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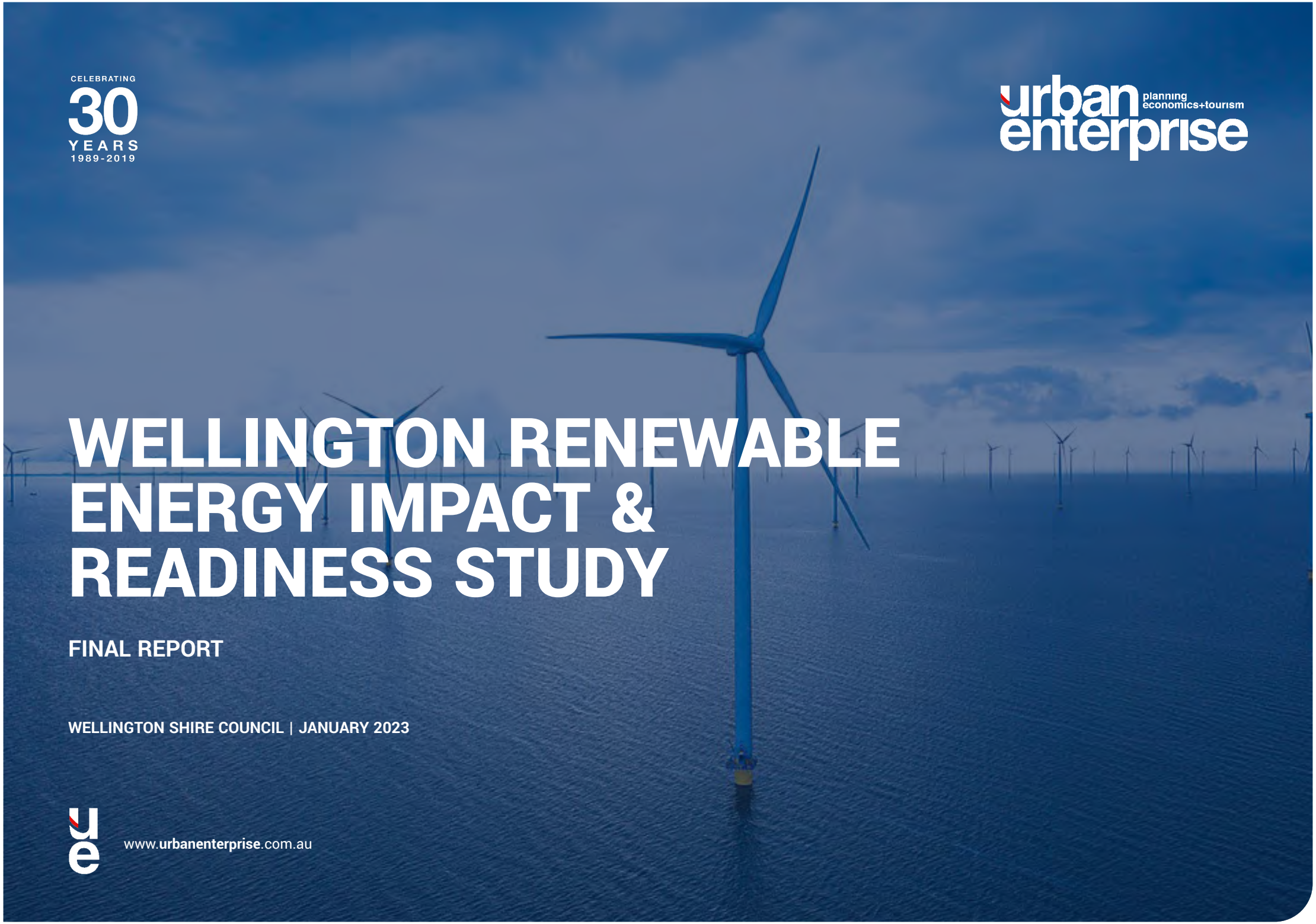

WELLINGTON RENEWABLE ENERGY IMPACT & READINESS STUDY

FINAL REPORT

WELLINGTON SHIRE COUNCIL | JANUARY 2023

www.urbanenterprise.com.au

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ACRONYMS

AEMO	Australian Energy Market Operator
APRETC	Asia Pacific Renewable Energy Training Centre
AWIS	Airport Weather Information Service
BBMT	Barry Beach Marine Terminal
CASA	Civil Aviation Safety Authority
C1Z	Commercial 1 Zone
C2Z	Commercial 2 Zone
DELWP	Department of Environment, Land, Water and Planning
FIFO	Fly In Fly Out
FO	Flood Overlay
GRZ	General Residential Zone
GW	Gigawatt
GWO	Global Wind Organisation
IN1Z	Industrial 1 Zone
IN3Z	Industrial 3 Zone
LDRZ	Low Density Residential Zone
LQ	Location Quotient
LSIO	Land Subject to Inundation Overlay
LVA	Latrobe Valley Authority
MTSC	Morwell Trade and Skills Centre
MW	Megawatt
NDC	Nationally Determined Contribution
O&M	Operation and Maintenance
OEI	Offshore Electricity Infrastructure
POW	Place of Work
REZ	Renewable Energy Zone
SGW	South Gippsland Water
SRW	Southern Rural Water
TZ	Township Zone
UNFCCC	United Nations Framework Convention on Climate Change
VESS	Victorian Employer Skills Survey
VRET	Victorian Renewable Energy Targets
VTIF	Victorian Transmission Infrastructure Framework

EXECUTIVE SUMMARY

Wellington Shire and the surrounding areas are the focus of a series of major renewable energy development proposals, including substantial offshore wind projects.

This Renewable Energy Impact and Readiness Study has been prepared to:

- Document the nature, scale and timing of renewable energy projects;
- Understand the potential implications for infrastructure, supply chain, business demand, land supply and labour demand;
- Identify economic and spatial issues, opportunities and constraints expected to result from the projects; and
- Recommend directions and actions that Council can implement to facilitate investment, maximise economic benefits, and minimise potential issues.

CONTEXT

The Australian Federal Government is committed to addressing climate change through a national target for greenhouse gas emissions reduction, ultimately leading to net zero emissions by 2050. In Victoria, the target year is 2045.

Gippsland is one of six Renewable Energy Zones (REZ) identified in Victoria, and the shallow water off the southern coast has been formally declared as the first zone for offshore wind generation. Wellington's Council Plan has a priority objective of becoming one of the leading renewable energy and sustainability hubs in Australia.

Gippsland has well established energy production activities and supply chains associated with non-renewable resources which are in varying stages of reduced output and decommissioning. Concurrently, renewable energy projects are increasing rapidly. In this context, the renewable projects proposed in and near Wellington Shire are nationally significant in that they are directly facilitating the energy transition needed to achieve state and Federal emissions targets.

A particular challenge is that Australia's supply-chain capability in renewable energy is nascent with very limited manufacturing capability in particular.

RENEWABLE ENERGY PROJECT PIPELINE

This report provides a snapshot in time (2022) of the major renewable energy projects proposed in Wellington and surrounds. At time of preparation, this included 20 major projects across large scale solar, onshore wind, offshore wind, battery storage, hydrogen and mixed energy proposals.

Collectively, the projects could generate in excess of 11GW of energy, mostly through offshore wind. A summary of proposed projects is shown in Figure S1 and indicative locations are shown in Figure S2.

FIGURE S1 RENEWABLE ENERGY PROJECTS SUMMARY

Source: Urban Enterprise, based on inputs from project proponents.


Bairnsdale
Stratford
Heyfield
Maffra
Drouin
Princes Hwy
Sale
Moe
Traralgon
Rosedale
Warragul
Princes Hwy
Longford
Morwell
Hyland Hwy
S Gippsland Hwy
Strezlecki Hwy
Churchill
Seaspray
Port of Hastings
Bass Hwy
Korumburra
Mirboo North
Leongatha
S Gippsland Hwy
Yarram
Woodside
Wonthaggi
Bass Hwy
S Gippsland Hwy
Alberton
Inverloch
Foster
Port Albert
Port Welshpool
Port Anthony
Wilsons Promontory
LEGEND
Proposed Energy Project Type
Onshore Wind Farm
Offshore Wind Farm
Solar Farm
Battery Storage
Hydrogen
Gippsland Multi-energy Proposal
Wind Farm (In Operation)
Other Infrastructure
Major Road
Other Road
Wellington Shire Boundary

PROJECT NEEDS

In order to facilitate the major investments proposed in renewable energy in the region, a range of local opportunities and impacts are expected to occur.

It is noted that many of the specific project requirements are difficult to define at this point. This is because key decisions regarding project licences and approvals, major infrastructure locations (especially transmission and ports) and the ultimate scale and location of proposals are yet to be finalised. In this context, the future impacts of the proposed projects in terms of timing and spatial implications are highly uncertain and should be regularly monitored by Council.

Despite these uncertainties, national and international examples demonstrate the major opportunities and impacts that can be expected to arise in Wellington and Gippsland that should be planned for well in advance.

Understanding the indicative scale, timing and location of impacts will help to appropriately plan for periods of high demand for labour, housing, accommodation and infrastructure.

The main themes of opportunity and impact considered in this report are:

- Supply-chain, jobs and skills;
- Housing and accommodation;
- Infrastructure; and
- Community readiness.

These needs and impacts apply to an area much greater than just Wellington, given that supply chains, employment and housing requirements are likely to extend across Gippsland, Victoria and Australia.

Business supply chain needs include:

- A local and regional supply-chain to support construction and operational activities, including general construction, labour and trades, parts manufacturing, transport and professional services.
- A diversity of business capabilities to support discrete project construction and operational needs.
- Indirect supply-chain needs to support construction and operations workforces, including retail, hospitality, accommodation, health and education.
- Adequate, suitable and well-located zoned industrial land to leverage investment generated by the renewable energy project pipeline, including:
  - Strategic business investment; and
  - Existing businesses seeking to re-locate or expand to service the projects.

Jobs and skills needs include:

- A significant scale of workers with different skill sets to be sourced from both within and outside Gippsland:
  - Approximately 7,300-7,400 construction jobs; and
  - Approximately 1,200-1,300 direct operational jobs per annum.
- Specific skills and qualifications tailored to renewable energy project types (especially offshore wind).
- Construction phase jobs across range of occupations, including trades and technicians (e.g. electricians, wind farm technicians, transmission), machine operators and drivers (construction equipment, boat operators) and many others.
- Operational phase jobs across management, technicians, transport, logistics and marine roles that would largely be required on or near construction locations, as well as professional services undertaken in major urban areas.

Housing and accommodation needs include:

- A diversity of housing and accommodation types (location, product and tenure) to support permanent and temporary workers.
- Sufficient and adequate rental housing and commercial accommodation to meet fluctuating demand during the construction phase.
- Preparing to accommodate direct employment of up to 800-1,000 additional workers in the region on an annual basis compared with current levels.
- Planning for an increase in permanent and rental housing close to ports (offshore wind) to accommodate workers during the operational phase.
- In the medium term, there is likely to be an increase in overall housing demand in many parts of Wellington, with particularly strong demand for rental housing.

Major infrastructure needs include:

- Transmission infrastructure to transport energy from generators to consumers.
- Transport infrastructure (especially roads, ports and airports) to facilitate construction, freight, cargo and crew movements.
- Civil infrastructure to support urban industrial and residential development, especially drainage, water and sewer services.

Community needs include:

- Regular engagement and clear communication to disseminate relevant and accurate information and projects, timeframes, impacts and opportunities.
- Social license and optimised economic outcomes that create lasting benefits for communities.

HOW CAN COUNCIL INFLUENCE READINESS?

Given the complexity and breadth of the global supply chain and government and other stakeholders involved in major energy projects, Wellington Shire Council's role in influencing readiness is naturally limited to its local government functions.

Opportunities to influence local 'readiness' are primarily available through advocacy to other governments and agencies; partnerships with regional and other local governments; planning actions at the local level (especially in terms of land supply); economic development actions and strategies; local policy; and community engagement.

Given the State and National significance and impact of the proposed projects, a co-ordinated approach across Gippsland and Victoria is both required and warranted.

Council's Readiness Levers

Promotion and advocacy	Local supply chain opportunities, skills and training priorities.
Coordination and partnerships	Assist government and other agencies regarding funding, infrastructure and approvals.
Strategic Planning and policy	Land use planning to ensure land availability and capacity to accommodate demand from industry, housing and services.
Engagement and communication	Business and community awareness and information.

ISSUES, OPPORTUNITIES & RECOMMENDED DIRECTIONS

An analysis of the local economy, land supply and property market conditions in Wellington and the capacity to accommodate both business as usual demands as well as the ability to service the expected impacts of renewable energy projects resulted in the identification of a range of issues and opportunities to consider.

In order to address these issues and opportunities, 11 directions are recommended to be pursued by Council to ensure local readiness, facilitate investment and maximise economic and community benefits with Wellington and the Gippsland region.

An action plan is set out in Section 10 of the report which is designed to guide implementation. Implemented will require partnerships with a range of stakeholders including local, state and federal Governments, education and training providers, businesses, and industry and community groups. Implementation will be subject to future resourcing, budgeting and prioritisation to be determined by Council.

The following tables summarise the issues and opportunities identified through analysis of each theme, and the subsequent recommended directions for Council.

1. Supply-Chain, Jobs and Skills

Issues and Opportunities

No.	Issue / opportunity
1.1	The existing business base in Wellington offers services relevant to renewable energy projects, however there is limited direct specialisation and a limited overall scale of businesses that can service major renewables projects.
1.2	The large scale manufacturing, construction and operational investment will require extensive global supplies. The national and regional critical mass of projects may attract specialised global businesses.
1.3	There is limited industrial land supply to service 'business as usual' demand, and a lack of strategic sites to accommodate new businesses.
1.4	There is a shortage of labour available to existing businesses in many sectors in Gippsland and Wellington, and general skills gaps for the renewable energy sector overall.
1.5	There is an existing workforce in the region with skills that can be adapted and transferred to renewable energy projects, especially those related to oil and gas and traditional energy and resource production and services.
1.6	Training providers are planning for renewable energy sector needs. However, a multi-faceted approach to skills development, training and employment attraction will be needed to service the scale of projects proposed in a short timeframe.
1.7	Existing core industries of agriculture, health, education, construction and tourism will require ongoing labour and business services in the local area – the potential for disruptions to 'existing' economic activity should be considered.

Directions

No.	Direction	Responds to issues
1	**Support and promote integration of local and regional business capabilities into the renewable energy construction and operational supply chain.**	1.1, 1.3, 1.7
2	**Attract, adapt and grow a skilled labour force to service direct and indirect employment needs.**	1.4, 1.5, 1.6, 1.7
3	**Position Wellington and the central Gippsland region to attract and accommodate national and global suppliers to the renewable energy sector.**	1.2, 1.3

2. Housing and Accommodation

Issues and Opportunities

No.	Issue / opportunity
2.1	There is an existing shortage of rental housing relative to demand, with availability critically low in southern Wellington.
2.2	There is an inadequate supply of smaller dwellings and housing suitable for older residents in Yarram.
2.3	Limited residential development has occurred in southern Wellington in recent years and infrastructure issues (especially drainage) have constrained opportunities.
2.4	At present, parts of the Shire would not be able to accommodate any additional demand for housing which arises as a result of renewable energy projects. This could lead to further rent price growth and likely displacement of residents.
2.5	Housing demand during the construction phase is expected to be weighted towards short-term and temporary stays in the region. The prospect of demand subsiding in some areas may limit investment interest from housing developers to establish permanent housing.
2.6	There is a lack of certainty regarding the likely timing and location of housing demand that could result from major energy projects.
2.7	A wide range of industry sectors rely on housing for labour and income. If there is an overall shortage of housing, other sectors could experience further labour constraints.
2.8	Although commercial accommodation and holiday homes could help to accommodate worker housing demand, the extent to which these may be available could be limited and negative tourism sector impacts could result.
2.9	The planning and development process usually requires several years, meaning that a rolling supply of suitable zoned land will be needed to enable a timely response to any residential development interest to service renewable energy project-led demand.

Directions

No.	Direction	Responds to issues
4	**Plan for an expected increase in demand for rental housing and short stay accommodation in Wellington, primarily in southern areas.**	2.1, 2.4, 2.6, 2.7, 2.8
5	**Identify and encourage housing types which accommodate seasonal and temporary workers, as well as older residents and smaller households.**	2.2, 2.5, 2.7, 2.8
6	**Ensure that residential land supply is adequate to respond to potential increases in housing needs and can be readily serviced.**	2.3, 2.9

3. Infrastructure

Issues and Opportunities

No.	Issue / opportunity
3.1	Certainty regarding transmission alignments is urgent and important for proponents and the community, however key elements of the proposed network are yet to be resolved and the regulatory environment is complex.
3.2	The ultimate transmission network should be consolidated wherever possible to maximise efficiencies and minimise visual and environmental impacts.
3.3	Port infrastructure and related land will be needed to support offshore wind and hydrogen opportunities. Port of Corner Inlet is well placed to perform an O&M role and potentially a construction role which would benefit both projects and the Gippsland economy.
3.4	Preparations for upgrades to the arterial and local road networks will be needed to ensure readiness for construction phases of project. This will require State, regional and local involvement and could create legacy benefits for communities in areas which currently have sub-standard road networks.
3.5	Council assets in southern Wellington (such as Yarram aerodrome) could play a role in supporting transport access to offshore projects.
3.6	The urban infrastructure network in southern Wellington is highly constrained which could limit the ability of towns in the area to accommodate urban growth in response to projects.
3.7	Yarram has the potential to accommodate some residential and industrial growth as part of its existing and potentially greater service centre role, however drainage issues must first be resolved through a co-ordinated approach.

Directions

No.	Direction	Responds to issues
7	**Advocate for urgent and simplified resolution of a consolidated transmission network.**	3.1, 3.2
8	**Ensure sea and road transport readiness through early investigation and strategic planning.**	3.3, 3.4, 3.5
9	**Address civil infrastructure barriers to urban development in Yarram.**	3.6, 3.7

4. Community Readiness

Issues and Opportunities

No.	Issue / opportunity
4.1	There is currently no single, trusted source of information for community members to access relevant and current information.
4.2	The rate of change and announcements are fast moving, and involve a complex network of government and industry stakeholders.
4.3	There is a clear opportunity for local economic and legacy benefits of projects, however suitable policy and commitments to local benefit will need to be embedded in planning and approvals processes.
4.4	Wellington Shire does not have the resources to adequately and efficiently facilitate the early phases of renewable energy projects, a challenge which is expected to deepen in coming years.

Directions

No.	Direction	Responds to issues
10	**Aim to be a trusted source of information on renewable energy projects for the community.**	4.1, 4.2
11	**Advocate for and facilitate tangible community benefits that deliver a positive and lasting legacy.**	4.3, 4.4

1. INTRODUCTION

1.1. BACKGROUND

Renewable energy targets, incentives and investments are driving major shifts in the way energy is produced, stored and transported in Australia. New sources of energy and forms of production are planned to complement or replace traditional equivalents.

Consistent with global trends, Wellington Shire and the surrounding areas are currently the focus of a range of major renewal energy proposals, including a substantial number and scale of offshore wind projects.

Wellington Shire Council engaged Urban Enterprise to prepare a Renewable Energy Impact and Readiness Study. The Study provides an economic evidence base and action plan to ensure that all potential local impacts and benefits of proposed projects are clearly understood and supported through planning and economic development actions.

1.2. PURPOSE AND OBJECTIVES

The main driver of the project is a need to understand, and subsequently strategically respond to, the range of projects proposed. In particular, Council needs to understand the economic and spatial implications and opportunities for Wellington to enable action to be taken at the local government level.

Concurrently, the Shire is experiencing several other issues impacting the economy and property markets which may interact with the impacts of renewable energy projects, such as limited industrial land availability and housing shortages.

Of particular importance is the need to understand and plan for issues and spatial implications that could arise, which may extend to the availability and suitability of land supply, infrastructure optimisation, and supply chain requirements. Having an appreciation of the issues, and understanding of the likely timeframes for the construction and operation of projects will help to identify periods of high demand.

The primary objectives of the study are as follows:

- Understand and document the nature, scale, timing and impacts of renewable projects;
- Understand the implications of projects in terms of infrastructure, supply chain, business demand, land supply and labour demand;
- Provide an up-to-date evidence base and analysis of industrial and residential land demand and supply in areas that are expected to be most directly impacted by the projects;
- Identify economic and spatial opportunities and constraints expected to result from the projects; and
- Identify actions and levers Council can apply to facilitate investment, maximise economic benefits to the region, and minimise potential issues that may arise.

1.3. SUBJECT AREAS

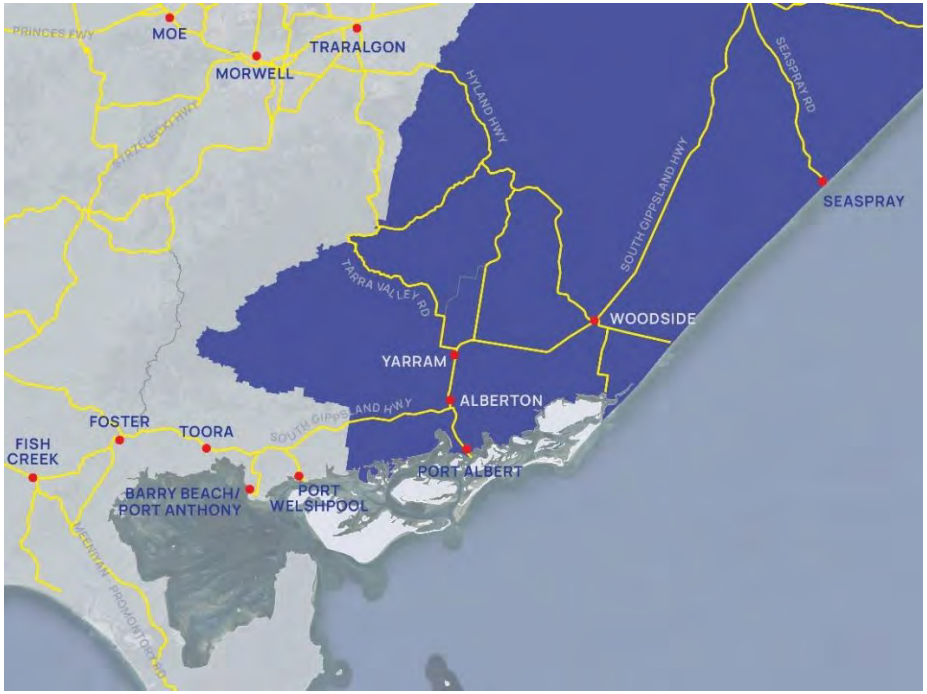
The focus for this study is Wellington Shire, however the spatial distribution of renewable energy projects and the economic and supply-chain relationships across Gippsland means that the suite of projects will impact the whole region and beyond. As a result, several Gippsland Local Government Areas are referenced throughout this study, including Latrobe City, South Gippsland and Bass Coast.

F1. REGIONAL SUBJECT AREA

Source: Urban Enterprise, 2022

Given that larger-scale offshore wind projects are proposed directly off the south coast of Wellington Shire, the study specifically considers the role of towns in southern Wellington, including Yarram, Alberton and Port Albert (see Figure 2).

F2. SOUTHERN WELLINGTON



Source: Urban Enterprise, 2022.

1.4. APPROACH AND REPORT STRUCTURE

Part A of this report includes the following sections and analyses:

- Policy Context – this section identifies the main drivers underpinning the transition to renewable energy, including Federal and State Policy.
- State of the Renewable energy industry – this section summarises the renewable energy sector in Australia and implications for Wellington.
- Project Profile – this section includes maps and summaries of the renewable projects pipeline in Wellington Shire and surrounds, including project type, location, capacity, indicative timing and expected job creation.
- Readiness Considerations – this section discusses the needs of the projects across the development lifecycle, focusing on supply-chain, jobs and skills, housing, infrastructure and community information.

Part B of this report includes the following:

- Readiness Capability – this section assesses current economic, planning and policy conditions in Wellington Shire to determine how well existing conditions are aligned to the requirements of the renewable sector and to subsequently identify opportunities and gaps to address.
- Directions and Actions – based on the readiness opportunities and gaps, overarching directions are recommended, followed by specific actions that Council could undertake to prepare for and optimise renewable energy projects in the area.

1.5. HOW CAN COUNCIL INFLUENCE READINESS?

Council's main opportunities to influence local 'readiness' relate to:

- Planning for the skills needed to provide labour for the construction and operation of projects;
- Ensuring there is adequate land supply to accommodate businesses and housing needed to support renewable projects; and
- Identifying and facilitating the delivery of key infrastructure required to directly and indirectly support projects.

Council can primarily influence readiness using the levers outlined below. In most instances, local governments cannot directly influence the way in which renewable energy projects are delivered and the benefits which accrue. Indirect influence and readiness can be achieved, however, through the application of a multi-faceted approach involving advocacy, partnership, planning, policy and engagement.

	Promotion and advocacy	Local supply chain opportunities, skills and training priorities.
	Coordination	Assist government and other agencies regarding funding, infrastructure and approvals.
	Strategic Planning	Land use planning to ensure adequate availability and capacity to accommodate demand from industry, housing and services.
	Engagement and communication	Business and community awareness and information.

1.6. WHAT IS THERE TO GAIN?

The economic opportunities and benefits associated with renewable energy investment are substantial at both the local and regional level. This is demonstrated by a range of case studies and literature referenced in this report and those supporting broader Federal and State energy policy initiatives.

Equally, the opportunity cost of not adequately planning for and facilitating investment in a way which optimises local outcomes and creates lasting benefits could be significant, while potential adverse economic and community impacts present other challenges (including potential disruptions to existing industries).

For the Wellington Shire community and economy, the main opportunities include:

- Investment attraction – facilitating a critical mass and diversity of renewable energy projects that are proposed by a range of international proponents can create business opportunities within the local and regional supply-chain, especially manufacturing, construction, transport, logistics, installation and maintenance.
- Regional economic transition – investment and employment in high capacity renewable energy generation in Wellington will help to mitigate the progressive reduction in economic activity across Gippsland associated with non-renewable energies and enable the retention and attraction of specialised skilled labour and firms which will be of high value to the next generation of the national economy.
- Flow-on benefits from new economic activity and local population – the scale of proposed investment presents a range of flow-on opportunities including the potential to increase labour force participation, increase average incomes, community legacy benefits, infrastructure improvements, resolution of existing development constraints and housing issues, as well as improved business conditions for sectors such as retail, hospitality and accommodation.

