services; etc), the cost to Council of providing resources for the solar farm site is likely to be relatively small and would be limited to road maintenance, garbage removal and the like. Therefore, financial contributions from the operation of the solar farm will represent a substantial net return to Council. Discussions with Leeton Council indicate the reduction of traffic in and around the Subject Site through the operation of the solar farm is likely to reduce the level of road maintenance of Council roads compared with existing agricultural uses (e.g. trucks, farming machinery).

Importantly, this net revenue can be re-invested in infrastructure and services or used to offset property rates, which will benefit the community more generally.

Developer Contributions

The proponent will engage with Leeton Shire Council to investigate a developer contribution payment if the project is approved. It would be preferable for any development contribution to fund the delivery of community infrastructures and programs.

3.9 Ongoing Economic Stimulus

Ib vogt Gmbh advise the solar farm will be located across a single property, with 50% of the site purchased outright and the remaining 50% of the site leased by the landowner to the proponent for at least 30 years.

These new income streams can be particularly important in supporting the financial sustainability of large rural farms.

As noted earlier, securing a guaranteed 30-year drought-proofed income stream (indexed to CPI) also allows farming families more flexibility in the long-term planning for their farming operations, including succession planning and providing ongoing income for future generations or new landowners.

Based on information provided by the proponent relating to estimated host landowner returns, potential Community Fund payment and the consultant's calculations of potential net increases in Council rates, the Study Area's economy would receive an estimated stimulus of $14.4 million over 30 years (adjusted for CPI @ 2.5% pa) through these effects.

3.10 National Grid Supply and Environmental Benefits

The Yanco Solar Farm has the potential to provide the following national grid supply and environmental benefits:

- Generate approximately 154,000 MWh of renewable electricity per year.
- Supply enough power each year to service approximately 36,500 households (assuming 4,215 kWh in average household consumption; Source: AMEC 2017 – Residential Electricity Price Trends (http://www.aemc.gov.au/markets-reviews-advice/2017-residential-electricity-price-trends).

  In a regional context, the Study Area currently contains approximately 41,270 dwellings (ABS Census 2016); therefore, the Yanco Solar Farm has the potential to provide the annual electricity needs of approximately 90% of the Study Area, highlighting the importance of the facility from a clean electrical generation perspective.
- Save around 51,000 tonnes of carbon dioxide (CO2) per year, assuming generation would otherwise use brown coal with a carbon factor of 0.33372 tonnes per MWh (DOEE 2017).
- A solar energy facility that displaces 51,000 tonnes of CO2 per annum is the equivalent of taking about 22,500 cars off the road each year, based on an average car in NSW travelling 14,000 km per year with CO2 emissions of 162 g/km (DIT, 2011).

3.11 Tourism Opportunities

The Yanco Solar Farm could provide small-scale opportunities to attract new visitors to the area, through viewing platforms, information boards etc, including the possibility of opportunities for linked trips to other proposed renewable facilities in the area (e.g. Leeton Solar Farm).

Potential visitor types include:

- Environmentalists
- Researchers
- Eco-tourists

- School and educational groups.

Benefits of attracting new visitors to the region include increased expenditures on accommodation, food and beverage, fuel, retail, entertainment etc, all of which will support businesses and employment, especially in nearby Yanco and Leeton.

3.12 Conclusions

6 The Yanco Solar Farm project will involve approximately $75 million in investment during the construction phase and will support 120 direct FTE positions and 190 indirect FTE positions over the construction period. Once operational, 5 direct FTE positions and 15 indirect FTE positions will be supported by the facility.

7 Allowing for the project to be carefully managed around the region's peak times for harvesting activity and the scheduling of other major infrastructure projects in the region, accessing adequate labour supply should not present an issue for the project, noting the peak local employment requirement for the project (70 jobs) represents less than 1% of workers occupied in construction-related activities in the Study Area or 4% of local workers occupied in these activities.

8 Potential concurrent infrastructure projects in the local area – including the Leeton Solar Farm project – are unlikely to impact on labour and resources required to support the Yanco Solar Farm project for the following reasons:

- Different construction time frames/ staging associated with approved projects (i.e. Leeton Solar Farm)
- Other solar farm projects may not be developed around the same time as the Yanco project, noting the need to secure planning approval, network connection, end customers and financing to move to project construction
- The large construction-base available in Leeton Shire (i.e. 2,000 construction-related workers and 200 construction-related businesses) which can support a pipeline of infrastructure projects, with further resources available across the Study Area.

9 The project will provide significant participation opportunities for businesses and workers located in the Study Area, having regard for the good match of skills and resources available. In this regard, the proponent and organisations such as the Industry Capability Network could be involved in ensuring maximum local inputs are secured.

10 The 'external' project labour requirement would be expected to generate an accommodation need for 50 project workers at the peak of the project and sufficient capacity exists to house these workers across a range of accommodation options, including motels, hotels, serviced apartments, caravan parks and private rentals. Given the relatively low occupancy rates observed for Leeton and Narrandera commercial accommodation establishments, the construction phase of the project will be beneficial for these businesses.

11 Construction workers would be expected to inject approximately $560,000 in additional spending into the local economy over the construction phase, supporting around 2-3 jobs in the service sector in Leeton and Narrandera LGAs.

12 Approximately 205ha of productive agricultural land (orange and grape growing) will be lost to accommodate the solar farm. This represents less than 0.1% of irrigated agricultural land in the Murrumbidgee Irrigation Area . Up to $1.2 million pa in horticultural production might be lost; however, the wholesale value of clean electricity production from the site is estimated at $10.0 million per year. The number of jobs lost through existing agricultural activities (including supply chain jobs) will be replaced by a similar number of new jobs associated with solar farm activities (including supply chain jobs).

13 Council rates revenue associated with the development and operation of the solar farm will be subject to negotiations between Leeton Shire Council and the proponent; however, net financial benefits to Council are likely to be significant over the 30-year project lifecycle.

14 The proposed developer contributions can be directed to new community infrastructures and programs.

15 Ongoing economic stimulus associated with returns to the host landowner, potential Community Fund payment, and the estimated uplift in Council rates, is approximately $14.3 million over 30 years (adjusted for CPI @ 2.5% pa).

16 The project has the capacity to supply sufficient clean energy to power approximately 36,500 homes and, in the process, to reduce C02 emissions by 51,000 tonnes per year.

17 Once operational, the Yanco Solar Farm could potentially support small-scale tourism and educational opportunities in the future.