PART A. CONTEXT

In Part A:

- Policy context and the main drivers for the national energy transition to renewables.
- Current state of play for the renewable energy sector in Australia, including energy generation, consumption and supply-chain maturity.
- A summary of renewable energy projects proposed in Gippsland, including type, indicative location, scale and timing.
- A discussion of general project needs and readiness considerations for Wellington Shire across:
  - Supply-chain;
  - Jobs and skills;
  - Housing and accommodation;
  - Infrastructure; and
  - Community.

2. POLICY CONTEXT

2.1. INTRODUCTION

This section summarises the policy context relevant to the study, including the following federal, state and local priorities in regard to the renewable energy industry:

- The policy drivers that underpin energy transition;
- Victoria's Renewable Energy Zones; and
- The roadmap to "net zero" by 2050.

2.2. KEY FINDINGS

- **Federal and State policy supports an urgent need to transition to renewable energy, including more investment in generation and commitments to more ambitious targets for emission reductions.**
- **The Federal Government has declared the Bass Strait waters off the Gippsland coast as Australia's first offshore wind zone, providing greater certainty for offshore wind farm development.**
- **Gippsland is one of six Renewable Energy Zones (REZ) in Victoria. The State Government acknowledges the need for offshore wind projects to generate the majority of Victoria's future energy needs. There is a clear focus for departments and agencies to facilitate the delivery of offshore wind projects.**
- **Gippsland enjoys a consistently strong wind regime and proximity to existing transmission infrastructure in the Latrobe Valley.**
- **Strategic objectives at the local level support continued investment in the renewables sector to support transition from old to new energy, and local optimise local economic benefits.**

2.3. FEDERAL POLICY

The Federal Government is committed to addressing climate change through ambitious national targets on greenhouse gas emissions reduction, including legislating a 43% reduction on 2005 levels by 2030, and net zero emissions by 2050.

An updated Nationally Determined Contribution (NDC) has been lodged with the United Nations Framework Convention on Climate Change (UNFCCC) secretariat. This is part of Australia's obligations under the Paris Agreement. The updated NDC:

- Commits Australia to a more ambitious 2030 target;
- Reaffirms Australia's commitment to net zero emissions by 2050;
- Commits the government to providing an annual statement to parliament on progress towards these targets; and
- Restores Australia's Climate Change Authority as a source of independent policy advice.

Federal Government policies will build on existing emissions reduction programs, provide industry with a comprehensive and consistent policy framework and encourage households, businesses and communities to embrace opportunities to transition to net zero.

In December 2022, the Federal Government declared the Bass Strait waters off the Gippsland coast as the first offshore wind zone, providing greater certainty for offshore wind farm development. The Offshore Electricity Infrastructure (OEI) Act establishes a regulatory framework which allows licence holders to undertake offshore electricity infrastructure activities in Commonwealth offshore areas. Licences that may be granted under the OEI Act relate to feasibility, commercial, research and demonstration, and transmission and infrastructure activities.

2.4. STATE POLICY

Victoria's Climate Change Act (2017) aims to achieve net zero greenhouse gas emissions and a climate-resilient community and economy in order to mitigate and adapt to the impacts of climate change. The Victorian Government introduced the Victorian Renewable Energy Targets (VRET) to provide greater policy certainty and investor confidence for the renewable energy sector in Victoria.

GREENHOUSE GAS EMISSION REDUCTION TARGETS

Victoria's Climate Change Act 2017 establishes a long-term target of net-zero greenhouse gas emissions by 2050, with five-yearly interim emissions reduction targets. The Victorian Government's foundational target was for emissions in 2020 to be 15–20% below 2005 levels along with:

- 40% by 2025;
- 50% by 2030; and
- Net zero emissions by 2050.

The latest emissions data shows that this target has been exceeded. In 2019, emissions fell to 24.8% below 2005 levels.

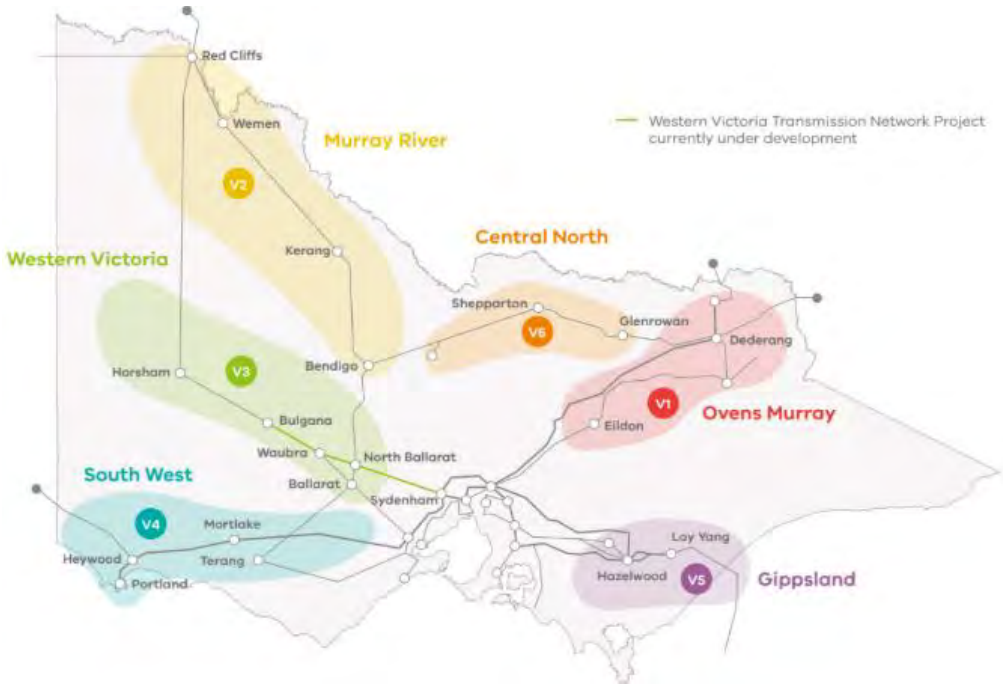
In October 2022, the Victorian State Government announced more ambitious reduction commitments than those outlined in the Act. These include:

- 75%-80% below 2005 levels by 2035; and
- Net zero by 2045.

VICTORIAN RENEWABLE ENERGY ZONES (REZ)

In order to meet future VRET targets, the State Government has identified six Victorian Renewable Energy Zones (REZs) which are shown in Figure 3. These zones are recognised as having the highest potential to provide clean and reliable energy through solar, wind and hydro resource. The Gippsland region is a REZ.

F3. VICTORIA'S RENEWABLE ENERGY ZONES



Source: Victorian Renewable Energy Zones Development Plan, DELWP 2021

The *Victorian Renewable Energy Zones Development Plan Directions Paper* (2021), states that the development of REZs will allow new renewable energy projects to be connected in a timely manner, thereby reducing risk premiums for investors, contributing to energy affordability and reliability outcomes for consumers, and helping to achieve Victoria's climate change goals.

The State Government has also established VicGrid; a government agency dedicated to actively plan and develop Victoria's REZs, including:

- Planning and investing in REZ network infrastructure;
- Identifying and applying appropriate procurement, cost recovery and co-funding approaches;
- Facilitating renewable energy generation projects in Victorian REZs; and
- Working with communities to plan REZs and ensure local benefits from REZ development.

ROADMAP TO NET ZERO BY 2050

Victoria's Climate Change Strategy (2021) provides a roadmap to net-zero emissions by 2050. To achieve the emissions reduction targets, the State Government has outlined emissions reduction objectives for each sector. For the energy sector this includes accelerating Victoria's transition to clean and efficient energy, with 50% of Victoria's electricity to be generated from renewable sources by 2030.

The transition away from brown coal-fired power is underway, with the closure of Anglesea Power Station in 2015 and Hazelwood Power Station in 2017. Two out of the three coal fired power stations that remain operational in Gippsland are planned to close in the coming decades: Yallourn is proposed to close in 2028 and Loy Yang A is proposed to close in 2035. The decision to close Loy Yang A 10 years earlier than planned was announced by Energy Australia in 2022. Alinta Energy owns Loy Yang B, which is officially proposed to close in 2047, but this could also be brought forward.

The VRET targets and Victoria's Climate Change Strategy objectives are drivers of investment into the renewable energy sector. This includes investment in energy production and transmission to ensure electricity is stable, reliable and cost-effective.

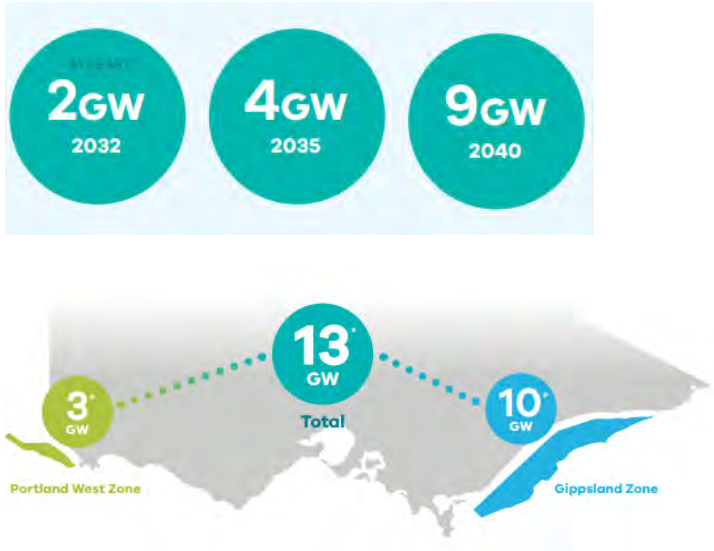
OFFSHORE WIND POLICY DIRECTION PAPER

In 2022, the Victorian Government announced Australia's first offshore wind energy targets of 2GW of offshore wind energy production by 2032. The *Victorian Offshore Wind Policy Directions Paper* (March 2022) details how the development of an offshore wind industry will assist the State in achieving its emissions reduction targets.

The Paper identifies that winds off Victoria's coastline are among the best not only in Australia, but on a global scale, with the potential for Gippsland and Portland regions to support 13GW of capacity using fixed platforms in shallow waters. The Paper articulates an objective for Victoria to be the leader in the Australian offshore wind market, an industry that is developing rapidly internationally, and for which competition for investment is strong.

Victoria's offshore wind targets are shown in Figure 4.

F4. OFFSHORE WIND TARGETS, VICTORIA



Source: Victorian Offshore Wind Policy Directions Paper, March 2022

The stated government aim is to achieve first power from offshore wind by 2028, to provide sufficient time for Government and proponents to prepare for, and complete necessary development activities, such as:

- Planning and approvals;
- Procurement, supply chain and workforce development;
- Stakeholder impacts; and
- Enabling infrastructure such as ports and transmission.

In November 2021, the State Government committed approximately $40 million via the *Energy Innovation Fund* for initial development of three offshore wind projects, all of which are located off the coast of Wellington Shire and Bass Coast Shire:

- Star of the South – $19.5m to support pre-construction development activities;
- Macquarie Group (Great Southern) – $16.1m to facilitate prefeasibility; and
- Flotation Energy (Seadragon) – $23m for scoping studies and surveys.

OFFSHORE WIND: IMPLEMENTATION STATEMENT 1

In October 2022, the Victorian Government released Offshore Wind Implementation Statement 1, outlining the government's plans for the establishment of an offshore wind industry.

This is the first in a series of implementation statements that will be released and are designed to provide certainty and facilitate ongoing collaboration. Offshore Wind Implementation Statement 1 includes announcements and updates on the following:

- Transmission – VicGrid will lead a coordinated approach to transmission to ensure projects have access to the grid.
- Ports – The Port of Hastings is likely to be the preferred port to support offshore wind construction, subject to necessary community and industry consultation, and environment and planning approvals.
- Offshore Wind Energy Victoria –lead the establishment of the offshore wind sector.
- Local industry – seeking to boost the capability of local industry.
- Legislation and regulation – collaborate with the Commonwealth to deliver streamlined regulation and legislation.

The Victorian Government plans to release Implementation Statement 2 in early 2023, which will provide further information on:

- Offshore wind procurement and support mechanism;
- Local content requirements;
- Updates on policy and regulatory developments; and
- Updates on transmission solutions and ports.

2.5. LOCAL & REGIONAL POLICY

There is policy support at the local and regional level for renewable energy development. Wellington's Council Plan has a priority objective of becoming one of the leading renewable energy and sustainability hubs in Australia. Transitioning the local economy to encourage job growth and take advantage of growth industries is a key focus at the local level.

The local planning scheme outlines several strategies related to economic development that indirectly provide strategic support for renewable energy development in the municipality, including:

- Support the establishment of new industries and businesses, and the expansion of existing operations in appropriate locations;
- Support new and innovative rural and other industries to help achieve a diverse regional economy;
- Support business enterprises which utilise the Shire's natural resources in a sustainable manner.

The Council Plan (2021-25) is centred around five priority areas:

- Climate change
- Economy in transition
- Partnering with Gunaikurnai
- Sustainable population growth and housing choice

- Better access to key services

The Plan identifies Climate Change as the number one priority, with a renewed focus on attracting renewable energy investment, and facilitating growth in major towns. Equity and access to services are also highlighted in a range of initiatives within the Plan. Relevant priorities across climate change and economy in transition are summarised in Table 1.

T1. PRIORITIES, WELLINGTON COUNCIL PLAN (2021-25)

Climate Change	Economy in Transition
• Become one of the leading best practice renewable energy and sustainability hubs in Australia. • Use our region's competitive advantage in access to energy transmission capacity and energy related workforce to drive uptake of large-scale renewable energy. • Investigate community-owned decentralised energy (renewable energy capture and storage and bioenergy) and advocate for take up of household solar PV.	• Actively facilitate and advocate for growth industries that will create new jobs, diversify our economy to make it more resilient and assist with smooth transitions between industries. This includes: • Advocating for expediting the Gippsland renewable energy zone transmission infrastructure • Proactively developing a Renewable Energy Readiness strategy for the southern part of Wellington Shire to take full advantage of the major proposed solar/wind projects, including the provision of battery storage

Source: Wellington Shire Council Plan, 2021-25

At the regional level, strong support also exists for development of the renewable energy industry, with a focus on pursuing opportunities emerging from energy transition:

> *"The international and domestic focus on renewable energy and climate change mitigation is driving opportunities to activate clean energy and carbon capture and storage potential, and positions the region to supplement existing strengths in energy production "*[1]

[1] Gippsland Regional Economic Development Strategy, 2022

3. STATE OF THE RENEWABLE ENERGY INDUSTRY

3.1. INTRODUCTION

This section summarises the current state of play for the renewable energy sector in Australia, including energy generation, consumption and supply-chain maturity.

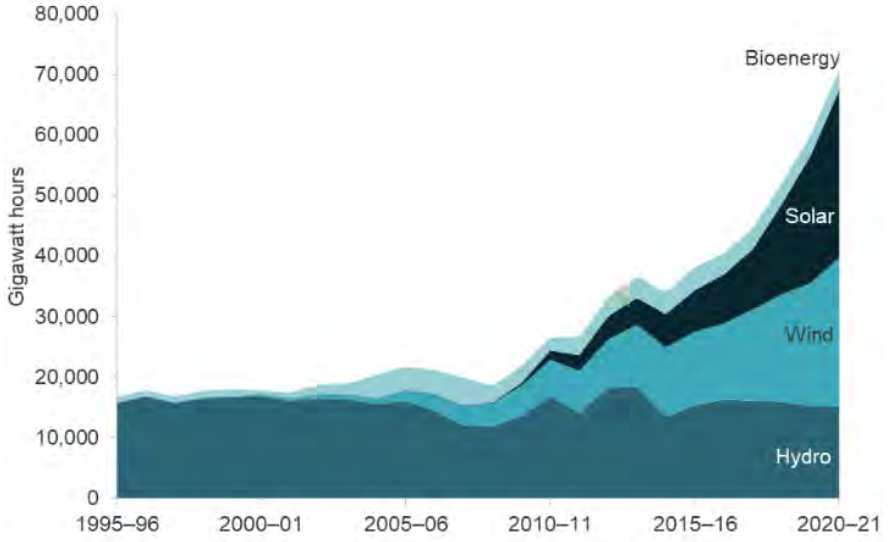
3.2. KEY FINDINGS

- **Energy generated from renewable sources is increasing in Australia, but still accounts for less than one-third of all generation.**
- **Recent growth in renewable energy investment and generation is mostly attributed to solar and onshore wind.**
- **Large-scale solar and offshore wind are recognised as the key growth areas to support future energy needs.**
- **Australia's supply-chain capability in renewables is relatively immature, with no manufacturing capabilities in large-scale solar or wind turbines (on or offshore).**
- **Policy support and increased project investment may create the critical mass required to attract global supply-chain investment interest.**
- **Australia has existing capabilities further up and down the renewable energy sector supply-chain in:**
  - **Professional and technical services to support planning and pre-development;**
  - **Trades, technicians and machinery operators to support civil works, assembly and installation;**
  - **Parts and equipment manufacturing; and**
  - **Transport and logistics to support operations and maintenance.**

3.3. ENERGY GENERATION & CONSUMPTION

In 2021, 29% of Australia's total electricity generation was produced by renewable energy sources, including solar (12%), wind (10%) and hydro (6%). The share of renewables in total electricity generation in 2021 was the highest on record.

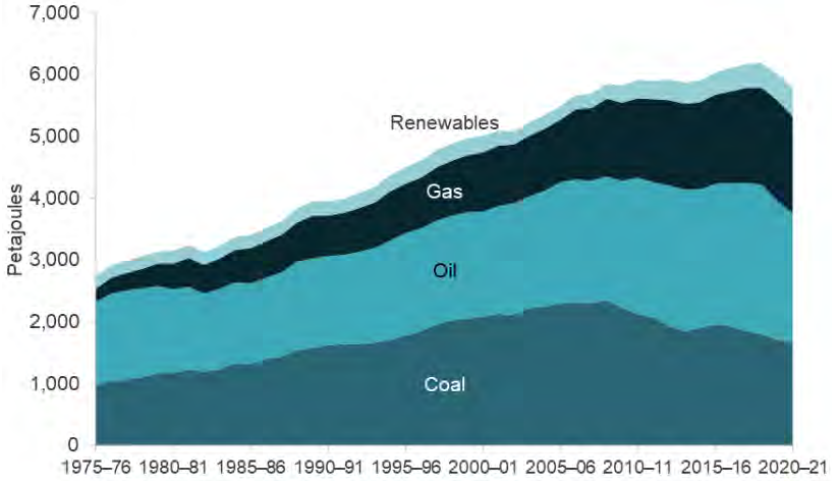
F5. RENEWABLE ENERGY GENERATION, AUSTRALIA, 2021



Source: Department of Climate Change, Energy, the Environment and Water, 2021

Despite strong growth, renewable energy accounts for a very small proportion of national energy consumption. Fossil fuels (coal, oil and natural gas) accounted for 92% of Australia's primary energy consumption mix in 2021.

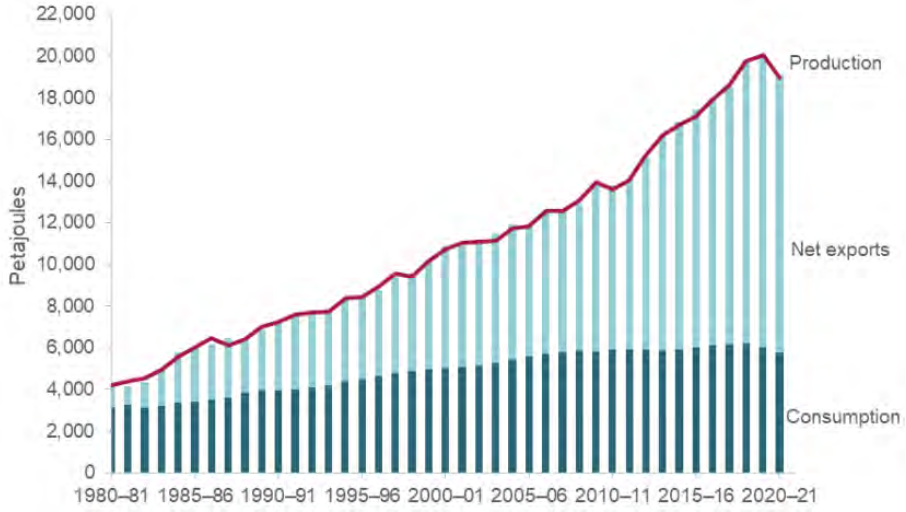
F6. ENERGY CONSUMPTION BY FUEL, AUSTRALIA, 2021



Source: Department of Climate Change, Energy, the Environment and Water, 2021

Australia is a substantial net exporter of energy, including coal and natural gas, with net exports equating to over two-thirds of production. So whilst the share of renewable energy generation is increasing relative to national demand, Australia remains a major net exporter of fossil fuel powered energy.

F7. ENERGY CONSUMED & EXPORTED, AUSTRALIA, 2021



Source: Department of Climate Change, Energy, the Environment and Water, 2021

3.4. RENEWABLE ENERGY INVESTMENT

In the past five years, the amount of Australia's electricity that comes from renewables has almost doubled. The growth of renewable energy in Australia in 2021 was led by[2]:

- Small-scale solar - added 3.3 GW of new capacity during the year, representing the fifth year in a row that it has set a record for new installed capacity.
- Large-scale solar - added 2,955 MW of new capacity across 27 projects, which was almost 1 GW more than 2020.
- Onshore wind - added 1,746 MW of new capacity; the highest ever recorded annually.

68 large-scale projects were under construction or financially committed at the end of 2021, representing more than 9 GW of new capacity. The 68 projects consisted of 42 solar farms, 19 wind farms, 3 bioenergy projects, 2 hydropower projects and 2 hybrid wind and solar projects.

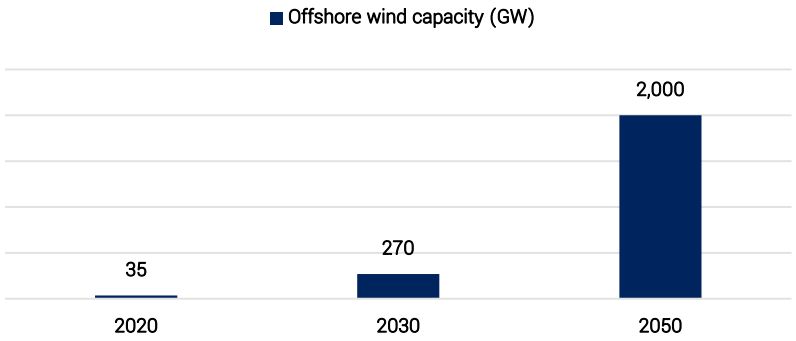
The battery storage sector is also gaining momentum, with the commissioning of Australia's largest battery (the 300 MW/450 MWh Victorian Big Battery).[3]

Small and large scale solar (including rooftop solar) and onshore wind farms account for the majority of investment projects in Australia's renewable energy sector. Battery and hydrogen projects are gaining momentum, but remain relatively immature by comparison.

OFFSHORE WIND

Offshore wind is widely recognised as a proven and reliable source of renewable energy and will continue to grow globally in the coming years. Internationally, the current 35GW of installed offshore wind capacity is expected to increase to over 100GW by 2025, and more than 600 GW by 2050[4] .The Global Wind Energy Council calculates at least 2,000 GW of offshore wind capacity is needed by 2050 to reach global net zero ambitions.

F8. GLOBAL OFFSHORE WIND CAPACITY TO ACHIEVE NET ZERO



Source: Energising Australia with Offshore Wind, Oceanex Energy, 2022

Europe is leading the offshore wind market, with the UK and Germany being the largest markets. The US also has strong offshore wind targets and is on track to deploy 30GW by 2030. In Asia, China, Taiwan, Japan, South Korea and Vietnam are all also commencing their own deployment programs.

In the UK, development of the offshore wind sector has been a major success story over the past 20 years. The sector has expanded over 20 years and now accommodates over 2,000 turbines along the UK continental shelf.

[2] Clean Energy Australia Report, Clean Energy Council, 2022

[3] Victoria's Big Battery, DEWLP, 2022

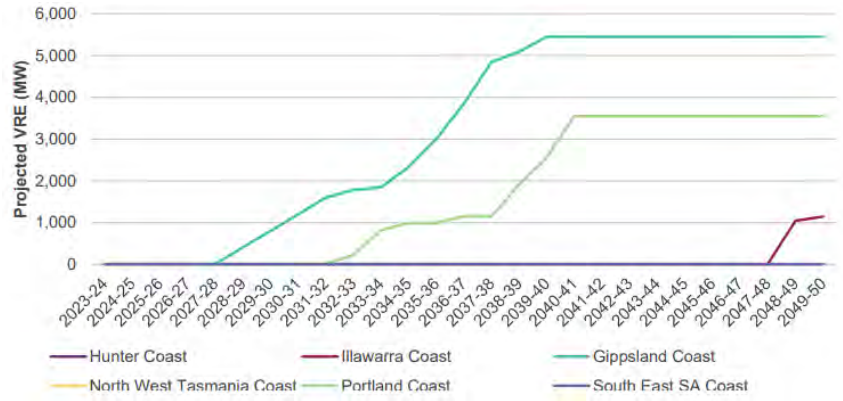
[4] Energising Australia with Offshore Wind, Oceanex Energy, 2022

Rapidly expanding government commitments and technological progress are contributing to the positive outlook in established markets and countries new to offshore wind, including Australia. All regions globally are expected to contribute to growth in offshore wind. Given that areas in Asia, UK and Europe have existing capabilities in offshore wind, global supply-chains have established to support the construction and operation of projects in these regions.

Although Australia currently has no offshore wind generation, Bass Strait has been announced as Australia's first priority zone for offshore wind generation. The cost of producing offshore wind power is expected to reach parity with onshore wind in the 2040s and there is policy support at the Federal and State levels for rapid growth in the offshore wind sector – these factors are expected to drive a sustained period of major investment in offshore wind in Australia.

As shown in Figure 9, Gippsland is expected to lead the national growth in offshore wind generation. Modelling prepared by the Australian Energy Market Operator (AEMO) includes a scenario with offshore wind generation in Gippsland commencing in 2027 and increasing to 5.5GW by 2038. Other Australian offshore wind regions are expected to lag substantially, including Portland (3.5GW by 2040) and Illawarra commencing in late 2040s.

F9. OFFSHORE WIND DEVELOPMENT SCENARIOS



Source: AEMO, 2022. REZ Development Overview, p.19. Note: this is an alternative scenario and not the most likely 'Step Change' scenario.

HYDROGEN

The emergence of hydrogen as an alternative energy source is gathering momentum globally as countries seek ways to accelerate decarbonisation.

Hydrogen is extracted from water, coal, gas or biomass, with 'renewable hydrogen' creating by applying renewable energy to water, a carbon free process. Hydrogen can be used to power vehicles and generate heat and electricity.

Australia's National Hydrogen Strategy identifies that increasing global demand for hydrogen and falling costs is creating a major opportunity for its production, and that Australia is well placed to export hydrogen by leveraging our natural resources, experience building large scale energy industries and established trading relationships.

The Victorian Renewable Hydrogen Industry Development Plan identifies that the state's world class offshore-wind resources are ideally located close to potential renewable hydrogen export hubs, including in Gippsland at Port of Hastings and Port Albert which are each identified as potential hydrogen export locations. (Figure 10).

F10. POTENTIAL HYDROGEN EXPORT LOCATIONS

Source: Victorian Renewable Hydrogen Industry Development Plan, p.43. Although "Port Albert" is shown, other literature referenced in the study refers to the deep water port at Port Anthony.

3.5. SUPPLY-CHAIN MATURITY

The transition to renewable energy production has led to the establishment of a major global network of businesses involved in designing, manufacturing, distributing, installing and maintaining all aspects of new energy infrastructure.

The renewable energy sector in Australia continues to grow and diversify with different sources of energy generation and storage investment, however domestic supply-chains vary in terms of maturity depending on the energy type.

Some renewable energy types, such as small and large scale solar and onshore wind, have domestic supply chains that are more advanced than other emerging energy types such as battery storage, hydrogen and offshore wind.[5]

Keppel Prince (located in Portland, Victoria) is the only Australian manufacturer of onshore wind turbine towers. Danish company Vestas is the world leading global supplier of wind turbine components and has partnered with Keppel Prince on several onshore wind farm projects in Australia. Vestas established a Renewable Energy Hub (VREH) at the former Ford manufacturing site in Geelong in 2019 for the assembly of wind turbines.

The technology and supply-chain capability to support the offshore wind industry in Australia is in its infancy. There are currently no Australian manufacturers of wind turbine blades or nacelles. This circumstance presents both a limitation to the availability of local inputs to support development of offshore wind in Australia, as well as an opportunity to attract global businesses to the country if a critical mass of projects and uninterrupted demand for inputs can be established.

Whilst specialised component manufacturing is currently immature in Australia, there are existing capabilities that are more established further up and down the supply-chain, including professional and technical services, transport and logistics, assembly and installation, construction, operation and maintenance.

Analysis of UK's offshore wind sector (Appendix C) found that a strong project pipeline was fundamental to supply-chain development for offshore wind in that region, but even with this pipeline, the domestic content of early projects was only around 32% (a target of 60% domestic content has since been set).

The case study identified that creating a coherent investment proposition will be the best way for government to build a healthy project pipeline, minimising the associated costs and maximising domestic benefits.

Consultation with renewable energy project proponents in Gippsland as part of this study identified that access to local supplies and suppliers provides competitive benefits to the projects, but that the proportion of local content available can vary widely.

[5] Large-scale solar/Solar PV R&D, ARENA, 2022

3.6. JOBS AND SKILLS

OVERALL RENEWABLE ENERGY

Renewable energy as a source of employment across Australia is projected to grow strongly in years to come. UTS[6] estimate that at least 25,000 people were employed across renewable energy supply chains in 2019 (almost 10,000 of which were in rooftop solar), and that by 2035, the renewable energy sector could employ as many as 46,000 people with around 75% of job opportunities expected to be distributed across regional and rural Australia.

The sector currently employs more people than the domestic coal sector. Renewable energy can play a meaningful role in transition for coal regions such as the Latrobe Valley – but a comprehensive transition plan for industry diversification, renewable planning, and investment is needed to realise these opportunities for the current coal workforce.

Whilst construction and installation jobs are the most prevalent in the renewable energy labour market at present (75%), by 2035 as many as half of renewable energy jobs could be ongoing jobs in operation and maintenance.

Renewable energy will continue to create employment for a diverse range of occupations. The leading jobs types are expected to be trades and technicians, labourers and professionals. Around one-in-five renewable energy workers is an electrician or electrical trade assistant. Other major types of workers include roofers and installers (rooftop solar), concreters and construction labourers, drivers, mechanical trades, engineers and a range of skilled professionals and managers.

OFFSHORE WIND

Employment in offshore wind is projected to increase strongly in Australia over the next 25 years. Scenarios prepared by Blue Economy[7] indicate that offshore wind employment is expected to peak at between 4,000 and 8,000 jobs (FTE per annum) in the late 2040s.

F11. PROJECTED OFFSHORE WIND EMPLOYMENT, 2025 – 2050, AUSTRALIA

Source: Blue Economy, 2021. Scenarios relate to build out of 27GW from 2025 to 2050 and 10-25% local employment.

Literature consistently references opportunities to adapt skills related to traditional resource activities to apply to the technical requirements and activities of renewable energy projects. There is a particularly complementary relationship between the skills needed for offshore oil and gas activity and offshore wind.

[6] Renewable Energy Employment in Australia, UTS, June 2020.

[7] Offshore Wind Energy in Australia, Blue Energy CRC / Department of Industry, Science, Energy and Resources, July 2021.

Development of a capable local workforce will be an ongoing challenge for Australia in general and Gippsland in particular and will require several industry pathways to be established:

> *"International experience … has found the main pathways into offshore wind are from* ***other technically related sectors*** *(such as offshore industries and the energy sector),* ***new entrant*** *apprentices and graduates and the* ***workforce with skills that cut across sectors*** *(e.g. business / commercial, IT and data analytics, drone and underwater ROV operators, etc). Consequently, the development of offshore wind energy could be an important source of alternative employment for the offshore oil and gas workforce and potentially onshore workers in fossil fuels industries."* (Blue Economy, p.10)

3.7. ENERGY TRANSITION IN GIPPSLAND

In Gippsland, renewable energy opportunities are emerging in the context of a region which generates the majority of Victoria's electricity and gas. Gippsland produces approximately 85% of Victoria's electricity, 97% of Victoria's natural gas and 26% of Australia's oil.[8] Extraction, production and processing activities create substantial local employment and supply chain benefits prominent in the Latrobe Valley and Sale.

The following recent and planned closures of major coal-fired power stations in the Latrobe Valley are accelerating the need for energy transition in the region and associated supply-chain and employment repositioning:

- Hazelwood Power Station closed in 2017;
- Yallourn Power Station is planned to close in 2028;
- Loy Yang A Power Station is planned to close in 2035; and
- Loy Yang B Power Station is planned to close in 2047.

The three planned closures will reduce generation by 4.7GW. Policy changes, community views and price volatility are among the many uncertainties and challenges faced by existing coal-fired generators and driving earlier closures.

AEMO forecasts faster withdrawals than the current announced dates. Under the 'Step Change' Scenario, all Australian coal capacity would cease by 2040 and Victorian coal would cease by 2032.[9] In any case, Victoria's transition away from coal fired power is ongoing and the exact timeframe for ceasing production is unknown.

Overall gas production is projected to decline in the long term as renewable energy replaces non-renewable incumbents. Esso Australia is progressively decommissioning its older oil and gas facilities in Bass Strait, while concurrently investigating opportunities for carbon capture and CO2 extraction.

The existing transmission infrastructure, business base and skilled workforce presents a major opportunity for renewable energy projects to be established in the region, however the condensed timeframes within which the transition now must occur will present challenges for businesses, workers, energy developers and governments.

[8] Invest Gippsland.

[9] Integrated System Plan, AEMO, 2022.

4. RENEWABLE ENERGY PROJECTS

4.1. INTRODUCTION

This section provides an overview of the renewable energy projects currently proposed in Wellington and immediate surrounds.

Information about the type, location, scale, status, timing and any known details pertaining to the scale of jobs required during the construction and operational phases is documented.

Project information and data was primarily sourced from direct consultation with project proponents and supplemented where possible through publicly available information.

It is important to note that the content of this section is based on 'point-in-time' information available during 2022 and that projects are being announced and changed on a regular basis.

Most projects identified are in the early feasibility and planning stages, meaning that specific details about locations, employment requirements and timeframes are highly indicative. This information should therefore be used as a guide only and is subject to regular change.

4.2. KEY FINDINGS

- **The estimated energy generation potential of proposed projects exceeds (11GW), more than double current generation of non-renewable energy in the Gippsland region (5.3 GW).**
- **The total proposed investment is $41 billion.**
- **Total workers needed to construct and operate the projects are estimated by proponents at:**
  - **7,300-7,400 during the construction phase (aggregate); and**
  - **1,300-1,400 workers per annum during operational phases.**
- **Offshore wind projects proposed off the Wellington coast are of national significance and account for:**
  - **90% of total investment in the region;**
  - **Close to 85% of energy capacity;**
  - **Close to 60% of cumulative construction jobs (~4,250); and**
  - **80% of cumulative jobs during operation (~1,000 per annum).**

4.3. SUMMARY OF PROJECT PIPELINE

At the time of preparation of this study, 20 renewable energy projects were proposed in the area. Of these projects, 10 are expected to be developed within or off the cost of Wellington Shire (6 onshore and 4 offshore).

There are a diverse range of project types proposed, including onshore wind, offshore wind, solar, battery and hydrogen.

The indicative location and project type are shown and numbered in Figure 12.

F12. RENEWABLE ENERGY PROJECTS

4.4. ENERGY GENERATION, INVESTMENT & JOBS

The proposed projects include:

- 5 offshore wind farms;
- 4 onshore wind farms;
- 6 solar farms; and
- 5 'other' projects (includes battery, hydrogen and hybrid projects).

If all projects were to be delivered as planned, a total of 11-12 GW of energy could be generated, which is more than double the current non-renewable generation in the region (approximately 5GW).

The cumulative investment and job impacts are significant. At this point in time, the construction phase (for all renewable energy projects) is expected to extend to as far as 2040 and include:

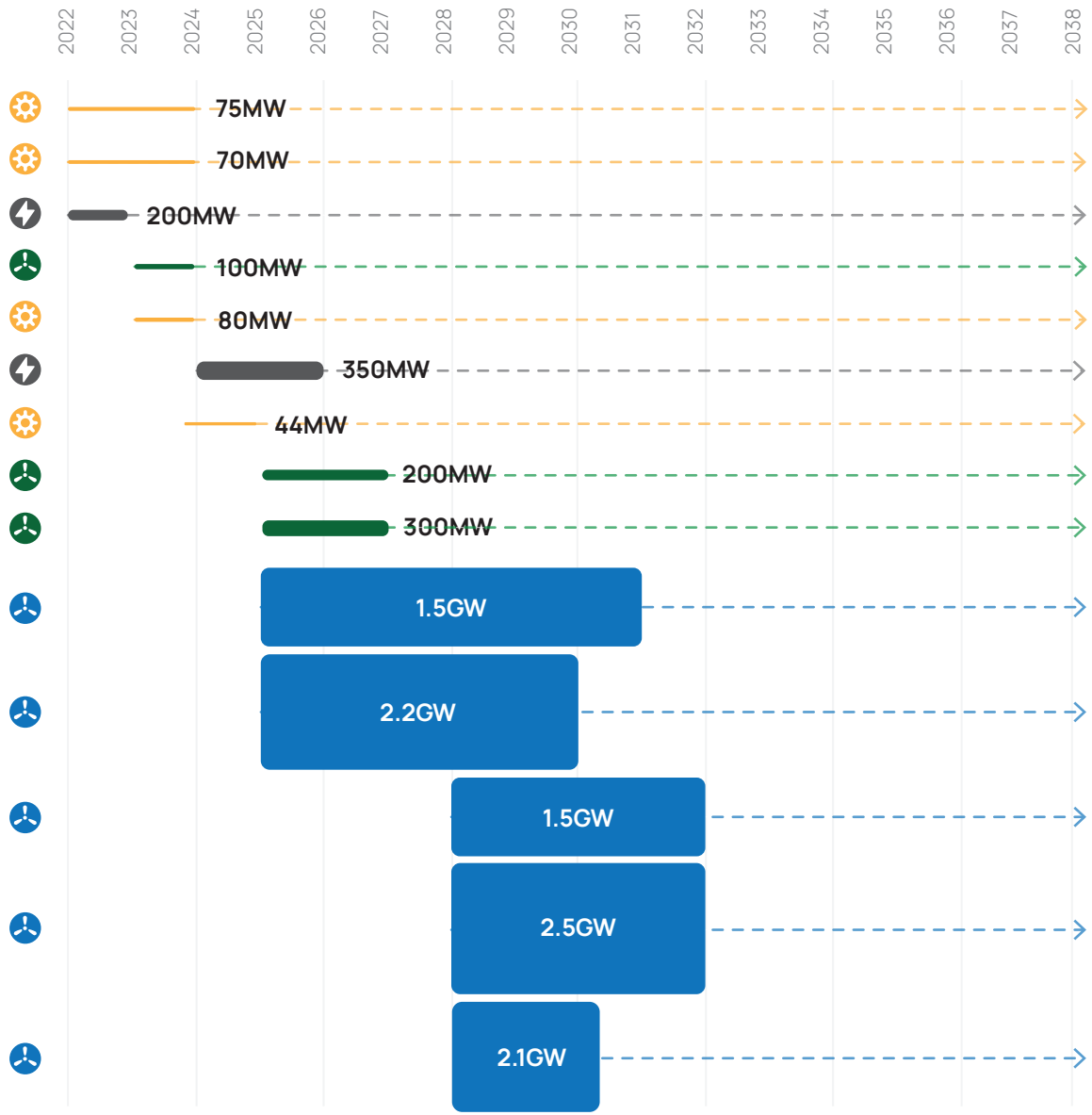
- Direct investment of more than $40 billion;
- Approximately 7,300-7,400 jobs during the construction phase;
- $180 million in operating expenditure per annum; and
- Approximately 1,200-1,300 ongoing jobs per annum.

The proposed timing for the construction and operational phases for larger-scale projects is shown in Figure 13 based on information provided by proponents.

F13. PROPOSED RENEWABLE ENERGY PROJECTS

Source: Various, compiled by Urban Enterprise, 2022; Note 1: Where a range was provided for the construction and operating costs, a midpoint was used; Note 2: 'Estimated jobs supported' includes direct local, regional, state and national FTE jobs and are not annualised.

F14. RENEWABLE ENERGY PROJECT PIPELINE (AS INDICATED BY PROPONENTS)



KEY

Project Stage

Construction Operation

Project Type

- Offshore Wind Farm
- Solar Farm
- Battery Storage
- Onshore Wind Farm

Please Note: The capacity and timeframes for 14 renewable energy projects are yet to be confirmed and have been excluded from the chart.
*Figures includes projects excluded from the above chart.

4.5. OFFSHORE WIND

Power from offshore wind is generated from turbines at sea, with energy transported through a series of cables and substations to onshore connection points. Offshore wind is a powerful renewable energy source due to stronger and more consistent winds off the coast compared with onshore and the ability to generate power at different times of the day. This helps create a more reliable and secure source of energy.

Offshore wind farms are typically larger and generate more energy than other forms of renewables and require a significant level of investment, infrastructure and labour, as well as connections to transmission lines onshore.

This industry is in its infancy in Australia, with many of the technical components (i.e. turbines) and skilled jobs imported from overseas. The ongoing operation and maintenance of offshore wind farms requires a combination of 'remote' activities (onshore) and 'on site' activities (offshore).

Cumulative Energy Generation, Cost & Jobs

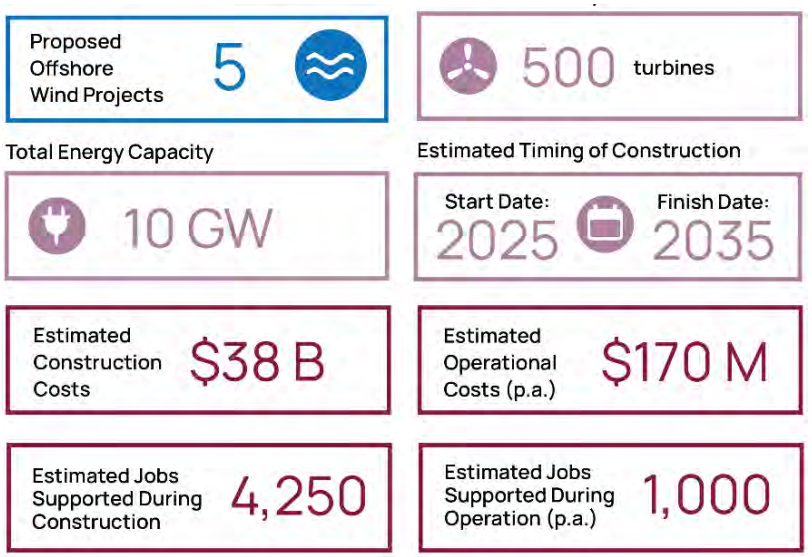
- Investment of $38 billion which comprises **91%** of total investment;
- Operating costs of $170 million p.a., **96%** of all project costs;
- Energy capacity of 10 GW comprises **84%** of total proposed renewable energy capacity; and
- Support **58%** (~4,250) of jobs created during construction of renewable energy projects and **80%** (~1,000) of jobs created during operation.

It is noted that the timing of construction of offshore wind projects will depend on the sequencing and completion of various approvals processes, the availability of labour and materials, and the timeframe within which offshore wind energy production becomes commercially competitive in Victoria.

Given these variables, the commencement dates, sequencing and duration of the overall construction phase remain unknown at this point. An indication of the temporal uncertainty is evident by reference to the following:

- Victoria's target is for offshore wind to reach 9GW by 2040;
- AEMO's 'Step Change' scenario (their most likely outcome) assumes no offshore wind in Victoria before 2030 unless costs reduce significantly; and
- AEMO's 'sensitivity analysis' has 5.5GW offshore wind in Victoria developed over the period 2027-2039.

F15. OFFSHORE WIND PROJECTS



Source: Various, compiled by Urban Enterprise, 2022; Note 1: Where a range was provided for the construction and operating costs, a midpoint was used; Note 2: 'Estimated jobs includes direct local, regional, state and national FTE jobs and are not annualised.

Note: The staging of projects will be subject to a competitive feasibility licensing process led by the Federal Government. After completion of consultation for this study, a sixth offshore wind project was announced off the Wellington coast, known as Blue Marlin (2GW). Data presented in this report does not include this project.

4.6. ONSHORE WIND

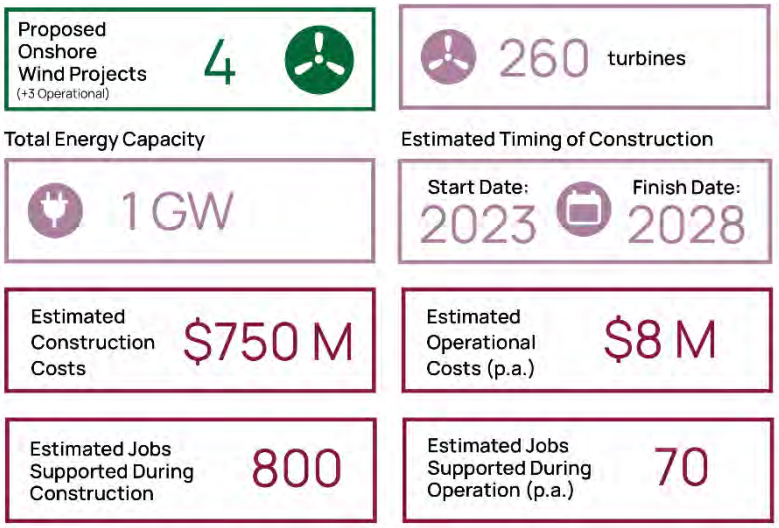
Onshore wind farms are typically located across regional and rural areas. Onshore wind is a more mature form of renewable energy in Australia, with over 100 wind farms operational across the country (including 3 in the Gippsland region).

Onshore wind power is currently the cheapest source of renewable energy, and is Australia's leading source of clean energy, supplying approximately 36% of the country's clean energy and 9.9% of Australia's overall electricity.

Cumulative Energy Generation, Cost & Jobs

- **10%** (1 GW) of total proposed energy capacity;
- **2%** ($750 million) of total construction cost and **4%** ($8 million) of total operating costs; and
- **15%** (800) of total construction jobs and **5%** (70) of total operating jobs.

F16. ONSHORE WIND PROJECTS



Source: Various, compiled by Urban Enterprise, 2022; Note 1: Where a range was provided for costs, the midpoint was adopted; Note 2: 'Estimated jobs supported' includes direct local, regional, state and national FTE jobs and are not annualised.

4.7. SOLAR FARMS

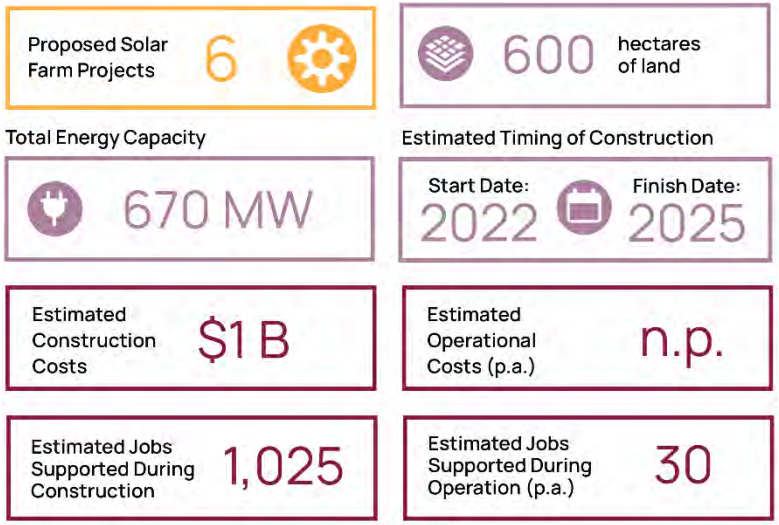
Large scale solar typically uses solar photovoltaic (PV) technology to generate electricity from fields of solar PV panels.

The solar panels convert the energy from sunlight into direct current electricity, then inverters convert the power into alternating current that can be integrated into the electricity grid.

Cumulative Energy Generation, Cost & Jobs

- High investment costs of proposed projects in the area totalling $1 billion (**3%** of total) – but a relatively lower energy capacity of 670 MW.
- Notable impact on construction jobs, including over 1,000 construction jobs (**14%** of total), but only 30 ongoing jobs (**2%** of total).

F17. SOLAR FARM PROJECTS



Source: Various, compiled by Urban Enterprise, 2022; Note 1: Where a range was provided for the construction and operating costs, a midpoint was used; Note 2: 'Estimated jobs supported' includes direct local, regional, state and national FTE jobs and are not annualised.

OTHER RENEWABLE ENERGY PROJECTS

BATTERY FARMS/STORAGE

Batteries are a type of renewable technology that store and release electricity on-demand. These projects are typically co-located with other renewable energy (such as solar or wind) to help maintain a reliable energy supply, as electricity generated from renewable projects can be stored within the battery during times of low demand and released at times of high demand. Batteries provide flexible distribution of electricity and help maintain grid stability[10]. Several battery storage projects are proposed in Gippsland at present.

MARINUS LINK

Marinus Link is a proposed 1.5GW capacity undersea and underground electricity connection to connect Victoria and Tasmania's electricity grid.

Marinus Link involves approximately 345 kilometres of High Voltage Direct Current (HVDC) cable that will run from the Latrobe Valley to Tasmania via South Gippsland Shire. Marinus Link and supporting transmission will add up to $1.5 billion in economic stimulus through construction and operation and create 1,400 jobs at peak construction. The project is in its design and approvals stage with construction anticipated to commence in 2025.

HYDROGEN

Hydrogen produced with renewable energy (i.e. wind, solar) is an emerging technology and can produce an emissions-free energy source. Australia is recognised as "a potential hydrogen production powerhouse.[11]"

There are currently 103 hydrogen projects in Australia, valued at over $160 billion, with potential to grow this industry across the Gippsland region, leverage existing renewable projects and create export opportunities. Hydrogen can also be used as an alternative for many domestic uses, including a fuel source (e.g. hydrogen fuel cell vehicles), cooking and heating.

[10] https://arena.gov.au/renewable-energy/battery-storage/

Cumulative Energy Generation, Cost & Jobs

- Five projects have a total cost of $1.8 billion (**4%** of total) and estimated to generate 550 MW of energy.
- Projects will support 1,320 construction and 160 ongoing jobs.

F18. OTHER RENEWABLE ENERGY PROJECTS (EXCLUDING MARINUS LINK)

Source: Various, compiled by Urban Enterprise, 2022; Note 1: Where a range was provided for the construction and operating costs, a midpoint was used; Note 2: 'Estimated jobs supported' includes direct local, regional, state and national FTE jobs and are not annualised.

[11] https://www.cleanenergycouncil.org.au/resources/technologies/hydrogen

4.8. INDICATIVE SCALE, TIMING & SPATIAL FACTORS

Understanding the indicative scale, timing and location will help to appropriately plan for periods of high demand and potential 'pinch points' for labour, housing, accommodation and infrastructure.

1. Offshore wind projects off the coast of Wellington Shire have longer construction periods and substantially higher labour requirements.
    - Offshore wind projects are expected to deliver a cumulative energy generation in the order of 10 GW.
    - The combined construction phase for offshore wind projects is likely to be at least 15-20 years.
    - Cumulative labour needs during the construction phases is in the order of 4,250 jobs (if averaged over 15-20 years, this will equate to approximately 200-300 FTE positions per annum).

2. Offshore wind projects are spatially proximate to southern Wellington, but jobs will be dispersed and drawn from a state-wide catchment.
    - Construction worker requirements will primarily be distributed between port locations (construction and operation/maintenance) and transmission network/infrastructure locations (on and offshore).
    - There is an expectation that the closest commercial port to Wellington Shire (Corner Inlet) will play a critical operational role, and may support marine transport activities during the construction phase.
    - Towns with existing housing, services and industrial land that are proximate to projects and enabling infrastructure (ports, freight network) may perform key service roles, including Yarram and Foster.

3. Offshore wind projects are expected to be sequenced, however any overlap will create 'pinch points' for worker demand, housing and accommodation, infrastructure and services.
    - The timing and potential overlap of construction phases is uncertain and will depend on the timing of licences and environmental approvals. Individual projects could result in significant surges in demand for labour, housing and supplies.

4. Smaller scale projects have relatively shorter construction phases with lesser demand for workers.
    - Nine smaller-scale solar, onshore wind and battery projects are expected to commence construction between 2022-2025, and have shorter construction phase durations.
    - The total energy generation for these nine projects is less than 1.5 GW, which is equivalent to the smallest offshore wind project.
    - Onshore renewable projects proposed across the region have a cumulative need for 3,000 construction workers, and less than 300 operational workers.
    - A potential overlap of construction phases with offshore wind farms would create competition for labour, housing and accommodation in the region.

There is an expectation that the closest commercial port to Wellington Shire (Port of Corner Inlet) is likely to play a critical operational role and support marine transport activities during the construction and operation phases.

5. READINESS CONSIDERATIONS

5.1. INTRODUCTION

This section discusses the various needs to effectively construct and operate the pipeline of renewable energy projects, with a view to:

- Facilitating the delivery of projects;
- Optimising economic benefits that flow to Wellington Shire; and
- Mitigating adverse implications where possible.

Readiness needs and considerations are categorised into five themes:

1. Business supply-chain;
2. Jobs and skills;
3. Housing and accommodation;
4. Infrastructure; and
5. Community readiness.

This section is based on a literature review, consultation and case studies.

Literature Review

Various literature, technical studies and reports prepared and commissioned by Government, industry associations, education providers and project proponents were reviewed to inform this section (see Appendix A).

Consultation

The consultation phase directly engaged 35 stakeholder groups, including project proponents, Wellington Shire Council officers and Councillors, representatives of neighbouring Councils, state government departments and agencies, education and training providers, referral and infrastructure authorities, local real estate agents and industry groups.

A list of stakeholders consulted as part of this study is provided in Appendix B.

Case Studies

The following case studies were considered to inform local government 'readiness':

- Onshore wind projects delivered in Moyne Shire, south-west Victoria;
- The Victorian Desalination Plant (VDP) in Wonthaggi, Bass Coast Shire; and
- The offshore wind sector in the United Kingdom.

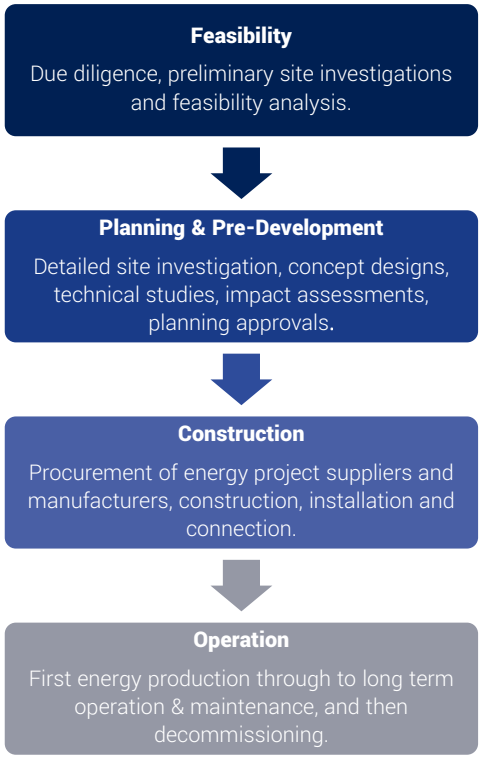
Case study analysis involved consultation with Council and government representatives to discuss and document key issues and lessons relevant to Wellington Shire in areas where major projects have been completed and post-delivery analysis is possible. Case study details are provided in Appendix C.

5.2. SUPPLY CHAIN

5.2.1. OVERVIEW

A general overview of the key development phases of a renewable energy project is shown in Figure 19. Projects draw on the provision of a range of technical services, primary resources, manufactured components, equipment and services over the four main phases shown.

F19. PROJECT DEVELOPMENT PHASES

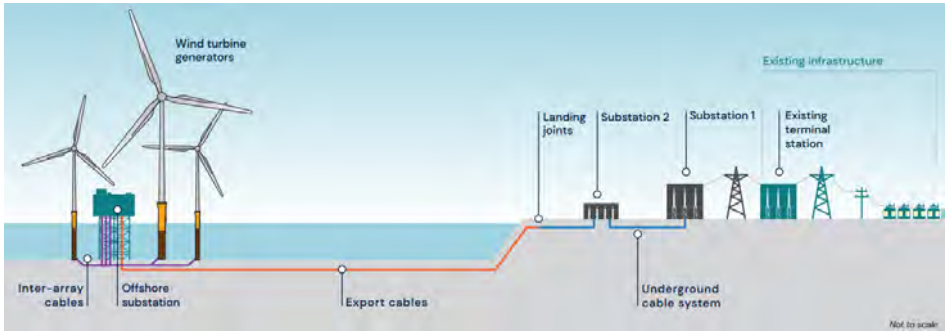


Source: Urban Enterprise.

A particular focus of renewable energy readiness for Wellington is the extent to which an efficient supply chain can be established to support the construction and operation of offshore wind projects.

Figure 20 shows the typical elements of offshore wind farms and the various components that need to be procured and installed both off and onshore.

F20. OFFSHORE WIND – PHYSICAL COMPONENTS



Source: Star of the South.

Suppliers expected to be procured by Star of the South during construction and operation include:

- Offshore cables;
- Offshore and onshore sub-stations;
- Offshore sub-station foundations;
- Wind turbines and foundations;
- Onshore transmission;
- Development and project management;
- Installation, construction and commissioning;
- Operation, maintenance and service; and
- Sustainability.

ROLE OF LOCAL AND REGIONAL SUPPLIERS

To effectively facilitate and deliver the proposed pipeline of renewable energy projects, suppliers will be sourced from global, national, regional and local networks.

Given the relative supply-chain immaturity in Australia and lack of specialised businesses, specialised components are expected to be primarily manufactured overseas and transported via heavy vessels to a construction port in Australia; where the components will be handled and assembled prior to being floated to the offshore location for installation into fixed foundations.

The extent to which local suppliers can be utilised will depend on the location, expertise, cost and capacity of local businesses to deliver the necessary inputs and services. Proponents indicated that local content will be used wherever possible to optimise local economic benefits and reduce costs, but that specialised components and services will need to be procured from national and global networks.

In general, the proportion of local content utilised is expected to increase as projects progress through the development phases, with low local content in the manufacturing stages and relatively high local supplier utilisation during operations and maintenance.

Proponents indicated that they expect the greatest demand for local suppliers to be in construction and operation of projects, as well as some support of planning and feasibility tasks. A summary of these localised supply-chain needs is provided in Table 2.

Particularly prominent local and regional supply chain opportunities relate to:

- Manufacture and installation of less specialised components, such as cables, foundations, transmission and sub-stations.
- General construction services and materials, including concrete, earthworks and electrical, civil and metal trades.
- Equipment and machinery, such as fencing, vehicles and servicing; and
- Marine vessels, logistics and servicing.

T2. KEY LOCAL SUPPLY-CHAIN NEEDS

Industry Sector	Activity and Jobs
Professional and technical services	• Engineering and surveying • Planning, legal and financial services • Environmental services • Project management and administration
Construction and trades	• Electricians and technicians • Metal workers, welders and fitters • Labourers • Machinery operators • Site preparatory and civil construction works
Manufacturing and wholesale trade	• Parts and materials • Equipment • Machinery
Transport and logistics	• Truck drivers/machine operators • Machine and equipment servicing • Port and water transport terminal operations • Marine logistics and vessel operation

Source: Urban Enterprise, based on literature and consultation with proponents.

5.2.2. SUPPLY CHAIN OPPORTUNITIES

The nature and location of supply chain needs and opportunities in Wellington will depend on future decisions regarding key aspects of offshore wind and other projects, especially the location of key construction and operations ports, and the critical mass of projects that can be established in the region such that overseas businesses are attracted to Australia and Gippsland.

The International Renewable Energy Agency (IRENA)[12] estimates that 35% of offshore wind labour requirements relate to segments of the value chain that are easier to localise, including the installation and grid connection and operations and maintenance phases. While manufacturing opportunities should not be ignored, suppliers involved in these less specialised phases should be a priority for Council to support and develop.

Based on the literature reviewed, the following three main types of opportunities exist to maximise supply chain efficiencies and benefits in Wellington:

1. Building the capacity of existing local businesses to provide the supplies and services required by renewable energy projects;
2. Attracting global component manufacturing businesses to the region in response to the critical mass of demand; and
3. Capitalising on existing expertise of businesses servicing the offshore oil and gas industry in Bass Strait.

The associated implications of these needs and opportunities are:

- The need for existing businesses to be able to adapt, attract labour and expand (including suitable premises and land);
- The need for strategic industrial land locations to be available for prospective businesses seeking a Wellington location; and
- The likelihood of substantial indirect demand for other local supplies and services during construction phases, such as retail and hospitality, housing and community services.

[12] Renewable Energy Benefits - Leveraging Local Capacity for Offshore Wind, IRENA, 2018.

5.2.3. SUPPLY-CHAIN NEEDS SNAPSHOT

- A local and regional supply-chain to support construction and operational activities, including general construction, labour and trades, parts manufacturing, transport and professional services.
- A diversity of business capabilities to support discrete project construction and operational needs.
- Indirect supply-chain needs to support workforce, including retail, hospitality, accommodation, health and education.
- Adequate, suitable and well-located zoned industrial land to leverage investment in renewable energy projects, including:
  - Strategic and 'opportunistic' business investment; and
  - Investment from existing businesses seeking to re-locate or expand to leverage cumulative investment.

5.3. JOBS AND SKILLS

The renewable energy projects proposed in the Gippsland region will generate substantial demand for labour during both the construction and operation phases.

Proponent input results in an estimated total construction employment of up to 7,400 jobs, plus up to 1,300 ongoing operations jobs per annum.

Table 3 summarises the types of occupations required during each phase of offshore wind farm development.

T3. OFFSHORE WIND FARM OCCUPATIONS BY PHASE

Phase	Occupation types
Development	Primarily involves engineers and managers in professional roles.
Construction	Workforce primarily comprises a range of trades and technicians (e.g. electricians, wind farm technicians), machine operators and drivers (construction equipment operators, boat operators).
Operations	Mix across occupational types including engineers, wind technicians (electrical and mechanical), metalworkers, boat operators and operations managers.

Source: BVG Associates, 2017, Blue Energy 2021, summarised by Urban Enterprise.

The labour attraction task will be substantial. Blue Energy notes that a major UK study of offshore wind found there were three main pathways into the industry:

- Movers from other technically related industries (offshore and energy);
- Apprenticeships and graduates; and
- Movers with cross-sector skills (e.g. business, IT, data analytics, etc).

Although the focus on 'movement' from other sectors is positive in terms of utilising the substantial workforce involved in the retiring non-renewable energy sector in Gippsland, the increase in labour demand and movement from other ongoing industries will clearly have implications for parts of the Wellington economy.

5.3.1. TIMING AND LOCATION OF EMPLOYMENT NEEDS

The period and spatial area across which this employment will be needed is difficult to define at this point, however the following characteristics are known:

- Offshore wind project construction is expected to take between 2 and 4 years per project.
- Not all construction phases will occur concurrently, however there are likely to be periods of overlap when there is high demand for labour, including onshore and offshore energy types.
- Not all construction jobs will be located in Wellington – proximity to ports will be a key spatial driver and there will be a need for workers at different on and offshore locations for roles relating to transport and logistics, assembly and technical installation.
- During the operational phase of projects, jobs are anticipated to be a mix of operational and maintenance roles that would largely be required on or proximate to the subject site, whilst some of the professional service roles could be undertaken remotely (i.e. off-site). The overall annual employment associated with operation will increase over time and ultimately account for a large proportion of the long term employment impact of the projects.

Proponents indicated a general aspiration to primarily source labour from within Gippsland (especially Wellington Shire, Latrobe City and South Gippsland Shire), however it is accepted that due to skills and labour force limitations some labour will need to be temporarily imported.

As the preferred construction hub location, Port of Hastings is likely to be a key attractor for labour (as will Port of Corner Inlet if it is ultimately an operations and maintenance hub). This outcome is anticipated in the Victorian Government's Offshore Wind Implementation Statement and depicted in Figure 21.

F21. CATCHMENTS & LABOUR MOBILITY TO OFFSHORE WIND HUBS

Source: Victorian Government Offshore Wind Implementation Statement 1, 2022.

Consultation with Bass Coast Shire Council regarding the experience of labour demand during construction of the Victorian Desalination Plant in Wonthaggi revealed the following experience that is likely to be relevant to the upcoming construction phases in Wellington:

> *In the case of the Desalination Plant in Wonthaggi, the project required approximately 10,500 workers over a three year construction period, with a peak of 4,500 workers. Competition for local trades increased substantially during this time, and re-directed business activity away from local projects to serve the Desalination Plant. Local construction projects suffered as a result, including supply-chain delays and escalated costs.*
>
> (Appendix C).

5.3.2. WORKFORCE TRANSITION TO RENEWABLES

The potential transition of workers from non-renewable to renewable energy is an opportunity that is widely acknowledged, but the extent to which it can be realised remains uncertain.

Given the scale of workers and diversity of skills required, there will be a need for workers employed in 'sunset' industries with transferrable skills to transition to the renewable energy sector.

IRENA[13] notes that "as the offshore wind energy sector grows, it offers greater opportunities for individuals and businesses from the offshore oil and gas sector in different segments of the offshore wind value chain", including project planning, manufacturing, installation and grid connection and operation and maintenance.

The following considerations relating to workforce transition are drawn from relevant research:

- Existing workers in non-renewable energy production generally acknowledge that a potential 'pivot' to the renewable energy sector is an opportunity, but it is too early to make a decision.
- For workforce transition to be a realistic prospect, there needs to be clarity and certainty on the nature of employment (description of role), conditions (tenure and salary) and the extent of training/certification that will be required.
- A proportion of workers see their future in non-renewable energy sectors, and expect their employment to continue elsewhere in the region, or will seek employment in other parts of Australia where these sectors will endure for a longer period.
- A proportion of workers intend to, or will consider retirement, indicating a diminishing pool of labour employed in traditional energy sectors.

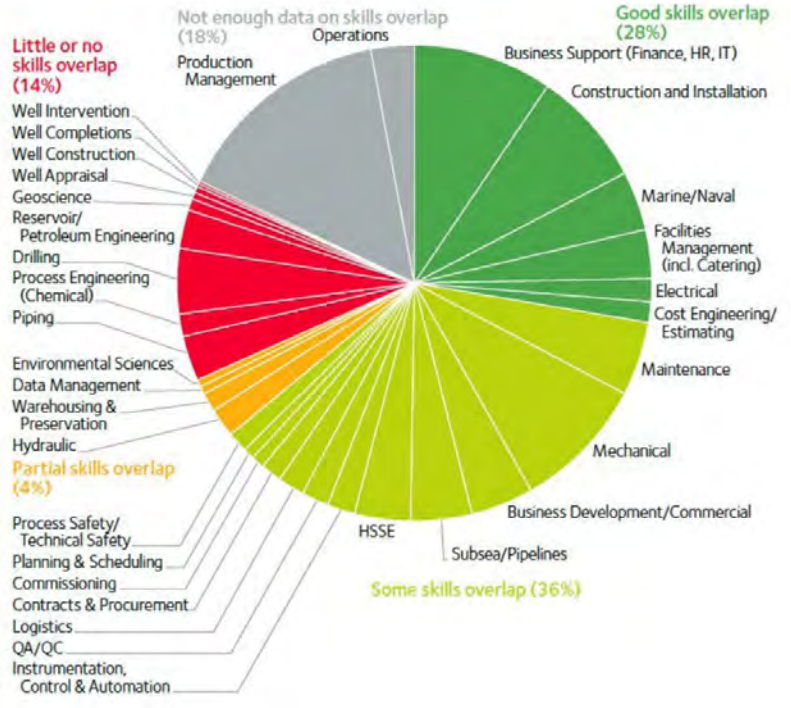
[13] IRENA Leveraging Local Capacity for Offshore Wind, 2018.

SKILLS OVERLAP WITH OIL AND GAS

There are many similarities between the skills needed to support offshore oil and gas extraction and offshore wind energy production. Figure 22 shows the extent to which the respective sector occupation requirements overlap, indicating that almost two thirds of skills required for oil and gas overlap with those required for offshore wind (64% have either "good" overlap or "some" overlap).

This is a key consideration for Gippsland and Wellington given the well-established and mature offshore oil and gas sector in Bass Strait off the Wellington coast.

F22. OCCUPATION MATCH: OFFSHORE OIL AND GAS / OFFSHORE WIND



Source: Friends of the Earth; Global Witness and Greener Jobs Alliance, 2019; Blue Energy.

5.3.3. TRAINING AND EMPLOYMENT PATHWAYS

To meet the construction and operational labour requirements for regional renewable projects, several areas of focus for growth in jobs and participation will be important for readiness:

- Employment pathways for different renewable energy project types through targeted programming, delivered by education, skills and training providers;
- Opportunities for re-skilling, upskilling and transition for workers with transferrable skills; and
- Opportunities to mobilise cohorts that are inactive in the labour market, particularly low and unskilled positions.

In all cases, dedicated training and skills development will be required.

The *Gippsland Energy Skills Mapping Report* (2022) prepared by Federation University in conjunction with the Latrobe Valley Authority (LVA) and TAFE Gippsland recommends the following actions to address new energy workforce and skills needs, all of which are relevant to this Study:

- State-of-the-art infrastructure, equipment, and laboratories in Gippsland to deliver new energy training and education.
- New programs developed and offered in Gippsland to meet the requirements of the new energy sector in the next 2-10 years.
- Partner with industry to ensure education and training programs are fit-for-purpose.
- Raise awareness of new energy careers.
- Develop clear pathways between secondary, vocational and higher education in clean energy careers.

5.3.4. JOBS AND SKILLS REQUIREMENTS SNAPSHOT

- A significant scale of workers with different skillsets to be sourced from within, and outside Gippsland:
  - Approximately 7,300-7,400 construction jobs; and
  - Approximately 1,200-1,300 operational jobs per annum.
- Specific skills and qualifications tailored to renewable energy project types (especially offshore wind).

5.4. HOUSING & ACCOMMODATION

Temporary workers employed during construction phases will require housing and accommodation. Proponents consulted are generally yet to consider housing in any detail but indicated the following housing needs.

5.4.1. HOUSING DEMAND: CONSTRUCTION PHASE

Construction phase labour is expected to result in strong demand for rental housing and short-stay accommodation across the region.

For major offshore wind projects off the coast of Wellington Shire and Bass Coast Shire, the construction worker housing catchment is anticipated to cover:

- A regional catchment area surrounding Port of Hastings, the likely preferred location for an offshore wind construction hub.
- A regional catchment area close to the Wellington and South Gippsland coast - including smaller townships such as Yarram and Foster, but also extending to regional centres in central Gippsland such as Sale and Traralgon.

Proponents indicated that the availability of a substantial population and housing base in regional centres within reasonable commuting distance of onshore construction locations is considered an advantage of Gippsland for major renewable projects.

A mix of housing and accommodation locations, types and tenure will be needed to support the labour force, however given the short term and contract nature of construction-related employment, it is expected that rental tenure and long-stay visitor accommodation will be the main housing type required for workers not already living in the region.

MOYNE AND BASS COAST CASE STUDIES

In the case of onshore wind projects in Moyne Shire Council and the Desalination Plant in Wonthaggi, the following issues arose during the construction phases:

- Competition for rental properties in the closest regional centres increased substantially (in both Warrnambool and Wonthaggi), placing upward pressure on rents and impacting housing affordability. This displaced many local residents and forced relocation, in some cases outside the municipality. Consultees noted that these issues contributed to the erosion of the social license and goodwill associated with projects and developers.
- Short stay rental properties in coastal townships (e.g. Port Fairy, Inverloch) typically utilised by holiday visitors during peak visitor seasons were occupied by workers, adversely impacting the region's visitor economy.
- Moyne Shire Council attempted to accommodate workers in Council-owned Caravan Parks, but the capacity did not meet demand during peak periods.

In Bass Coast, the impact of the Desalination Plant project on housing and accommodation was the most significant issue that arose during the three year construction period from 2009 to 2012. Prior to construction, Bass Coast Shire was the 18th most affordable regional municipality in Victoria (out of 48). By 2011, it was the least affordable and had recorded 40-50% growth in rents between 2007 and 2012. The highest rent increases were recorded in the town of Inverloch, 19 km (18-min) from the Desalination Plant.

In Moyne Shire, proponents underestimated the need for worker accommodation and did not adequately consider flow-on implications for housing in the region. As a result, many workers could only find rental properties and other accommodation in centres as far as Ballarat (1.5 hr drive from Mortlake).

To build social license and deliver a positive lasting legacy benefit for impacted towns and regions, consultees advised that proponents should closely consider ways to secure worker housing, including consideration of opportunities for the housing to be re-purposed/re-used by residents once worker demand recedes.

Without an adequate supply and availability of housing and accommodation, these issues could also arise in Wellington Shire and surrounding municipalities.

5.4.2. HOUSING DEMAND: OPERATIONAL PHASE

Housing needs during the operational phase will differ from the construction phase for the following reasons:

- Longer tenure employment conditions are likely to result in both owner-occupier and rental tenure demand; and
- Location of demand is most likely to be proximate to operation and maintenance hubs which are expected to be located around ports (such as Port of Corner Inlet – BBMT/Port Anthony).

The ultimate operational job requirements for offshore wind are in the order of 1,000 jobs per annum. If Barry Beach Marine Terminal and Port Anthony at the commercial Port of Corner Inlet become a key operation and maintenance hub serving offshore wind, then many workers employed in this area will likely seek to live in towns and settlements within a reasonable commuting distance, including southern Wellington.

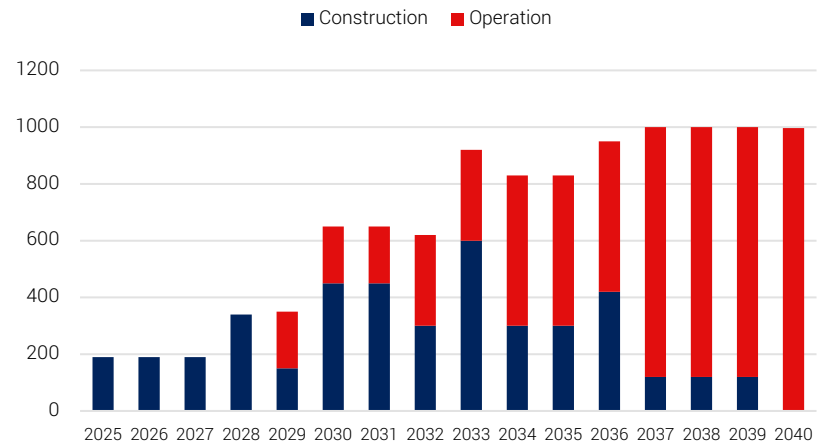
5.4.3. SCALE OF HOUSING NEEDS

The scale of housing demand associated with renewable energy projects is not yet clear, however an indicative estimate of the potential direct annual employment associated with construction and operations is shown in Figure 23.

This is based on the Victorian government aspirational scenario of 9GW of offshore wind generation operating in Gippsland by 2040 and the employment numbers provided by proponents converted into annualised job estimates. Job levels account for all direct jobs in Victoria, regardless of location (depending on the ultimate construction port location, a proportion of the employment could be based in Hastings, for example). Not included, however, are indirect employment outcomes.

This is a highly indicative estimate which provides a scenario of total direct employment on an annualised basis. Overall, annual employment is expected to exceed 800 jobs during the mid 2030s and 1,000 jobs by 2037. This scale of employment will generate substantial demand for housing in the region.

F23. INDICATIVE OFFSHORE WIND DIRECT EMPLOYMENT PER YEAR



Source: Urban Enterprise, based on 9GW operational in Gippsland by 2040, construction employment averaged across a 4 year construction period for each project. Projects sequenced throughout period for minimum overlap.

5.4.4. HOUSING AND ACCOMMODATION NEEDS SNAPSHOT

- A diversity of housing and accommodation (location, product and tenure) to support permanent and temporary workers.
- Sufficient and adequate rental housing and commercial accommodation to meet demand during the construction phase.
- Direct employment is expected to result in up to 800-1,000 additional workers locating in the region on an annual basis compared with current levels.
- Permanent and rental housing close to ports (offshore wind) will be needed to meet demand during operational phase.
- In the medium term, there is likely to be an increase in overall housing demand in Wellington as a result of the projects, with particularly strong impacts likely for rental housing demand.

5.5. ENABLING INFRASTRUCTURE

Enabling infrastructure will be critical for the construction and operational phases of proposed projects, including:

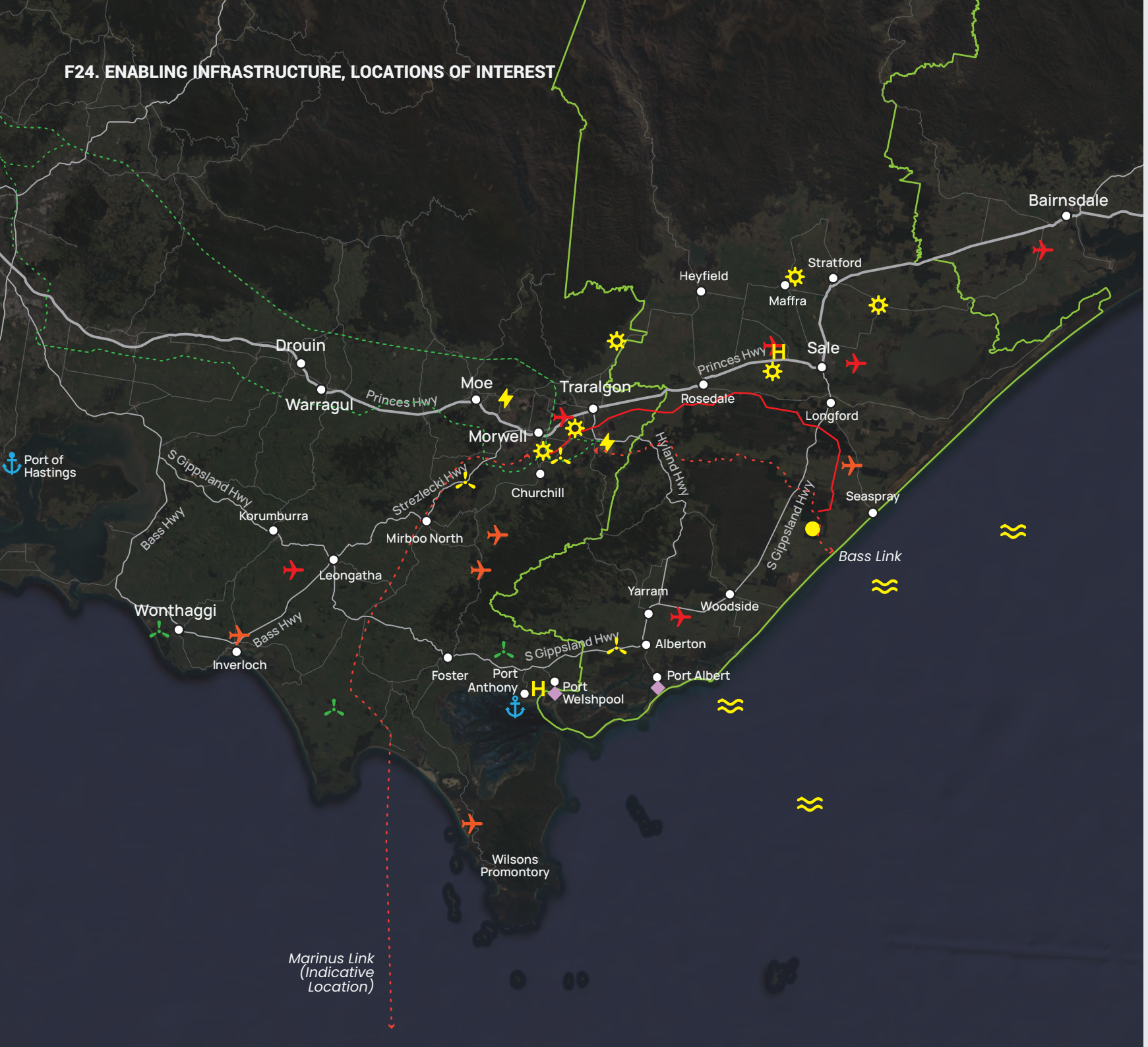
- Transmission infrastructure to support the transportation of energy from areas of generation to consumption.
- Transport infrastructure (roads, ports, airports) to facilitate freight and cargo to support the efficient delivery and operation of projects.
- Local civil infrastructure works in townships to support potential residential and employment land expansion and development.

If substantial population growth occurs in concentrated locations and timeframes, there will also be a need for social infrastructure such as health, education and community services.

Key infrastructure assets are shown in Figure 24, and include:

- An existing 500 kV transmission line connects Melbourne to the Latrobe Valley. The investigation area for the proposed new G-REZ transmission route extends from Hazelwood through south of Rosedale and Longford to Giffard.
- Port of Hastings is the likely preferred location for an offshore wind construction hub, while the closest commercial port with access to proposed offshore wind projects is Port of Corner Inlet (Barry Beach Marine Terminal/Port Anthony).
- Several airports exist in the region, including Yarram, West Sale and East Sale.
- Major road transport routes include Princes Freeway and South Gippsland Highway.

F24. ENABLING INFRASTRUCTURE, LOCATIONS OF INTEREST



LEGEND

Proposed Energy Project Type

- Onshore Wind Farm
- Offshore Wind Farm
- Solar Farm
- Battery Storage
- Hydrogen
- Gippsland Multi-energy Proposal
- Wind Farm (In Operation)

Airport & Ports

- CASA Registered Airport
- Other Airport
- Port
- Boat Access

Other Infrastructure

- 500kV Transmission Line
- Proposed AUSNET Transmission Route
- Proposed Marinus/ Bass Link Route (Indicative location)
- Major Road
- Other Road
- Wellington Shire LGA Boundary

5.5.1. TRANSMISSION

In Victoria, transmission network planning is undertaken by the Australian Energy Market Operator (AEMO).

Ausnet is currently planning the development of new transmission infrastructure to support the Gippsland Renewable Energy Zone (G-REZ). The project investigation area, preferred transmission route and the nominated alternative corridor are shown in Figure 25.

Both the preferred transmission route and the alternative corridor are still in the early stages of investigation and further work is required before a final route is determined.

AusNet will be conducting various environmental assessments along the preferred route and alternative corridor to inform the environmental approvals submissions and better understand the suitability of these corridors for transmission infrastructure.

The current G-REZ transmission project is estimated to unlock around 3-4 GW of renewable energy by 2026 by connecting multiple renewable energy projects to the grid via shared infrastructure. However, a 3-4 GW transmission network will not meet the region's ultimate requirements, with up to 9 GW of energy capacity (estimate) to be delivered by proposed offshore wind projects alone. This means that additional discrete transmission infrastructure will be required to meet future transmission needs.

F25. PREFERRED TRANSMISSION ROUTE (INVESTIGATION AREA)

Source: G-REZ Interactive Map, Ausnet, 2022.

Proponents indicated that investigation of transmission options is ongoing and include options to:

- Construct stand-alone, project specific transmission infrastructure, with a view to sharing or co-locating with existing lines (e.g. Basslink offshore and easements onshore);
- Share/co-locate transmission routes with other projects to reduce the need for multiple alignments; and
- Utilise G-REZ transmission infrastructure where possible.

Coordination of transmission infrastructure will be critical to the success of the renewable sector in Gippsland, particularly offshore wind. The key challenges associated with transmission include:

- Ensuring transmission infrastructure has the capacity to accommodate the scale of projects proposed; and
- Co-locating and sharing transmission infrastructure and alignments (including shore crossing points) where possible to minimise environmental impacts (e.g. visual, easements).

5.5.2. PORTS

Port access and infrastructure will be required to support the delivery and operation of offshore wind projects:

- A Construction Hub during the construction phase for receiving, handling and assembling wind turbine components; and
- An Operation and Maintenance Hub during the operational phase to support storage and transport of supplies and crew.

For offshore wind projects, turbines will be manufactured overseas and transported to Australia via major commercial vessels (up to 200m in length). In order to accommodate vessels of this size and accommodate a construction hub, ports will require:

- Water depth of at least 10.5 metres;
- Extensive quay side access with heavy load capacity; and
- Expansive laydown areas to accommodate major components - turrets, blades etc. (approx. 25-80 ha).

Offshore Wind Implementation Statement 1 (2022) identifies the Port of Hastings as the likely preferred location for a construction hub subject to environment and planning approvals. If this occurs, a notable proportion of construction jobs associated with offshore wind are likely to be concentrated in and around Hastings in Mornington Peninsula Shire.

A port O&M hub will be needed to support offshore wind projects, namely to transport crew and supplies to offshore wind farm locations. The core requirements for an offshore O&M hub include:

- Adequate lay down areas and hardstands;
- All weather storage facilities for supplies, parts and equipment; and
- Quay side access for transfer vessels for crew and supplies.

5.5.3. ROADS

Major roads will be utilised to facilitate freight and cargo movements (e.g. equipment, machinery, parts) to support renewable energy projects, along with onshore workers.

The majority of Gippsland's freight is currently transported using Gippsland's major road network, specifically the Principal Freight Network and other State Arterial roads.

The National Road Network currently extends along the Princes Highway between Melbourne, Traralgon and Sale. These road networks are supported by and connect to a range of other freight infrastructure including sea, air and rail.

Key readiness needs for the regional road network identified through consultation with DoT include:

- Project route mapping to identify issues, gaps, and a list of priority projects.
- The proposed locations of transmission infrastructure relative to arterial roads and road reserves so that any implications for the road network can be identified.

5.5.4. SERVICE INFRASTRUCTURE FOR LAND DEVELOPMENT

To facilitate any potential expansion and development of urban areas, the capacity and capability of civil infrastructure and services must be considered, including:

- Drainage;
- Sewerage reticulation;
- Water supply;
- Electricity; and
- Telecommunications.

Existing infrastructure availability and capacity considerations are assessed in Appendix D.

5.5.5. INFRASTRUCTURE NEEDS SNAPSHOT

- Transmission infrastructure to support the transportation of energy from areas of generation to consumption markets.
- Transport infrastructure (roads, ports, airports) to facilitate freight, cargo and crew movements.
- Civil service infrastructure, particularly adequate drainage to support potential urban expansion, and facilitate residential and industrial development.

5.6. COMMUNITY READINESS

Consultation with project proponents and case study consultees identified that facilitating community awareness and readiness for renewable energy investment is a critical component of realising the potential of the region and an important area of influence and involvement for local governments.

INFORMING THE COMMUNITY

Community information and awareness will be critical to build understanding and avoid misinformation, especially in the context of a complex stakeholder and regulatory environment, regular announcements and project changes and the strong likelihood of opposition on the basis of certain potential project impacts.

The community will be well served by clear, accurate and up-to-date information from a trusted source.

Consultation with Moyne Shire regarding the experience of wind farm proposals and approvals in that municipality identified that one of a Council's most important role in this context is to:

- Act as the main conduit of information between the community and project stakeholders (e.g. developers, referral agencies); and
- Lead (where possible) and assist with managing the engagement process to ensure there is coordination.

Moyne led a Community Engagement Committee for each project to foster communication between the range of stakeholders which was considered a successful model.

Despite the strong focus on engagement, Moyne experienced challenges in maintaining community goodwill throughout a period of substantial development and building community opposition, observing that goodwill eventually eroded, culminating in a Council resolution in November 2018 to oppose any further wind farm development in the Shire.

COMMUNITY AND LEGACY BENEFITS

It will be important to optimise benefits that flow to the local community. There is an opportunity for Wellington Shire Council to support funding mechanisms that contribute to meaningful community projects. This includes aspirational projects that:

- Delivery lasting legacy benefits; and
- Address related and flow-on issues from renewable energy projects (e.g. fund/deliver temporary housing that could be re-purposed/re-used for community benefit).

This could take the form of various development-led funding models for community programs, infrastructure and initiatives.

In the case of Moyne Shire, developers regularly committed funding for community programs and initiatives over a long period of time. Some examples of community benefits delivered as a result of wind farm projects in Moyne Shire are as follows:

- Approximately $876,000 in annual municipal rates collected from operating wind farms.
- Approximately $960,000 raised from wind farm community programs since 2005, which have been allocated to local community projects.
- Educational scholarship program for local students funded by one of the proponents.

Moyne consultees communicated that in hindsight they would have had a clearer position on community funding requirements and mechanisms from the outset. Further, Council would have investigated more lateral and aspirational projects to address direct issues caused by wind farm projects (such as funding /delivering temporary housing that could be re-purposed/re-used for community benefit).

ADEQUATE COUNCIL RESOURCES AND GOOD GOVERNANCE

Wellington Shire Council will require adequate resourcing and governance structures to ensure responsibilities around readiness can be effectively managed.

In the case of Moyne Shire, Council established a dedicated renewable energy unit to facilitate, support and manage engagement and impacts of several renewable energy projects.

The renewable energy unit has also been supported through the establishment of a Council-led Advisory Committee, consisting of developers, Councillors and community leaders, which has allowed Council to be a pro-active stakeholder in the engagement process.

5.6.1. COMMUNITY NEEDS SNAPSHOT

- Regular engagement and clear communication to obtain relevant and accurate information, and understand project information.
- Social license and optimised economic impacts that create lasting benefits.

PART B. CAPABILITY AND READINESS

In Part B:

Wellington Shire's existing capability and readiness to serve project needs and leverage opportunities is profiled in terms of:

- Business supply-chain, jobs and skills.
- Housing and accommodation, with a focus on the southern area of Wellington.
- Residential and industrial land supply, with a focus on the southern area of Wellington.
- Infrastructure (transmission, transport and civil infrastructure).
- Community information, engagement, participation and benefit.

Each area of focus includes:

- Issues and opportunities relevant to renewable energy readiness; and
- Recommended directions.

Note that issues, opportunities and directions relating to residential and industrial land supply are integrated into the themes of supply-chain, housing and infrastructure.

6. SUPPLY-CHAIN, JOBS & SKILLS

6.1. INTRODUCTION

This section profiles Wellington Shire's existing economic and employment capability to identify gaps and opportunities to serve different stages of the renewable energy project supply-chain and development lifecycle.

Although the focus is on Wellington Shire, this section also has regard to the adjoining municipalities of Latrobe and South Gippsland as relevant.

6.2. REGIONAL ECONOMIC SNAPSHOT

- Regional economic specialisations include agriculture, forestry, traditional energy production (coal, oil, gas), population services and tourism.
- The region has a Gross Regional Product (GRP) of $12 billion, 2.5% of Victoria's Gross State Product (GSP). Latrobe City is the largest municipal economy, accounting for half of regional jobs, output and GRP.
- There are more than 61,000 local jobs and over 12,000 businesses in the region. Businesses have a substantially greater average employment level in Latrobe than Wellington and South Gippsland.

T4. SUMMARY OF ECONOMIC INDICATORS

Indicator	Wellington	Latrobe	South Gippsland	Total
GRP ($B)	$4.05	$6.14	$1.88	**$12.07**
Local jobs	18,111	32,389	11,157	**61,657**
Businesses	4,057	4,344	3,786	**12,187**
Output ($B)	$7.82	$13.70	$3.94	**$25.46**
Value-added ($B)	$3.89	$5.78	$1.74	**$11.40**
Export value ($B)	$3.86	$6.19	$1.38	**$11.43**

Source: Wellington, South Gippsland and Latrobe City Council Remplan Profiles, accessed August 2022.

6.3. WELLINGTON'S ECONOMY

Key economic areas and assets in Wellington include:

- Population services (retail, health, education) in Sale and key townships;
- Productive agricultural land, especially the Macalister Irrigation District (MID);
- Offshore oil and gas resources and onshore refinery;
- Royal Australian Air Force (RAAF) air base and training school in East Sale; and
- Natural environment and assets linked to visitation and tourism industry.

T5. SNAPSHOT OF WELLINGTON'S ECONOMY

	Industry sector	Output	Exports	Wages/Salaries
⚡	Mining	22%	44%	6.1%
⚡	Construction	14%	7%	13%
	Agriculture, Forestry & Fishing	12%	17%	5.5%
⚡	Manufacturing	11%	14%	6.9%
	Public Administration & Safety	8.3%	11%	20%
	Rental, Hiring & Real Estate Services	7.2%	0.3%	1.1%
	Health Care & Social Assistance	3.8%	0.2%	12%
⚡	Electricity, Gas, Water & Waste Services	3.0%	2.5%	2.1%
	Retail Trade	2.7%	0.2%	5.6%
	Education & Training	2.6%	0.9%	8.8%
	Accommodation & Food Services	2.2%	0.9%	3.2%
⚡	Professional, Scientific & Technical Services	2.2%	0.3%	4.1%
⚡	Transport, Postal & Warehousing	2.1%	0.8%	2.4%
	Financial & Insurance Services	2.0%	0.4%	1.9%
	Other Services	1.3%	0.1%	2.1%
⚡	Wholesale Trade	1.3%	0.5%	2.2%
	Administrative & Support Services	1.2%	0.2%	3.0%
	Arts & Recreation Services	0.6%	0.1%	0.6%
	Information Media & Telecommunications	0.5%	0.1%	0.5%
	Total	**$7,819.9**	**$3,857.5**	**$1,463.8**

Source: Remplan Profiles, accessed August 2022. ⚡ key renewable energy supply-chain sectors.

6.4. BUSINESS MIX

- There are approximately 4,000 businesses operating in Wellington Shire, more than one-third of which are in the agriculture, forestry and fishing industry.
- The share of Wellington businesses that could participate in the renewable energy supply-chain varies. The industries with the highest number of businesses are:
  - Construction (630);
  - Transport, postal and warehousing (198); and
  - Manufacturing (132).
- Most businesses have relatively low employment levels (i.e. less than 20 employees), with some larger businesses concentrated in Sale.

Wellington accommodates several large industrial businesses which service the oil and gas and construction sectors and could potentially directly support the offshore wind and other renewable energy project types.

One example is **Rotofab** Asset Maintenance. Rotofab occupies approximately 9ha of industrial land in Wurruk near Sale and provides specialised welding and Structural Fabrication services to both Offshore facilities and Processing Plants along with the Power Generation Industry and Industry in General, along with machining, industrial coatings and container manufacturing.

Several other businesses located in the Wurruk industrial estate provide relevant services, including concrete, cranes and equipment, engineering and energy services.

The East Sale industrial area also accommodates major businesses relevant to the energy project needs, including concreting, engineering and equipment hire. **Oceaneering**, a global provider of engineered products and services to a range of industries including oil and gas and renewable energy, has an industrial presence in East Sale.

T6. BUSINESS BY INDUSTRY, 2021

	Industry	Wellington	Latrobe	South Gippsland
	Agriculture, Forestry & Fishing	1,412	434	1,482
♻	Construction	632	855	598
	Rental, Hiring & Real Estate Services	307	474	269
	Retail Trade	242	333	174
♻	Professional, Scientific & Technical Services	210	365	227
♻	Transport, Postal & Warehousing	198	302	166
	Health Care and Social Assistance	191	249	123
	Other Services	180	342	146
	Accommodation and Food Services	167	266	133
♻	Manufacturing	132	167	137
	Administrative and Support Services	109	170	88
♻	Wholesale Trade	76	84	71
	Financial and Insurance Services	55	144	72
	Arts and Recreation Services	49	56	21
	Education and Training	38	38	31
♻	Mining	24	8	7
♻	Electricity, Gas, Water & Waste Services	14	19	14
	Information Media and Telecommunications	14	26	19
	Public Administration and Safety	4	7	5
	Total	**4,054**	**4,339**	**3,783**

Source: Business counts, Wellington, South Gippsland and Latrobe, ABS, June 2021.
♻ key renewable energy supply-chain sectors.

6.5. INDUSTRIAL LAND SUPPLY

The ability for existing and new businesses to service renewable energy projects will be influenced by the availability of suitable industrial land in Wellington and other parts of Victoria.

In central and southern Wellington, the main locations of industrial land are in Sale, West Sale, Rosedale and Yarram. A review of available land supply (Appendix D) found that there is a lack of strategic industrial sites currently available to meet 'business as usual' demand and limited ability to accommodate both growth of existing businesses and sites for new businesses due to demand associated with the renewable energy supply chain.

If not addressed, there is a clear potential for zoned and developable land supply to inhibit local economic and employment opportunities associated with the renewable energy supply chain.

Given the long lead times associated with planning scheme amendments and land development, it is important that both Sale (as the regional centre and critical mass of industrial activity in Wellington) and Yarram (as the closest service centre in Wellington and many proposed projects) have a sufficient supply of zoned land (including a contingency for demand uplift and business expansion) to facilitate local supply chain activity and new business attraction. This will require additional land to be included in suitable industrial zones.

At the regional level, there is also a need for a strategic assessment of the most suitable locations and sites that may be required to accommodate major manufacturing businesses if and when these are attracted to Gippsland.

T7. INDUSTRIAL LAND AVAILABILITY, SALE AND SOUTHERN WELLINGTON

Indicator	Sale / Wurruk	Southern Wellington (Yarram)
Vacant industrial land supply (gross developable)	46ha	11ha
Development ready supply[1]	4.5ha	Limited due to drainage constraints
Approximate industrial land requirements over 20 years	80ha	25ha

Source: Urban Enterprise. See Appendix D for details. 1. Excludes West Sale Aerodrome due to development plan requirements.

6.6. EMPLOYMENT

6.6.1. SPECIALISATIONS

Existing specialisations in Wellington are evident through the Location Quotient (LQ) technique which measures the proportion of employment in Wellington compared with regional Victoria as a benchmark. A higher LQ indicates a higher level of economic specialisation and competitive advantage.

The LQ analysis shown in Figure 26 highlights the following employment specialisations in Wellington Shire:

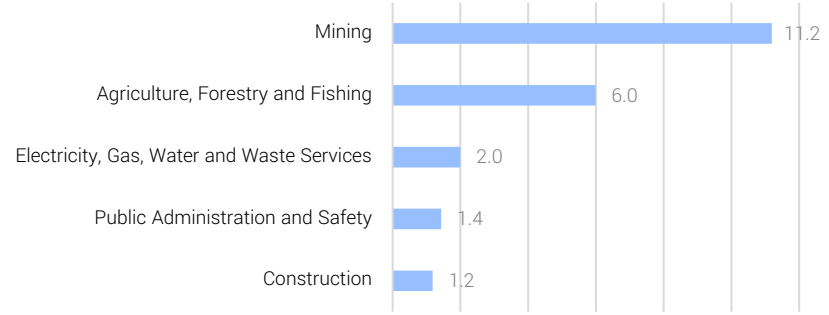
- Mining (driven by oil and gas extraction);
- Electricity, Gas, Water and Waste Services (driven by gas supply);
- Agriculture, Forestry and Fishing (driven by forestry and logging);
- Public Administration and Safety (driven by defence); and
- Construction (driven primarily by heavy and civil engineering construction).

The most relevant employment specialisations for renewable energy projects are oil and gas extraction, exploration and mining support services and heavy and civil engineering construction.

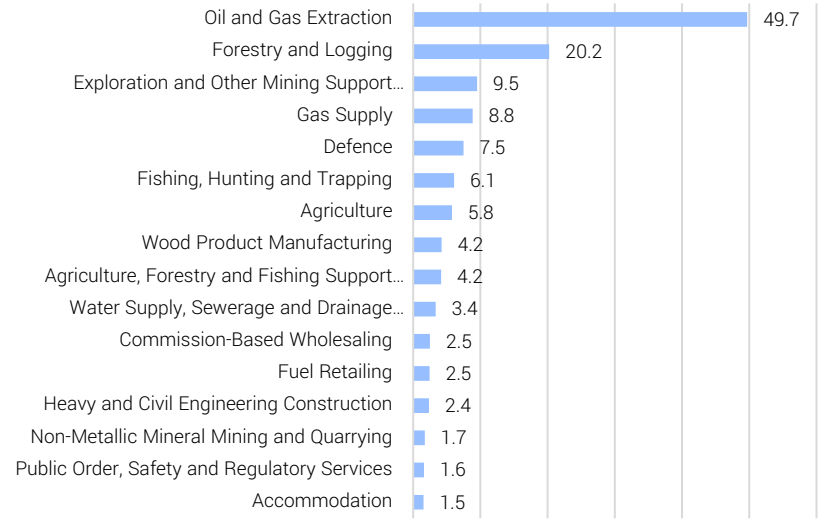
Oil and gas jobs and businesses are particularly important in terms of the potential to service offshore wind projects. The construction sector is also important given the substantial supply-chain requirements for construction businesses and labour expected in the coming years.

F26. EMPLOYMENT SPECIALISATIONS, LOCATION QUOTIENT, WELLINGTON

Industry Division: top 5 LQ result



Industry sub-divisions with LQ greater than 1.5.



Source: Wellington Economy Id profiles, accessed July 2022.

6.6.2. EMPLOYMENT BY INDUSTRY TRENDS

- The Census recorded a total of almost 18,000 jobs in Wellington Shire in 2021, a 4% increase from the previous Census. It is noted that the Census generally undercounts employment by at least 10%.
- During the construction and operation phases, offshore wind projects alone could generate at least 1,000 direct jobs per year in the region, which would equate to an additional 5% of the current employment levels across the municipality.
- Several supply-chain sectors relevant to renewable energy related sectors recorded a decline in employment from 2016 to 2021, including construction, manufacturing and electricity, gas and water services.
- There were more than 450 persons employed in the mining sector, most of which were in oil and gas extraction. A proportion of these jobs with transferrable skills present opportunities to service the renewable energy sector.

T8. EMPLOYMENT TRENDS, WELLINGTON SHIRE, 2016 TO 2021

	Industry	2016	2021	Change	% change
	Health Care and Social Assistance	2,095	2,621	526	25%
	Agriculture, Forestry and Fishing	2,361	2,189	-172	-7%
	Public Administration and Safety	1,567	2,015	448	29%
	Retail Trade	1,699	1,659	-40	-2%
	Education and Training	1,425	1,569	144	10%
♻	Construction	1,642	1,517	-125	-8%
	Accommodation and Food Services	1,081	1,021	-60	-6%
♻	Manufacturing	973	905	-68	-7%
	Other Services	583	636	53	9%
♻	Professional, Scientific and Technical Services	522	590	68	13%
♻	Transport, Postal and Warehousing	457	504	47	10%
♻	Mining	480	461	-19	-4%
	Inadequately described	471	371	-100	-21%
	Not stated	215	314	99	46%
	Administrative and Support Services	358	300	-58	-16%
♻	Wholesale Trade	232	276	44	19%
♻	Electricity, Gas, Water and Waste Services	282	255	-27	-10%
	Rental, Hiring and Real Estate Services	172	175	3	2%
	Arts and Recreation Services	182	163	-19	-10%
	Financial and Insurance Services	198	157	-41	-21%
	Information Media and Telecommunications	64	66	2	3%
	Total	**17,059**	**17,764**	**705**	**4%**

Source: Wellington Economy Id profiles, accessed July 2022

♻ key renewable energy supply-chain sectors

6.6.3. UNEMPLOYMENT & PARTICIPATION

Gippsland's unemployment rate in August 2022 was 3%, having recovered strongly from a period of higher unemployment (6-8%) from 2015 to 2018.

Wellington Shire's rate of unemployment in June 2022 (latest available at the LGA level) was 4.2% and has remained below 6% over most of the past decade, indicating a well utilised labour market with very limited capacity.

The surrounding municipalities of South Gippsland and Bass Coast have experienced similar unemployment conditions, whereas Latrobe City has consistently experienced higher unemployment than the other municipalities.

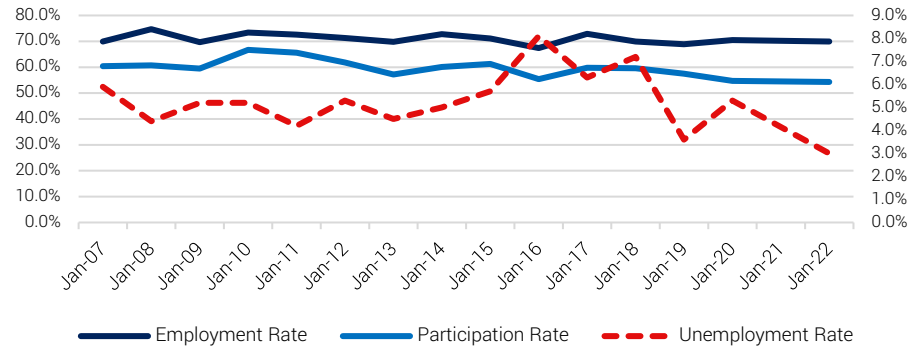
With the exception of Latrobe City, regional unemployment is at record low rates, and rarely exceeds 6%.

Importantly, the labour force participation rate in Gippsland (51.4%) sits well below Victoria (64.6%), and is lower than other parts of regional Victoria, and markedly so in some cases.[14]

The competitive job market is likely to present challenges in the recruitment and retention of labour to support renewable energy projects concurrent to existing business demand. As a result, there will be a need to:

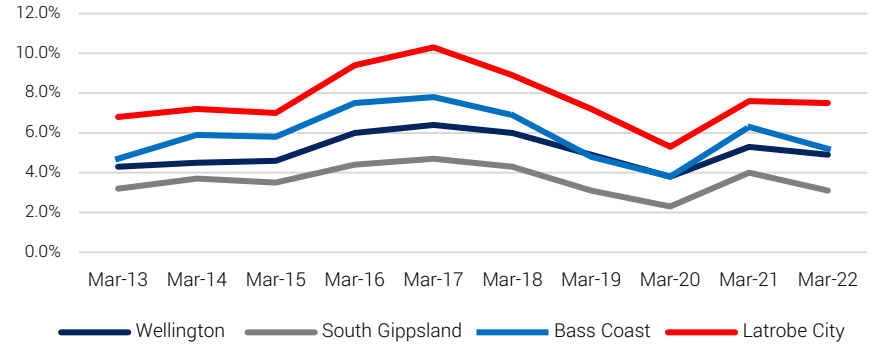
- Import labour from outside Gippsland;
- Attract regional workers from other sectors;
- Facilitate workforce transition; and
- Engage those not currently participating in the labour force or underemployed where possible.

F27. EMPLOYMENT, UNEMPLOYMENT & PARTICIPATION RATE, GIPPSLAND



Source: Unemployment rate, ABS, Jan 2007-22 (Latrobe Gippsland SA4).

F28. UNEMPLOYMENT RATE, REGIONAL LGAS



Source: Unemployment rate (smoothed), ABS, 2013-22

[14] Gippsland Regional Labour Force Participation Report, LVA. Data relates to September 2021, report published in June 2022.

6.6.4. JOBS AND SKILLS GAPS

The Victorian Employer Skills Survey (VESS) gathered insights from Victorian businesses in 2021 about:

- The impact of the COVID-19 pandemic on skills gaps, business operations and productivity recruitment experiences and challenges;
- Current or anticipated future skill gaps and whether training is being used; and
- Employer perceptions of the accessibility and quality of training and its impact.

The following key findings from the Gippsland business respondents are relevant:

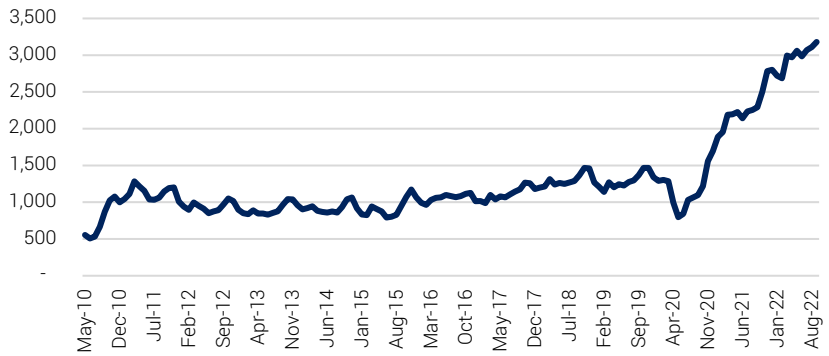
- 27% of Gippsland respondents stated that they would grow their workforce over the next 12 months, and 63% said their workforce would stay the same.
- 76% reported that they would expect to lack the technical/job specific skills in the next 12 months (2022);
- 65% attempted to recruit in the past 12 months;
- 77% found it difficult to fill roles; and
- 62% reported 'few applicants' as the major challenge in filing roles, followed by candidates lacked relevant experience (46%).

Figure 29 shows that the number of job vacancies in Gippsland has risen sharply since mid-2020 (around the onset of the COVID pandemic) and is currently at a record high in excess of 3,000 positions.

These circumstances demonstrate that Gippsland businesses have recently been experiencing difficulties in recruiting workers with relevant skills sets, and these challenges are likely to already be limiting economic growth.

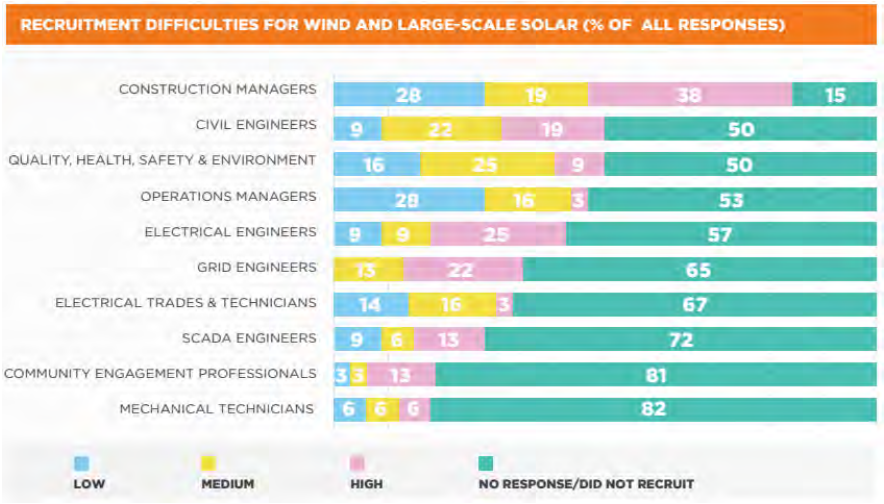
Concurrently, renewable energy developers in Australia are experiencing challenges recruiting skilled staff, especially in occupations in construction, engineering electrical and operations (Figure 30). Further, many of the occupations needed to support renewable projects are currently on the National Skills Priority List (2022).

F29. JOB VACANCIES, GIPPSLAND, 2010-2022



Source: Internet Vacancy Index, Gippsland, National Skills Commission, 2022.

F30. RECRUITMENT DIFFICULTIES FOR LARGE SCALE SOLAR AND WIND



Source: Clean Energy Council, Clean Energy at Work, 2020 survey.

6.7. ENERGY SECTOR SKILLS IN GIPPSLAND

The traditional energy sector in Gippsland has long been a primary driver and specialised area of the regional economy. The region's competitive advantage in resource mining and energy generation has developed over a long period of time, which has led to a well-established and efficient supply chain, a high level of employment, and associated flow on benefits.

A major comparative advantages of the region is engineering capability that developed to support the energy sector, particularly in the Latrobe Valley. The Latrobe City Economic Development Strategy (2016-2020) identifies the region as the 'Engineering capital of Australia', and states that:

> *"The technology developed in the Latrobe Valley was leading for its time and the machinery developed to extract coal and generate electricity was replicated in many other areas.*
>
> *The standout strength of the region is the engineering knowledge and skills…. a focus on Science, Technology, Engineering and Mathematics (STEM) is required to position the economy for the future industries and jobs"* (p. 5)

At a high level, supply-chain sectors in traditional energy that generally align with renewable energy project requirements are outlined in Table 9. These activities are primarily associated with oil, gas and coal exploration, extraction and energy generation, including construction, operation and maintenance of major infrastructure both on and offshore.

As shown in Table 10 and Figure 31, Wellington and Latrobe City have substantial employment in sectors and sub-sectors that are directly relevant to renewable energy needs, presenting the opportunity to apply these skills and experience to the new energy challenge.

T9. ENERGY SUPPLY-CHAIN, SUB-SECTORS & ACTIVITIES

Industry category	Sub-sector Activity
Mining	Oil and gas extraction Exploration and mining support Coal mining
Electricity, gas, water and waste services	Electricity generation Electricity distribution Electricity transmission Gas supply
Transport, postal and warehousing	Water transport (freight and passenger) Port and water transport terminal operations Pipeline and other transport Stevedoring services
Manufacturing	Transport Equipment Manufacturing Primary Metal and Metal Product Manufacturing Petroleum and Coal Product Manufacturing Machinery and Equipment Manufacturing
Construction	Heavy and civil engineering construction Site preparation services Building structure services Building installation services
Professional, scientific and technical services	Engineering Design and Engineering Consulting Services Surveying and Mapping Services

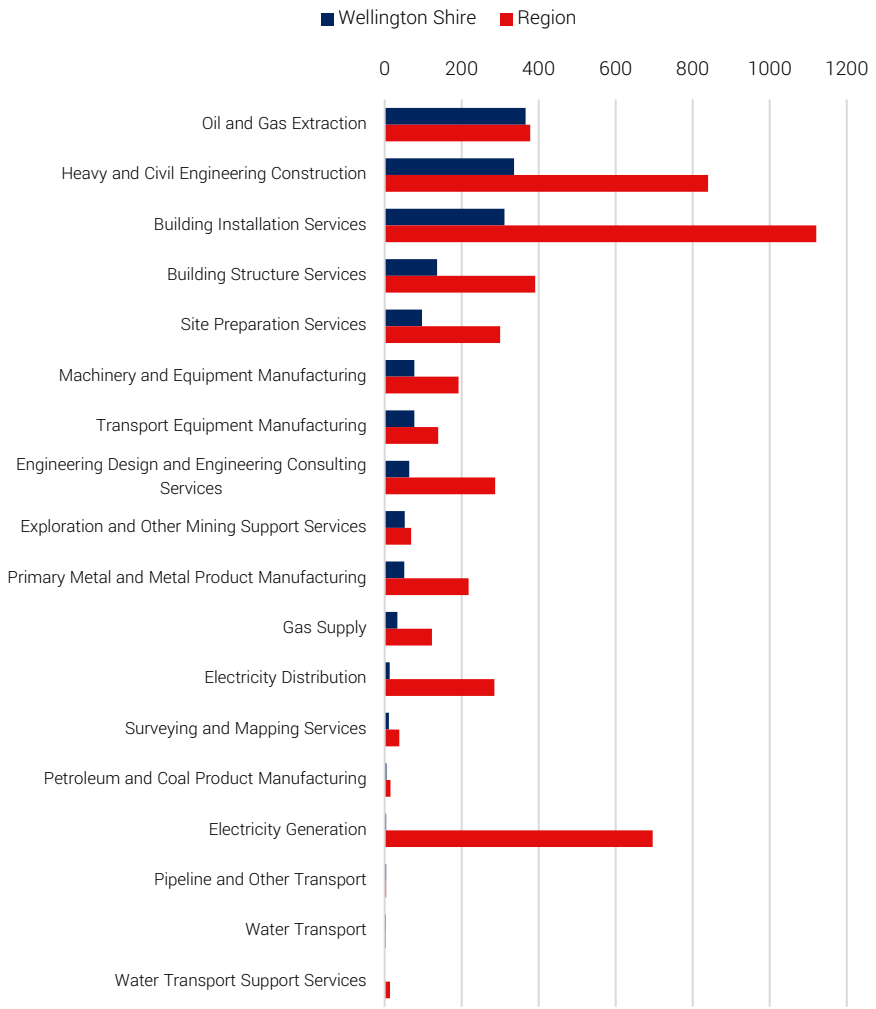
Source: Urban Enterprise 2022, derived from ANZSIC.

T10. JOBS IN ENERGY SUPPLY-CHAIN ACTIVITIES (GROUPED), 2021

Sector	Wellington	Latrobe City	South Gippsland
Mining	418	315	7
Electricity, gas, water and waste services	50	1,025	33
Manufacturing	210	266	88
Construction	880	1,342	430
Professional, scientific and technical services	50	212	38
Transport, postal and warehousing	7	5	9
Total	**1,615**	**3,165**	**605**

Source: ABS Census, 2021

F31. TOP EMPLOYING ENERGY SUPPLY-CHAIN SUB-SECTORS, 2021



Source: ABS Census, 2021.

6.8. TRAINING PATHWAYS

Education and training providers in Wellington and Gippsland have identified the need to align future course programming to specific job and skill requirements for new energy project construction, operation and maintenance.

Consultation with providers indicated that each are planning for future program delivery, and although there are synergies with certain existing programs (e.g. general technicians and trades), new tailored programs will be needed to support the diversity of renewable project types and roles. The following provider-specific points are relevant to local 'readiness':

- TAFE Gippsland's Morwell Trade Skills Centre (MTSC) opened in 2022, and offers training in electrotechnology, new energy systems, instrumentation and plumbing trade training with specialist workshop, lab facilities and general-purpose classrooms. The initial focus is on solar PV, however battery and wind technology is proposed in the future.
- In March 2022, Federation University opened Australia's first renewable energy wind turbine training tower in Mount Helen, Ballarat. The 23-metre tower is Stage 1 of the Asia Pacific Renewable Energy Training Centre (APRETC). The tower will allow Federation TAFE to start delivering the Global Wind Organisation (GWO) basic safety training standards required to work in the wind turbine industry.
- By 2023, Federation TAFE will deliver the globally recognised post-trade turbine technician training course. The six-month intensive course for electricians, mechanical fitters, and automotive technicians includes an internship with wind turbine manufacturers and service organisations, covering electrical, mechanical, and hydraulic systems training.
- Currently TAFE Gippsland do not offer course programs for wind technology and hydrogen, but these are flagged as priorities for future delivery. A potential partnership with Federation TAFE could see theoretical courses for wind technology delivered in Gippsland, and practical training delivered in Ballarat.

TAFE Gippsland and Federation University/TAFE are well-placed to support the growth of solar, wind, battery and hydrogen developments in Gippsland and the State. Coordination between education and training providers and project proponents will be an important part of skills alignment.

Other priorities should be:

- Providing targeted training for oil and gas workers and other more general business skills to transition to renewable energy applications; and
- Promoting pathways into the sector, including qualifications needed and available, roles expected to be available and employment conditions.

6.9. ISSUES & OPPORTUNITIES

Table 11 summarises the key issues and opportunities identified in relation to supply chain and employment.

T11. SUPPLY CHAIN AND EMPLOYMENT ISSUES AND OPPORTUNITIES

No.	Issue / opportunity
1.1	The existing business base in Wellington offers services relevant to renewable energy projects, however there is limited direct specialisation and a limited overall scale of businesses that can service major projects.
1.2	The large scale of manufacturing, construction and operational investment will require extensive global supplies. The national and regional critical mass of projects may attract specialised global businesses.
1.3	There is limited industrial land supply to service 'business as usual' demand and a lack of strategic sites to accommodate new businesses.
1.4	There is a shortage of labour available to existing businesses in many sectors in Gippsland and Wellington, and general skills gaps for the renewable energy sector overall.
1.5	There is an existing workforce in the region with skills that can be adapted and transferred to renewable energy projects, especially those related to oil and gas and traditional energy and resource production and services.
1.6	Training providers are planning for renewable energy sector needs however a multi-faceted approach to skills development, training and employment attraction will be needed to service the scale of projects proposed in a short timeframe.
1.7	Existing core industries of agriculture, health, education, construction and tourism will require ongoing labour and business services in the local area – the potential for disruptions to 'existing' economic activity should be considered.

6.10. RECOMMENDED DIRECTIONS

Table 12 shows the recommended directions for Council to address issue and opportunities. Specific actions are subsequently set out in Section 10.

T12. SUPPLY CHAIN AND EMPLOYMENT DIRECTIONS

No.	Direction	Responds to issues
1	**Support and promote integration of local and regional business capabilities into the renewable energy construction and operational supply chain.**	1.1 1.3 1.7
2	**Attract, adapt and grow a skilled labour force to service direct and indirect employment needs**	1.4 1.5 1.6 1.7
3	**Position Wellington and the central Gippsland region to attract and accommodate national and global suppliers to the renewable energy sector**	1.2 1.3

7. HOUSING & ACCOMMODATION

7.1. INTRODUCTION

This section assesses housing demand conditions, and the capacity and suitability of housing and accommodation in southern Wellington to meet the potential needs workers in renewable energy.

7.2. SETTLEMENT HIERARCHY

The existing settlement hierarchy of Wellington is shown in Table 13. The regional city of Sale is supported by a network of towns in central Wellington in Rosedale, Maffra, Stratford, Heyfield.

In southern Wellington where many of the renewable energy projects are proposed, Yarram is the only 'town' and performs an important service role for the surrounding rural areas and coastal settlements.

T13. SETTLEMENT HIERARCHY, WELLINGTON SHIRE

Hierarchy	Role	Towns
Regional Settlement	Main employment education, medical and commercial centre. Service role for rural hinterland and smaller towns and settlements.	Sale
Towns	Service centres for rural communities. Provide community services, employment and recreation services. Specialist functions, including tourism based retailing.	Yarram Maffra Heyfield Rosedale Stratford
Settlements	Minor rural service centres.	Alberton Port Albert Woodside Seaspray The Honeysuckles Golden Beach Paradise Beach Stradbroke Longford Gormandale Nambrok Glenmaggie Coongulla Boisdale, Munro Licola Dargo Cowwarr

Source: Wellington Planning Scheme. Southern Wellington towns and those located near the proposed offshore wind project locations are highlighted in blue.

7.3. HOUSING STOCK, TENURE AND OCCUPANCY

In 2021, there were approximately 20,000 dwellings in Wellington Shire. Sale and surrounds accommodate approximately 80% of the Shire's housing. There are less than 3,000 dwellings in southern Wellington (14% of the municipal total).

As shown in Table 14, more than 80% of housing tenure in southern Wellington is owner occupier, with 16% rented (a low proportion compared with state levels).

Demographic indicators relevant to housing needs in southern Wellington based on the 2021 Census show that southern Wellington has a much older resident population compared with the municipality overall (median 53 years compared with 44 for the Shire) and a high proportion of residents categorised as "empty nesters" and "seniors".

T14. DWELLING PROFILE & TENURE SUMMARY, 2021

Details	Southern Wellington	Wellington LGA
Number of dwellings	2,891	20,284
Occupancy	76%	79%
Dwelling Structure		
Separate House	92%	92%
Semi-detached, row, terrace or townhouses	4%	4%
Flat / Apartments	2%	4%
Other dwellings	2%	1%
Tenure		
Owned (outright or with mortgage)	81%	63%
Rented	16%	17%
Other	3%	19%

Source: ABS Census, 2021.

UNOCCUPIED DWELLINGS

24% of dwellings in Southern Wellington were unoccupied at the 2021 census, mainly due to the presence of holiday homes along and near the south-east coastline.

As shown in Table 15, Port Albert, Woodside and Seaspray collectively accommodate 583 unoccupied dwellings. The opportunity to utilise some of these dwellings to accommodate demand from temporary workers during renewable energy construction periods could be investigated, while acknowledging that many owners are likely to continue using the houses for holiday purposes.

T15. DWELLING OCCUPANCY, SOUTHERN WELLINGTON

Location	Unoccupied dwellings 2021	% of all dwellings	Wellington Shire average % unoccupied
Yarram	151	13%	21%
Alberton	20	13%	
Port Albert	114	37%	
Woodside & Woodside Beach	99	30%	
Seaspray	199	51%	
Total	**583**	**29%**	

Source: ABS Census, 2021.

7.4. PROPERTY MARKET CONDITIONS

OVERALL MARKET

House prices in Wellington increased at moderate levels over the period 2011 to 2017. Overall house prices began to increase more strongly during 2018 and 2019, followed by a period of very high growth during and following the commencement of the COVID pandemic in 2020.

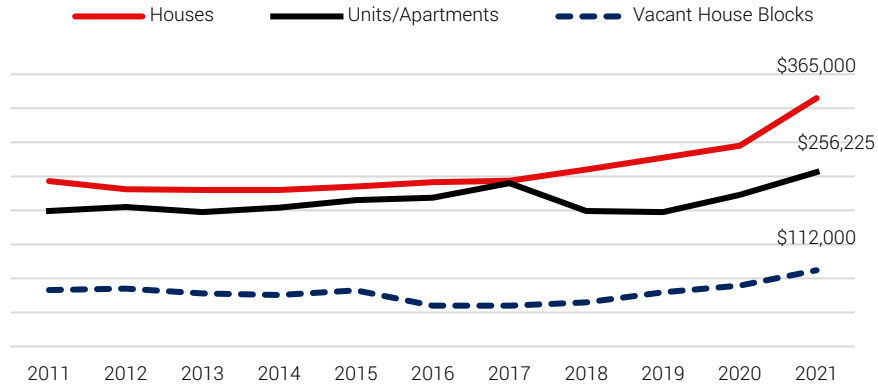
Real estate agents in southern Wellington indicated that overall demand levels have normalised somewhat in 2022 following the post-COVID surge which led to strong migration levels from Melbourne and some regional centres to rural areas and towns and an increase in demand for second homes.

Demand for new housing in Sale increased strongly in 2021, as evidenced by an accelerating rate of vacant lot sales, a 15% increase in the median sale price of vacant house lots in one year, and an overall increase in annual new dwelling approvals.[15]

In Southern Wellington, a review of properties advertised for sale in August 2022 found that:

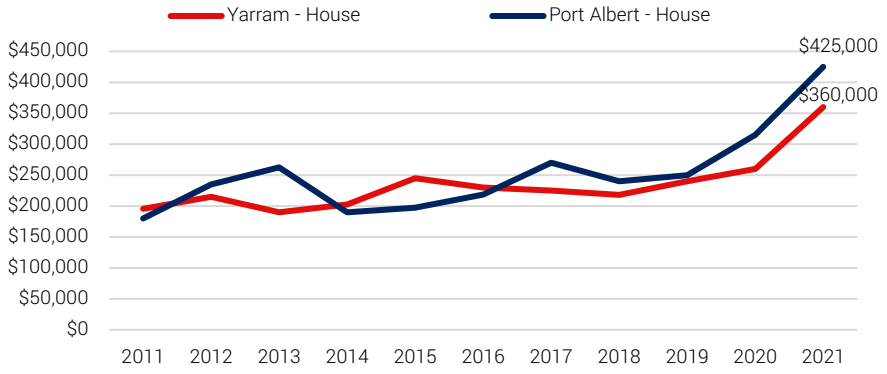
- Approximately 50 properties were available on the market including 35 houses, 3 units and 6 vacant lots.
- Over half of the properties on the market were located in Yarram, followed by Port Albert. Less than 5 were in Alberton.
- The median asking price for a stand alone house located in a township area was $527,500, higher than the Wellington median of $365,000 in 2021.
- There is one proposed residential estate in Yarram, located in the south east of the town. 36 lots have been made available to the market as part of Stages 1 and 2. 12 of the 36 lots are currently under offer or have been sold.

F32. MEDIAN HOUSE AND UNIT PRICES, WELLINGTON SHIRE



Source: A guide to property values, 2021.

F33. MEDIAN HOUSE AND UNIT PRICES, BY TOWN



Source: A guide to property values, 2021.

[15] Urban Enterprise, 2021, REIV sales data.

RENTAL MARKET

The overall rental market in regional Victoria is experiencing severe capacity issues, with vacancy rates at record low levels and in many places, a decline in the number of rental properties officially[16] available.

In Wellington Shire in 2022, there are approximately 2,800 active rental properties with a median rent of $370 per week. This is lowest level of active bonds in Wellington Shire since 2015 and coincides with a period of very high rent price growth.

The median rent increased by 16% in the 12 months to June 2022, with the highest increases for 1 bedroom dwellings. In 2022, 25% of all rental dwellings are categorised as "affordable" for residents on lower incomes.

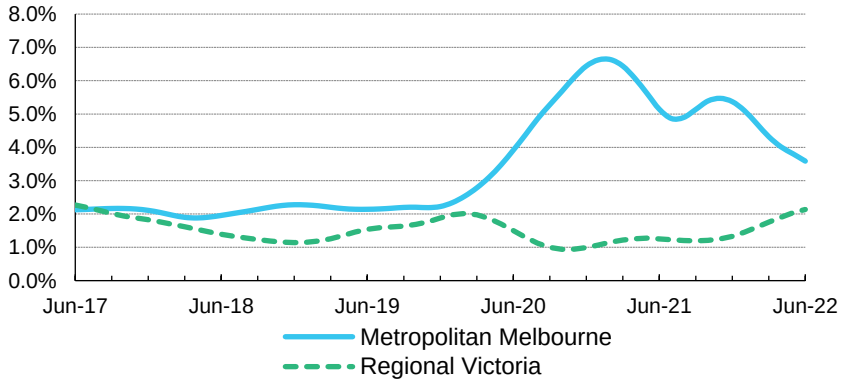
Based on major real estate website listings, there were only 3 houses advertised for rent in southern Wellington in October 2022 (two in Port Albert and one in Yarram).

Consultation with real estate agents active in Yarram and surrounds provided in the following insights into the rental market:

- There are approximately 280 rental properties managed by agents in Yarram, however the number has been reducing due to owners selling investment properties or no longer leasing through official channels.
- There is high rental demand relative to supply and very quick leasing once new properties are advertised (currently usually only 1-2 days). There is currently a long waiting list for rental properties.
- The most common new tenant type is lower and unskilled working families, often originating from the Latrobe Valley.

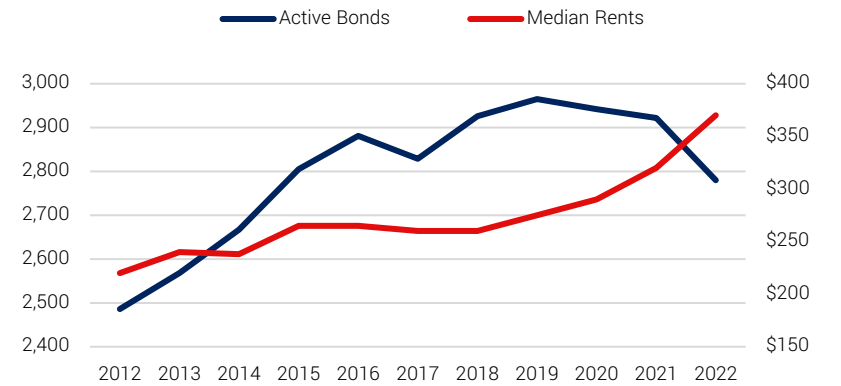
Consultation also identified that some businesses in the southern Wellington area have reported difficulties finding short-term accommodation for workers, particularly rural industries with a seasonal workforce.

F34. RENTAL VACANCY RATE, 2017 - 2022



Source: DHS Rental Report, 2022.

F35. ACTIVE RENTAL BONDS AND MEDIAN RENT, WELLINGTON



Source: Rental report, Department of Health, June 2022.

[16] Rentals registered under the Residential Tenancies Act. Anecdotally, the incidence of informal renting has increased in many areas, in part due to increased standards and landlord responsibilities imposed by recent legislative changes. Properties rented to short term visitors (eg. through AirBnB) are also impacting rental markets in some areas.

7.5. POPULATION AND DWELLING GROWTH

In 2022, the Estimated Resident Population of Wellington Shire is approximately 45,000 people. The Shire has recorded moderate population growth in the past decade, at an average annual rate of 0.7%, equating to an additional 300 residents and 320 dwellings per year on average.

The rate of growth in Wellington has been higher than Latrobe City (0.3%) but lower than South Gippsland (1%) over the same period.

Official State government population projections are for modest growth levels to continue, with a growth rate of 0.6% per annum projected which would result in the need for 3,288 additional dwellings over the period 2021 to 2036 (219 per year).

Southern Wellington recorded a modest increase in population between 2011 and 2021. Victoria in Future projections are for low growth requiring an average of 20 additional dwellings per annum over the period 2021 – 2036 in the Yarram SA2.

It is noted that these projections were prepared prior to the COVID pandemic and also do not take into account any potential impacts of renewable energy projects.

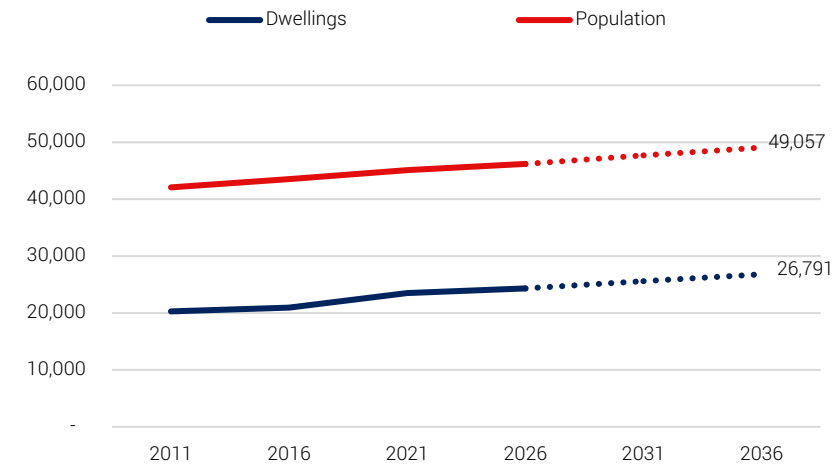
Post-pandemic projections prepared for Council by Forecast ID project a need for 285 dwellings in the Yarram District over the period 2021 – 2036, an average of 19 per year.

RECENT DEVELOPMENT ACTIVITY

Over the period 2015 – 2021, an average of 265 new dwellings have been approved for construction in the municipality, including 81 in Sale (31%) and 18 per year in southern Wellington (7%). Yarram, Port Albert and Woodside each average 4 dwelling approvals per annum.

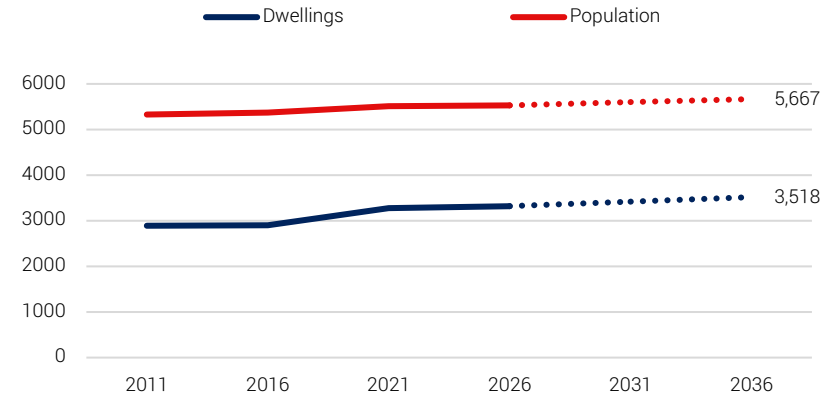
Over the period between the 2016 and 2021 Census, the number of dwellings counted in southern Wellington increased from 3,077 to 3,277, an average annual increase of 40 dwellings per year.

F36. POPULATION & DWELLING GROWTH, WELLINGTON SHIRE



Source: Estimated Residential Population, ABS and Victoria in Future, 2019.

F37. POPULATION & DWELLING GROWTH, SOUTHERN WELLINGTON



Source: Estimated Residential Population, ABS and Victoria in Future, 2019.

7.6. HOUSING SUPPLY AND ISSUES

SOUTHERN WELLINGTON

The following key issues regarding housing are identified based on the preceding analysis, consultation with real estate agents active in southern Wellington and a review of available land supply shown in Appendix D.:

- Yarram and most of southern Wellington have experience a period of very low growth and has an ageing population.
- Yarram is the central service location for the southern Wellington region and provides important retail, community and health services to the broader district. As the population has aged, demand has increased for smaller dwellings and aged care.
- Broadhectare land supply is relatively limited, with approximately 23 hectares remaining to the south-east of the Yarram. This area has drainage challenges which have directly contributed to the lack of new housing development in the town in recent years.
- Rental housing availability is at critically low levels and the number of rentals available is declining.
- Other smaller towns in southern Wellington such as Alberton, Port Albert and Robertsons Beach have a high proportion of unoccupied housing and lots but constrained urban infrastructure to accommodate any residential intensification.
- Foster in South Gippsland is a similar sized town to Yarram, and is growing at a higher rate due to the absence of constraints. Foster could attract the interest of developers if land is available and development more viable.

Importantly, housing in Yarram is currently not meeting the needs of existing residents and the lack of rental properties is negatively impacting housing costs and the ability of businesses in the area to attract labour.

If demand for housing in southern Wellington – particularly short term and rental housing during the renewable energy project construction phases – increases to any extent, this will accentuate existing challenges.

SALE

A review of residential land demand and supply in Sale (included in Appendix E) found that current residential land supply is expected to accommodate at least 1,200 lots, catering for approximately 15 years demand.

However, residential land supply is almost exclusively concentrated in a single development area (in Wurruk), a circumstance that warrants planning for additional supply to:

- Mitigate the risk of slow development; and
- Increase competition to enable the development sector to respond to any increases in demand which materialise as a result of the progressive increase in renewable project investment in the Wellington area.

7.7. COMMERCIAL ACCOMMODATION

Tourism is an important component of the southern Wellington economy, with holiday homeowners and short stay visitors dispersed across several smaller coastal settlements and day trips also common.

Pre-COVID, southern Wellington received 200,000 visitors per year, including 75,000 domestic overnight visitors (TRA, 2017-2019 average).

Domestic overnight visitors to southern Wellington typically stay with friends/relatives, in holiday homes or caravan parks & camping grounds (Figure 38).

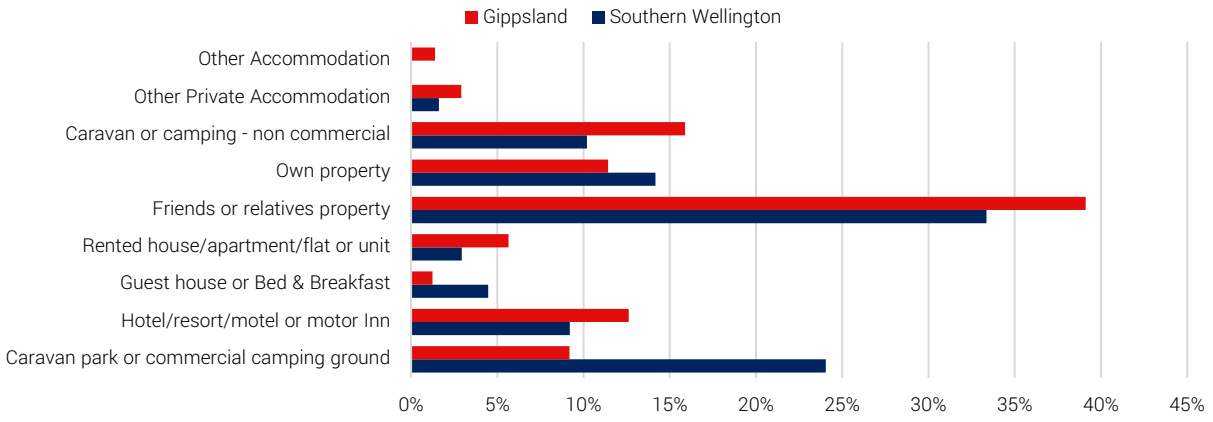
An audit of commercial accommodation available in southern Wellington is summarised in Table 16, showing that the area has a capacity of 103 commercial accommodation rooms, 275 camping & caravan sites and 74 rooms in self-contained short-stay accommodation.

This excludes holiday homes not rented out on a commercial basis, which are expected to comprise most of the 583 unoccupied dwellings in the area.

Commercial accommodation establishments are predominantly a mix of motels and self-contained houses and units and could be used to accommodate some short to medium term stays for workers, however the overall number of rooms is low and displacement of the holiday and leisure visitor market could occur.

The recent closure of the Seabank Caravan Park substantially reduced the capacity of the area to accommodate visitors in the Port Albert area.

F38. ACCOMMODATION UTILISED, 207-21 (5-YR AVE)



Source: NVS, TRA, 2017-21.

T16. COMMERCIAL ACCOMMODATION SUMMARY, SOUTHERN WELLINGTON

Accommodation type	Yarram	Alberton	Port Albert	Woodside	Total
Commercial accommodation (no.) (e.g. hotel, motel)	7	5	6	1	**19**
Rooms	*52*	*16*	*29*	*6*	***103***
Caravan, camping, holiday parks (no.)	2	0	1*	1	**4**
Sites	*171*	*0*	*4**	*100*	***275***
Self-contained house/unit/apartment (AirBnb/Stayz)	5	2	11	9	**27**
Rooms	*16*	*4*	*25*	*29*	***74***

Source: Urban Enterprise, 2022. *excludes the private Seabank Caravan and Camping park which was placed into administration in 2020.

7.8. HOUSING ISSUES & OPPORTUNITIES

Table 17 summarises the key issues and opportunities identified in relation to housing.

T17. HOUSING ISSUES AND OPPORTUNITIES

No.	Issue / opportunity
2.1	There is an existing shortage of rental housing relative to demand, with availability critically low in southern Wellington.
2.2	There is an inadequate supply of smaller dwellings and housing suitable for older residents in Yarram.
2.3	Limited residential development has occurred in southern Wellington in recent years and infrastructure issues (especially drainage) have constrained opportunities.
2.4	At present, parts of the Shire would not be able to accommodate any additional demand for housing which arises as a result of renewable energy projects. This could lead to further rent price growth and likely displacement of residents.
2.5	Housing demand during the construction phase is expected to be weighted towards short-term and temporary stays in the region. The prospect of demand subsiding in some areas may limit investment interest from housing developers to establish permanent housing.
2.6	There is a lack of certainty regarding the likely timing and location of housing demand that could result from major energy projects.
2.7	A wide range of industry sectors rely on housing for labour and income. If there is an overall shortage of housing, other sectors could experience further labour constraints.
2.8	Although commercial accommodation and holiday homes could help to accommodate worker housing demand, the extent to which these may be available could be limited and negative tourism sector impacts could result.
2.9	The planning and development process usually requires several years, meaning that a rolling supply of suitable zoned land will be needed to enable a timely response to any residential development interest to service renewable energy project-led demand.

7.9. RECOMMENDED DIRECTIONS

Table 18 shows the recommended directions for Council to address issue and opportunities. Specific actions are subsequently set out in Section 10.

T18. HOUSING DIRECTIONS

No.	Direction	Responds to issues
4	**Plan for an increase in demand for rental housing and short stay accommodation in Wellington, primarily in southern areas.**	2.1 2.2 2.4 2.6 2.7 2.8
5	**Identify and encourage housing types and locations best suited to accommodate seasonal and temporary workers.**	2.5 2.7 2.8
6	**Ensure that residential land supply is adequate to respond to potential increases in housing needs and can be readily serviced.**	2.2 2.3 2.9

8. INFRASTRUCTURE

8.1. INTRODUCTION

This section includes a review of the current infrastructure issues and opportunities and recommended directions relevant to Council's role and influence relating to transmission, transport and service infrastructure.

8.2. TRANSMISSION

Transmission infrastructure is critical to facilitating renewable energy projects, but is also expected to generate high levels of community interest. How and where the transmission network will be upgraded within the Wellington Shire boundaries is highly uncertain and is not within the direct influence of Council, other than as an important stakeholder to the planning process.

The following issues relating to local readiness have been identified through research and consultation:

- Uncertainty regarding alignments, timing and form of transmission - Although a network of easements currently exists for major roads and Basslink transmission and a proposed alignment for the G-REZ has been nominated by Ausnet, the ultimate alignment, form (i.e. above or below ground) and timing of transmission connections to the various proposed projects is yet to be determined. Proponents stressed the importance of efficient and timely transmission connections and highlighted the high levels of uncertainty that currently exist on this issue.
- Regulatory complexity - There is a complex regulatory and stakeholder network involved in transmission network planning in Victoria, including AEMO, AusNet, VicGrid and DELWP. In the context of the urgent requirement to facilitate renewable projects to replace retiring non-renewable equivalents and the need for certainty for proponents (and the community) regarding alignments and approvals processes, simplification of the planning and approvals pathways and stakeholder environment would be of broad benefit.
- Impact mitigation - Overseas experiences in offshore wind highlight the importance of minimising / consolidating the number of easements and shore crossing points for transmission. Given the location of the proposed offshore wind farms relative to Wellington's valued Ninety Mile Beach coastline, this should be a high priority objective for Council.

8.3. PORTS

For offshore wind, longer term hydrogen export opportunities and other logistics purposes, ports will be critical to facilitating construction and operations and maintenance activities over a long period.

The following summarises the high level 'readiness' of key ports in proximity to Wellington to service the projects.

PORT OF HASTINGS

The Port of Hastings is the largest port servicing Gippsland, has deep water access and has substantial adjacent land that could be used for construction purposes.

Victoria's *Offshore Wind Implementation Statement 1* (2022) identifies the Port of Hastings as the likely preferred location for a construction hub. Consultees communicated that the requirements to upgrade Port of Hastings to accommodate a construction hub for offshore wind will be substantial.

PORT OF CORNER INLET

Port of Corner Inlet located in South Gippsland (adjacent to the Wellington Shire municipal boundary) is the main commercial port in southern Gippsland.

The port is generally split into three separate but adjacent areas:

- Port Anthony (the southern area) - Approximately 180m of wharf face, with one commercial berth.
- Barry Beach Marine Terminal (BBMT) (the central area) - Approximately 400m of wharf face.
- Private freehold (northern area) is privately owned freehold land. No wharf face.

BBMT at Corner Inlet is currently used as an operational and maintenance hub (O&M) to service the oil and gas industry, with 23 offshore platforms and installations in the Bass Strait.

F39. PORT OF CORNER INLET PHOTO

PORT ALBERT AND PORT WELSHPOOL

Whilst there is recreational boat access at locations such as Port Albert and Port Welshpool, these areas do not have the infrastructure or capacity to support larger scale commercial activities for offshore wind projects.

CONSIDERATIONS

Port planning and investment will be central to the region's readiness for offshore renewable energy projects.

At present, although the Port of Hastings has been nominated as the preferred construction port and hub, there remains a level of uncertainty regarding what types of construction and operations and maintenance activities will occur at which port locations.

The regional economic benefits associated with Corner Inlet becoming the location for an offshore wind construction hub would be substantial, with nearby towns the most likely beneficiaries.

Advantages of Corner Inlet include:

- Proximity – Located closer to proposed offshore wind projects than other deep water ports, with notable travel time and cost savings. For example, Star of the South is approximately a 6 hour travel time from Corner Inlet, compared with 13-14 hours from Hastings, and 17-18 hours from Geelong.
- Wharf face & quay side access – BBMT has a wharf face in excess of 400m, allowing it to accommodate major construction vessels. The adjacent Port Anthony has a wharf face in the order of 180m.
- Land area – BBMT has around 80 ha of land area, with additional land available at Port Anthony.

However, the water depth at Corner Inlet is estimated at around 6.5 metres, which is not at a level to accommodate vessels used as part of a construction hub. For Corner Inlet to be considered, dredging would be required to deepen the channel to achieve a draft of 10.5 metres on the entrance to Corner Inlet and in the Barry Beach channel.

While the potential for Corner Inlet to ultimately function as a construction hub remains uncertain and subject to other processes, it is clearer that Port of Corner Inlet is an attractive location for an offshore wind O&M hub given its existing role servicing offshore oil and gas activities.

It is noted that the decommissioning of oil and gas platforms are planned to occur in the Bass Strait in the coming years. Preliminary discussions with port authorities indicated that BBMT has adequate capacity to accommodate an offshore O&M hub alongside decommissioning and other operations.

It is likely that Port of Corner Inlet will be the most logical and suitable candidate to accommodate an offshore wind O&M hub in Gippsland, and that some construction activities may also be possible subject to approvals and investment.

8.4. ROADS

The current state of play and issues for the road network are summarised below, based on consultation with the Department of Transport and council officers:

- A strength of the Gippsland region is its arterial road network which currently supports a wide range of heavy vehicle and special purpose vehicle movements.
- The South Gippsland Highway and Princes Highway form part of the Principal Freight Network and are generally in good condition.
- Current projects and priorities include:
  - The next stage of the Princes Highway duplication between Traralgon and Sale is expected to be completed in next 12 months.
  - The latest stages of the $115m South Gippsland Highway upgrade near Koonwarra saleyards (Leongatha) are being undertaken over several years.
  - The Sale alternative truck route is getting close to construction commencing (funding has been committed). The route will commence at the west sale aerodrome and bypass Sale to the north. Once upgraded, the route can be declared as an arterial suitable for freight.
  - Stage 1 of the Leongatha Alternative Freight Route is complete. Stage 2 needed, but is currently a "medium" priority.
  - The Gippsland region has received some Federal Government stimulus funding post COVID ($3 billion package), and has been used for short term projects such as shoulder sealing on arterial roads.
  - The Federal Government has progressively been delivering the Princes Highway strategy from Wollongong to South Australia, and includes corridor activation, signalisation, overtaking lanes, etc.
- Overall, the arterial road network through Gippsland is more than 90% 'complete' in terms of being fit for purpose to accommodate large vehicles, freight and B Doubles.
- Strategic road upgrades to respond to energy project needs could be an important legacy benefit for communities.

READINESS CONSIDERATIONS

In most instances, ongoing strategic upgrades to the arterial road network will be the responsibility of the State government, with Wellington Shire an important stakeholder.

Major offshore wind construction movements are expected to primarily occur offshore by marine vessels, meaning that road will not be required to accommodate large scale equipment and logistics exercises. Onshore wind, however, will continue to place substantial demands on the road network generally to the west of Wellington, and ongoing construction and operations movements will increase throughout the Wellington road network as the scale and complexity of projects in the area increases (especially transmission network construction).

DoT advised that transmission routes will be an important consideration for the arterial road network, especially relating to points at which the transmission infrastructure needs to cross roads or interface / share road reserves.

Given the main impacts will be on arterial roads, consultation with DoT was completed to determine the information that will be needed to inform a strategic response at the State and regional level. The following next steps are advised:

- A Regional Strategic Action Plan for declared roads will be needed to identify priority road actions for funding. This should be informed by:
  - Existing route mapping and condition ratings,
  - Locations and requirements of key onshore movements to projects;
  - Locations of proposed transmission lines and easements, including potential arterial road crossing points and any proposed shared use of road reserves for transmission purposes.
  - Gaps in the existing network;
  - Key actions and projects; and
  - Prioritisation of projects based on costs and benefits.

- At the local level, Wellington will need to be in a position to efficiently respond to individual project applications in respect of:
  - Temporary access plans;
  - Key infrastructure upgrades that are likely to be needed (especially access intersections); and
  - Local policy and guidelines on how the impacts of major energy projects on local roads will be assessed and funded by proponents (including investigation of any cost sharing opportunities).

Given that similar issues will be experienced across South Gippsland, Latrobe and Wellington on local, regional and State significant road issues, there is a clear opportunity for each Council to liaise closely on these issues. This will be especially important as projects progress further and announcements are made regarding port locations, construction plans and other key elements of the pipeline of energy projects in the region.

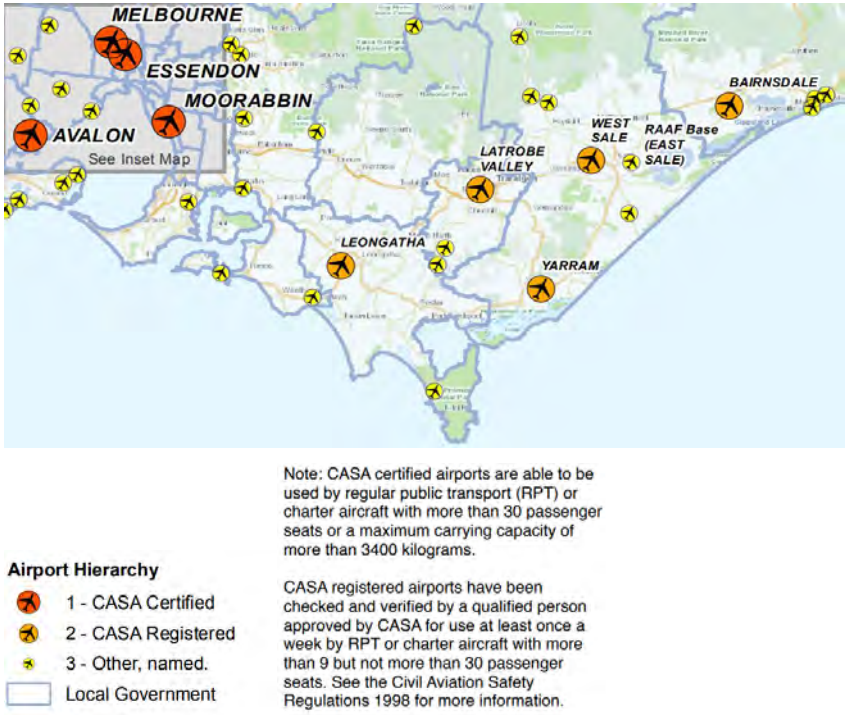
8.5. AIRPORTS

Renewable energy projects may need to utilise regional airports to facilitate air freight and crew transport movements. Gippsland is well serviced by regional airports, with several that have undergone upgrades (see Figure 40).

Yarram Aerodrome is the only Civil Aviation Safety Authority (CASA) registered airport in southern Wellington. Yarram Aerodrome is located on a 69 ha site east of Yarram township, and is owned by Wellington Shire Council. The Aerodrome is accessible by road and surrounded by farmland.

Although most freight will be transported by road, rail and sea, air access to offshore projects is expected to be needed for certain purposes, especially personnel transfer and operations and maintenance functions. Yarram Aerodrome could be utilised in support of the air transport requirements for offshore wind projects given its proximity to projects. Further assessment of its potential role would need to be undertaken having regard to the air transport needs of offshore wind projects and the suitability and capacity of the aerodrome to perform this role.

F40. REGIONAL AIRPORTS



Source: Cardno, 2022.

8.6. URBAN INFRASTRUCTURE

An assessment of the urban infrastructure available to service potential intensification and expansion of residential and industrial land in southern Wellington was prepared by Cardno with details provided in Appendix D.

The priority to ensure urban infrastructure readiness is the preparation of a major drainage and flood modelling for the town of Yarram given infrastructure constraints in other towns in the area.

8.7. ISSUES & OPPORTUNITIES

Table 19 summarises the key issues and opportunities identified in relation to infrastructure.

T19. INFRASTRUCTURE ISSUES AND OPPORTUNITIES

No.	Issue / opportunity
3.1	Certainty regarding transmission alignments is urgent and important for proponents and the community, however key elements of the proposed network are yet to be resolved and the regulatory environment is complex.
3.2	The ultimate transmission network should be consolidated wherever possible to maximise efficiencies and minimise visual and environmental impacts.
3.3	Port infrastructure and related land will be needed to support offshore wind and hydrogen opportunities. Port of Corner Inlet is well placed to perform an O&M role and potentially a construction role which would benefit both projects and the Gippsland economy.
3.4	Preparations for upgrades to the arterial and local road networks will be needed to ensure readiness for construction phases of project. This will require State, regional and local involvement and could create legacy benefits for communities in areas which currently have sub-standard road networks.
3.5	Council assets in southern Wellington (such as Yarram aerodrome) could play a role in supporting transport access to offshore projects.
3.6	The urban infrastructure network in southern Wellington is highly constrained which could limit the ability of towns in the area to accommodate urban growth in response to projects.
3.7	Yarram has the potential to accommodate some residential and industrial growth as part of its existing and potentially greater service centre role, however drainage issues must first be resolved through a co-ordinated approach.

8.8. RECOMMENDED DIRECTIONS

Table 20 shows the recommended directions for Council to address issue and opportunities. Specific actions are subsequently set out in Section 10.

T20. INFRASTRUCTURE DIRECTIONS

No.	Direction	Responds to issues
7	**Advocate for urgent and simplified resolution of a consolidated transmission network.**	3.1 3.2
8	**Ensure sea and road transport readiness through early investigation and strategic planning**	3.3 3.4 3.5
9	**Address civil infrastructure barriers to urban development in Yarram.**	3.6 3.7

9. COMMUNITY READINESS

9.1. INTRODUCTION

This section includes a review of issues relevant to Wellington's community readiness to accommodate the renewable energy projects.

It should be noted that social impact, visual and environmental issues and community consultation do not form part of the scope of this project, however general readiness considerations based on research, case studies and consultation with key stakeholders are documented.

9.2. CONSIDERATIONS

The following considerations are relevant to community readiness:

- Proponents see community consultation as a high priority and are actively engaging with stakeholder groups, however consultation processes are generally being held in isolation with limited coordination which could quickly lead to consultation fatigue and disengagement.
- There is no single, trusted source of information for community members to access relevant and current information, creating a high risk of misinformation and misunderstanding in the critical early phases of community information. The risk is currently accentuated by the large number of government agencies and proponents separately releasing information and announcements.
- The substantial investment could generate substantial local benefit and legacy for communities, however Council and other governments will need to work with proponents to establish a suitable policy and approach to securing local content and legacy commitments. This should include consideration of suitable local supply levels, labour force participation and training and community benefits schemes.
- Wellington Shire Council has limited resources to adequately engage in all tasks necessary to facilitate the early stages of readiness, such as fielding economic development enquiries, engaging with proponents and stakeholders, making submissions and so on. As the volume and speed of the resource requirement increases, it will be important for council to have the resources and organisational structure to respond.

9.3. ISSUES & OPPORTUNITIES

Table 21 summarises the key issues and opportunities identified in relation to infrastructure.

T21. COMMUNITY READINESS ISSUES AND OPPORTUNITIES

No.	Issue / opportunity
4.1	There is currently no single, trusted source of information for community members to access relevant and current information
4.2	The rate of change and announcements are fast moving and involve a complex network of government and industry stakeholders.
4.3	There is a clear opportunity for local economic and legacy benefits of projects, however suitable policy and commitments to local benefit will need to be embedded in planning and approvals processes.
4.4	Wellington Shire does not have the resources to adequately and efficiently facilitate the early phases of renewable energy projects, a challenge which is expected to deepen in coming years.

9.4. RECOMMENDED DIRECTIONS

Table 22 shows the recommended directions for Council to address issue and opportunities. Specific actions are subsequently set out in Section 10.

T22. COMMUNITY READINESS DIRECTIONS

No.	Direction	Responds to issues
10	**Aim to be a trusted source of information on renewable energy projects for the community**	4.1 4.2
11	**Advocate for and facilitate tangible community benefits that deliver a positive and lasting legacy**	4.3 4.4

10. ACTION PLAN

Recommended actions are identified which respond to each direction as shown in Table 23.

The Action Plan has regard to the context of the municipal and state planning framework and broader regional priorities for Gippsland and would need to be implemented in partnership with many stakeholders, including state and federal Government departments and agencies, regional economic development bodies, education and training providers, as well as business, industry and community groups.

An indicative timeframe, lead and partner stakeholders are recommended for each action. Where Wellington Shire Council is identified as the lead, the implementation of recommended actions will be subject to future resourcing, budgeting and prioritisation to be determined by Council.

Actions are categorised as either High, Medium or Low priorities. High priority actions should be undertaken in the short term, often because they are needed to commence a process which is time consuming, such as skills training and land supply, or because they are designed to address a clear priority or urgent existing need.

It is noted that many of the actions and directions are preliminary, in the sense that many key elements remain uncertain. In this context, it is important that a degree of flexibility and responsiveness is embedded into implementation.

In particular, some actions relating to the scale, location and timing of housing needs associated with renewable projects will depend to a great extent on the ultimate location and role of ports, and the timeframe over which projects are delivered. Actions that are preliminary are marked with an asterisk in the action number and priority rating.

T23. ACTION PLAN

Action No.	Action	WSC Role	Priority
	Economic Development, Supply Chain and Labour		
1	Support and promote integration of local and regional business capabilities into the renewable energy construction and operational supply chain.		
1.1	Liaise with renewable energy proponents regarding supply chain needs to refine the business and skill types required to support construction and operation.	Lead with partners	Medium
1.2	Prepare (subject to resourcing) a database of Wellington Shire businesses engaged in activities directly related to the renewable energy supply-chain and communicate opportunities.	Lead	Medium
1.3	Assist local businesses (subject to resourcing) to become 'supply chain ready' through the AusTender and Industry Capability Network.	Lead	Low
1.4	Following the completion of a drainage assessment (refer to direction 9), rezone at least 10ha of land to a suitable industrial zone in Yarram to ensure that business as usual demand plus and increase in supply chain activity can be accommodated.	Lead	Medium
2	Attract, adapt and grow a skilled labour force to service direct and indirect employment needs		
2.1	Liaise with renewable energy proponents regarding labour force needs and communicate opportunities through established networks.	Lead with partners	Medium
2.2	Engage with oil and gas businesses and supply chain representatives to explore the need and opportunity to adapt and transfer skills and services from offshore oil and gas to offshore wind applications.	Partner	Medium
2.2	Advocate for preparation of a regional skills attraction and training strategy and participate in a working group of regional education and training providers to drive locally based training opportunities for renewable energy skills and assist with strategic priorities where relevant.	Partner	High
2.4	Facilitate connections between renewable energy proponents and local secondary schools (through careers advisers and STEM networks) in relation to career pathway opportunities.	Partner	High
3	Position Wellington and the central Gippsland region to attract and accommodate national and global suppliers to the renewable energy sector		
3.1	Continue to support, fund and grow industry network opportunities through the Gippsland Renewable Energy Conference and Wellington Renewable Energy Forum.	Lead	High
3.2	In partnership with DELWP and regional Councils, embed economic development objectives for the renewable energy sector into regional and local planning policy to establish a supporting policy context for new entrants.	Partner	High
3.3	Advocate for the preparation of a regional investment/industrial growth strategy.	Advocate	Medium
3.4	Facilitate development and infrastructure planning for the West Sale Aerodrome Industrial Precinct and market development opportunities to the development sector.	Lead	High
3.5	Update industrial land planning for Sale with a view to rezoning an additional industrial precinct in the medium term (expansion of existing Wurruk Estate prioritised).	Lead	Medium

Action No.	Action	WSC Role	Priority
3.6	Engage with Invest Victoria, Latrobe Valley Authority, DJPR and Latrobe City to establish a value proposition and investment attraction strategy for large scale renewable energy project suppliers and manufacturers to establish in central Gippsland.	Partner	Medium
	Housing and Accommodation		
4	**Plan for an expected increase in demand for rental housing and short stay accommodation in Wellington, primarily in southern areas.**		
4.1	Advocate for State government action to expedite rezoning processes (following technical assessments) to provide for a broad range of housing growth opportunities.	Advocate	High
4.2*	Facilitate an increase in private sector visitor accommodation investment in Wellington, especially in southern areas, including caravan parks and other accommodation providers.	Advocate	Medium*
4.3	In partnership with relevant stakeholders (housing providers, strategic landowners and RDV), identify targeted opportunities to secure accommodation facilities suitable to accommodate both seasonal workers for existing industries (e.g. agriculture, timber, hospitality, etc) and in the medium term, renewable energy workers.	Partner	Medium
4.4	Engage with owners of regularly unoccupied dwellings in southern Wellington to identify the potential for workers to be accommodated in existing dwellings.	Lead	Medium
5	**Identify and encourage housing types and locations best suited to accommodate seasonal and temporary workers.**		
5.1	Liaise with project proponents regarding the expected length of duration of construction phases, expected household sizes and general housing typology requirements of workers during construction phases.	Lead	Medium
5.2	Periodically monitor announcements and liaise with government stakeholders and project proponents regarding new drivers of housing demand and expected timing of accommodation needs.	Lead	Ongoing
5.3*	Advocate to the State Government for the preparation of a worker housing provision study for the region establishing options for housing types, preferred locations, planning policy barriers and servicing requirements to support expected peaks in construction demand.	Advocate	High*
6	**Ensure that residential land supply is adequate to respond to potential increases in housing needs and can be readily serviced.**		
6.1	Plan for a long term supply of broadhectare land supply in Sale and Yarram (i.e. greater than 15 years at current demand rates) to accommodate business as usual housing demand plus capacity to accommodate an increase in demand due to renewable energy projects.	Lead	High
6.2	Engage with landowners of major vacant and underutilised residential landholdings in Sale and Yarram to confirm development intentions and constraints.	Lead	Medium
6.3	Advocate for State Government action to expedite rezoning processes (following technical assessments) to provide for a broad range of housing growth opportunities in Yarram and Sale.	Advocate	Medium
	Infrastructure		
7	**Advocate for urgent and simplified resolution of a consolidated transmission network.**		
7.1	Advocate to the State and Federal governments for a simplified and expedited approach to transmission network planning and regulation in Gippsland.	Advocate	High

Action No.	Action	WSC Role	Priority
7.2	As part of all transmission network planning, advocate for a network which minimises the number of easements and shore crossing points and maximises opportunities for infrastructure co-location and cost sharing.	Advocate	High
7.3	As part of all transmission network planning, advocate to VicGrid to ensure that planned transmission investment aligns with the timing and scale of private sector renewable energy investment and ensure that best practice and equitable landowner compensation arrangements are established by the State Government.	Advocate	High
8	Ensure sea and road transport readiness through early investigation and strategic planning		
8.1	In partnership with South Gippsland Shire and landowners, confirm the suitability for BBMT/Port Anthony to perform an O&M Hub role for the offshore wind sector and advocate for this outcome.	Partner	High
8.2	Advocate for detailed investigation of the suitability of BBMT/Port Anthony as an offshore wind construction hub considering all potential local benefits alongside impacts.	Advocate	High
8.3	In partnership with South Gippsland Shire, landowners and occupiers, identify opportunities and barriers to accommodating energy sector land requirements adjacent to BBMT/Port Anthony.	Partner	Medium
8.4	Partner with other Gippsland councils and DoT to prepare a Regional Strategic Action Plan for arterial and local roads to support energy projects.	Partner	Medium
8.5	In partnership with other Gippsland councils, develop a policy and approach to the assessment of future project applications in respect of local road and access requirements and funding responsibilities.	Partner	Medium
8.6	In conjunction with proponents, investigate the suitability of using Council owned airports in Yarram and West Sale to support the new energy sector (e.g. crew and/or freight transport).	Lead	Low
8.7	Advocate for considerable improvements to public transport across Wellington (especially southern Wellington) to enable movement of workers and students to training and employment opportunities in Sale, Latrobe Valley and Melbourne.	Advocate	High
9	Address civil infrastructure barriers to urban development in Yarram.		
9.1*	In consultation with the West Gippsland Catchment Management Authority, prepare a drainage/flood modelling assessment for residential and industrial expansion areas identified in Yarram to determine viability and costs to support future rezoning and development.	Lead	High*
9.2*	Based on the findings of the flood modelling/drainage assessment, identify the most suitable areas for rezoning to accommodate sufficient industrial and residential land to meet long term demand.	Lead	Medium*
9.3	Advocate to the State Government for funding support to provide enabling civil infrastructure to support the growth of the renewable energy sector in the Wellington Shire	Lead	High

Action No.	Action	WSC Role	Priority
	Community		
10	Aim to be a trusted source of information on renewable energy projects for the community		
10.1	In partnership with the Gippsland Climate Change Network and project proponents, compile and maintain a website and associated information on the status of proposed projects, links to official websites, and information on how community members can participate in consultation processes.	Partners	High
11	Advocate for and facilitate tangible community benefits that deliver a positive and lasting legacy		
11.1	Support and advocate for proponent-led funding mechanisms that contribute to meaningful community projects, with a preference for project funds to be collectively accrued. This includes aspirational projects that can address related and flow-on issues arising from renewable energy projects (e.g. fund/deliver temporary housing that could be re-purposed/re-used for community benefit).	Partners	Medium
11.2	Advocate for State and Federal Governments to introduce local supplier mandates to ensure Wellington Shire businesses and workforce benefit from renewable energy project investment.	Partners	Medium
11.3	Establish a Renewable Energy Working Group within Council to regularly monitor relevant issues and announcements and oversee implementation of this action plan.	Lead	Medium
11.4	Advocate to the State Government for funding to support a dedicated Renewable Energy Unit (potentially in partnership with Latrobe City, South Gippsland Shire and LVA) to manage economic development and other enquiries and actions which are needed to facilitate ongoing progression of the state and nationally significant energy transition projects.	Advocate	High

* Indicates actions that are subject to further announcements regarding the location and timing of key elements such as ports, construction locations and timeframes.

APPENDICES

APPENDIX A MAIN LITERATURE REFERENCES

- Activating Gippsland's Renewable Energy Workforce Action Plan 2022-2025
- Clean Energy at Work, Clean Energy Council, 2020
- E3 Opportunity Assessment: Developing the future energy workforce, Race for 2030, 2021
- Energising Australia with Offshore Wind, Oceanex Energy, 2022
- Gippsland Energy Skills Mapping Report, 2022
- Gippsland Freight Infrastructure Masterplan, 2022
- Gippsland Regional Plan 2020-2025
- Gippsland's Clean Energy Future, 2022
- Greener skills and jobs, OECD, 2014
- How to succeed in the expanding global offshore wind market, McKinsey & Company, 2022
- https://www.cleanenergycouncil.org.au/resources/technologies/large-scale-solar
- Latrobe Valley New Energy Jobs and Investment Prospectus, 2018
- Lessons Learnt from Utility-Scale Renewables on the NEM, ARENA, 2021
- Offshore Electricity Infrastructure Act 2021 - Proposed Area: Gippsland, Victoria
- Offshore Wind Implementation Statement 1, Victorian Government, 2022
- Offshore Wind Policy Directions Paper, Victorian Government, 2022
- Renewable Energy Benefits - Leveraging Local Capacity for Offshore Wind, IRENA, 2018.
- Renewable Energy Jobs in Australia, UTS, 2020
- Victoria's Climate Change Act, 2017
- Victoria's Climate Change Strategy, 2021
- Victorian Renewable Energy Zone Development Plan Directions Paper, DEWLP, 2021
- Wellington Shire Council Plan, 2021-25.

APPENDIX B STAKEHOLDER CONSULTATION SUMMARY

Stakeholder Organisation	
Renewable Energy Proponents	**Wellington Shire Council**
• 10 x project proponents	Officer representatives from: • Local Development (Yarram) • Statutory Planning • Strategic Planning • Economic Development • Infrastructure and Community Services • Built and Natural Environment • Land Use Planning. Wellington Shire Councillors
External Government Agencies and Authorities	**Other Stakeholders**
• La Trobe Valley Authority • DELWP • Department of Transport • RDV Gippsland • Environment Protection Authority • Gippsland Ports • La Trobe Shire Council • Bass Coast Shire Council • South Gippsland Shire Council • Moyne Shire Council	• Committee for Wellington • Gipps Tech • Gippsland Climate Change Network • Workforce Plus/Australian Renewable Academy • Port Anthony • TAFE Gippsland • Nick Murray & Associates • Local real estate agents • Local business owners

CASE STUDY 1: ONSHORE WIND FARMS, MOYNE SHIRE COUNCIL

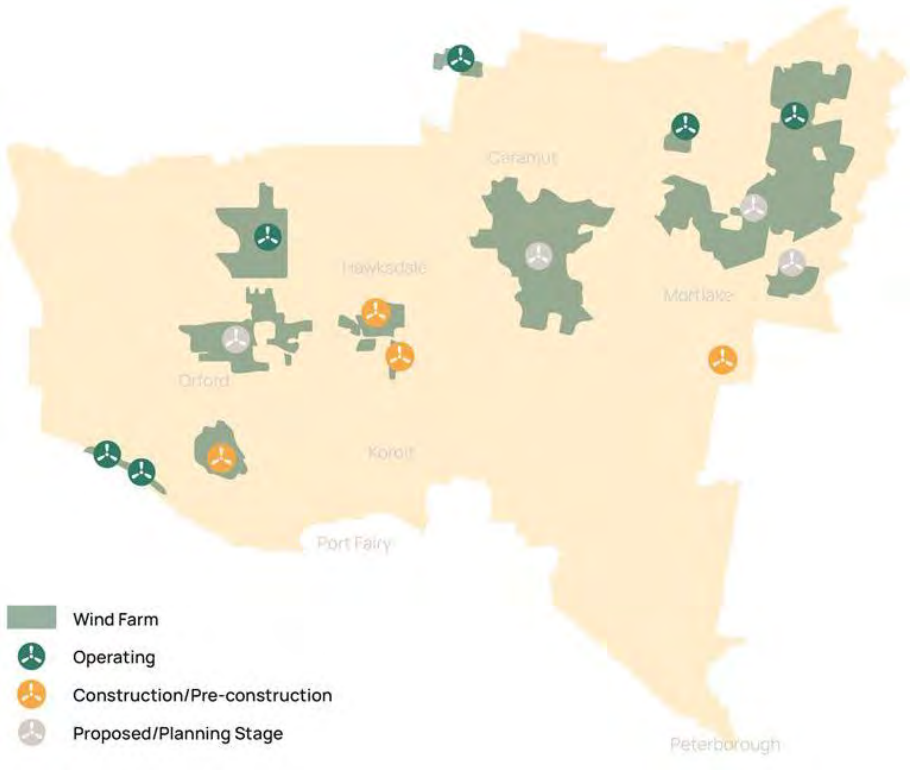
Moyne Shire, located in South-West Victoria, and is situated approximately 3 hours from Melbourne and 2 hours from Geelong. The Shire's key townships include Mortlake, Port Fairy and Koroit.

Moyne Shire forms a large proportion of the South West Victoria Renewable Energy Zone (REZ) and is the major growth area for onshore wind energy facility development in Victoria. Within the Shire there are six operational wind farms, four under construction, and four proposed (or in planning).

If all wind farms are constructed as proposed, the Shire will accommodate approximately 800 turbines (covering over 12% of total land area[17]), with a capacity to generate around 3 GW of electricity. Figure 41 illustrates existing and proposed wind farm projects in Moyne Shire.

Moyne Shire Council (**Council**) has been attracting and managing onshore wind farm investment, construction and operation for 20 years. Consultation with Moyne Shire Council helped identify key learnings and success factors from their experience.

F41. WIND FARMS IN MOYNE SHIRE



Source: Urban Enterprise, 2022, derived from information published by Moyne Shire Council, 2022

[17] Moyne Shire Council, 2021

KEY LESSONS

- **Proactively plan for key worker housing**
- **Local supply chain benefits and land consumption has been relatively modest**
- **Adequate Council resources and good governance supports readiness**
- **Clear messaging and communication between stakeholders is critical**
- **Optimise local benefits to the community and build social license**
- **Advocate for education and training providers to match programs to skill requirements**
- **Environmental impacts of infrastructure (roads and transmission) have been problematic**

Key lessons are discussed in-turn.

Proactively plan for key worker housing

One of the most critical issues observed by Council was the cumulative impact on housing and accommodation availability for key workers during the construction phase.

Renewable energy proponents underestimated the need for worker accommodation during the construction phase. As a result, there was a substantial shortfall of worker accommodation in the region, with demand far exceeding supply.

Many construction workers were forced to look for rental housing outside of the region, including areas as far as Ballarat (approx. 1-1.5 hours' drive). This meant that indirect economic benefits of workers living and spending in the local area was largely foregone (i.e. retail, hospitality and other services).

Increased demand for worker accommodation also placed upward pressure on rents and commercial room rates, affecting permanent, short-term and commercial accommodation. Impacts were felt across Mortlake, Port Fairy and Warrnambool, and led to some residents and visitors being displaced.

To address worker housing shortages, Council in conjunction with the State Government funded and delivered key worker cabins in Koroit. The cabins provide affordable short-term accommodation for workers across renewable energy and other sectors of the economy. Once the cabins are no longer needed for workers, they will be re-purposed for tourist accommodation.

Another potential solution raised by Council was to advocate for project developers to develop/fund permanent worker housing that can be re-used by residents once tenure has ceased (leaving a lasting legacy/benefit to the community).

Local supply chain benefits and land consumption has been relatively modest

Moyne Shire Council observed a modest increase in local business demand through the construction phase, and mostly benefitted service-industrial businesses (e.g. automotive repair/maintenance, crane operators, tyres, equipment/fencing, weed/pest control).

Onshore wind farm projects led to the consumption of several industrial zoned sites in Mortlake, which had been vacant for a long period. The nature of consumption was a combination of:

- An existing business expanded its footprint and operations due to an uplift in demand; and
- Vacant and underutilised land used for temporary lay down areas for wind turbine and other components.

To optimise local supply-chain utilisation, Council raised the potential to target mandates to ensure local suppliers are used where there is existing capability.

Another key lesson learned was the importance of local business engagement to communicate contract opportunities as they arise, and to educate businesses on how to navigate the procurement and tender process.

Adequate Council resources and good governance supports readiness

Moyne Shire Council established a dedicated renewable energy unit to facilitate, support and manage the delivery and impacts of renewable energy projects.

This model has been successful, particularly in managing several projects and the broad range of areas impacted (e.g. housing, accommodation, infrastructure, community engagement and services).

The renewable energy unit has also been supported through a Council-led Advisory Committee, consisting of developers, Councillors and community leaders, which has allowed Council to be a pro-active stakeholder in the process.

Clear messaging and communication between stakeholders is critical

Council's most important role is to be the main platform to deliver clear, accurate and transparent information to the community in regard to:

- Communicating project updates to the community as they arise; and
- Assisting with the engagement process between proponents and the community to ensure there is coordination.

Proponent-led engagement with the community can lead to confusion and consultation fatigue.

Council led a Community Engagement Committee for each project to foster communication between the range of stakeholders which was a successful model.

Optimise local benefits to the community and build social license

It is important for the local community to benefit from projects in a tangible way, delivered through various development-led funding arrangements.

Some examples of community benefits delivered as a result of wind farm projects in Moyne Shire are as follows:

- Approximately $876,000 in annual municipal rates collected from operating wind farms.
- Approximately $960,000 raised from wind farm community programs since 2005, which have been allocated to local community projects.
- Educational scholarship program for local students funded by one of the proponents.

Council found that in hindsight they would have had a clearer position on community funding requirements and mechanisms. Further, Council would have investigated more lateral and aspirational projects to address direct issues caused by wind farm projects (e.g. fund/deliver temporary housing that could be re-purposed/re-used for community benefit).

Community infrastructure funding is not the only consideration when building social license, there is also a need to build goodwill through:

- Clear and accurate communication of information;
- Comprehensive community engagement and consultation; and
- Managing disbenefits and adverse environmental impacts in the best interest of the community (e.g. visual, noise, amenity).

If social license is eroded then it can quickly turn the community offside, which then flows through to Council reconsidering their position. This can ultimately pause or derail projects, which is what has occurred in Moyne Shire Council.

Council resolved in November 2018 to oppose any further wind farm development in Moyne Shire until recommendations 8.2.1 - 8.2.7 in the National Wind Farm Commissioners 2017 Annual Report were implemented in the Victorian context. This resolution was restated by Council on 25 August 2020.

Advocate for education and training providers to match programs to skill requirements

Moyne Shire Council acknowledged that local workforce benefits could have been more substantive. Targeted advocacy with regional education and training providers would have better aligned programs with the skills required to work on onshore wind farms. Some considerations include:

- Obtaining buy-in from education and training institutes to upskill the local workforce to transition to renewable energy; and
- Advocating for local/regional participation from professional and technical services during pre-construction (e.g. cultural assessments, environmental assessments, etc.)

Moyne Shire Council are also experiencing very low unemployment, with many sectors facing worker and skills shortages. Consideration should be given the flow-on implications of re-directing workers way from other areas of the local economy.

Environmental impacts of infrastructure (roads and transmission) have been problematic

Moyne Shire Council has one underground and one above-ground transmission line. The above-ground transmission is visually and physically confronting for residents; particularly those residing on agricultural and rural properties.

Council have continually advocated for underground transmission lines to be implemented where technically feasible, with the extra cost to be passed onto all consumers so the burden of reducing the localised impact is equally shared.

In addition to transmission infrastructure, one of the main physical impacts has been disruption and damage to the road network. The main culprit has been heavy truck movements carrying quarry and other extractive materials.

Council found that developers consultants had generally underestimated the impact to local roads. Many roads remain damaged and have not been remediated.

Projects with an onsite quarry generally reduced traffic and road impacts. As an example, having an onsite quarry for Dundonnell Wind Farm saved 3,000 traffic movements.

Council stated that heavy truck movements are inevitable, but onsite quarries have many advantages and should be encouraged where feasible.

Council also recognised the importance of having a policy when it comes to local roads to ensure:

- Upgrades to local roads occur prior to construction to mitigate ongoing damage and remediation; or
- At a minimum developers return local roads to their original state if damaged (but not preferred).

CASE STUDY 2: VICTORIAN DESALINATION PLANT, BASS COAST SHIRE

The Victorian Desalination Plant project was announced on the back of Victoria's Millennium Drought and rapid population growth. At the time the project was announced, Victoria's water storage levels were critically low (approximately 16.5% in the largest reservoir) and water security was at threat.

The VDP is situated on a 35 ha site that forms part of a broader 260 ha coastal reserve in Wonthaggi, Bass Coast Shire. The site was selected due to the access to saline water direct from the Bass Strait, and the potential to connect into existing pipeline infrastructure to transfer desalinated water into the Cardinia Reservoir.

The cost to construct the VDP was in the order of $3.5 billion. The construction phase commenced in September 2009 and was completed in December 2012.

Consultation with Bass Coast Shire Council helped to identify key learnings from their lived and observed experience with the VDP. Given that construction of the Plant commenced more than 13 years ago, it was challenging to obtain as much information compared with Moyne Shire Council who have recently, and currently facilitating and managing several onshore wind farm projects.

Most of the information is anecdotal, however Bass Coast Shire Council commissioned the *Bass Coast Shire Affordable Housing – Desalination Plant Benchmark Assessment Report* in 2013 to assess the impact of the project on the local housing market.

F42. DESALINATION PLANT CONNECTION TO THE WATER GRID

KEY LEARNINGS

- **Local Government and the community did not have time to appropriately plan for the project, and were not 'ready' for the impacts due to its urgency.**
- **Major inflow of construction workers placed an enormous strain on housing and accommodation.**
- **Local construction business demand was re-directed from local projects.**
- **Ongoing economic benefits generated by the Desalination Plant are negligible.**

Key lessons are discussed in-turn.

Local Government and the community did not have time to appropriately plan for the project, and were not 'ready' for the impacts due to its urgency

The Desalination Plant occurred during a time of severe drought in Victoria, which continued to threaten water supply, availability and security.

The timeframe between the announcement of the project to construction commencing did not allow Bass Coast Shire Council, the local economy or community to appropriately prepare for the project's potential impacts.

A key lesson learned from Bass Coast Shire's experience is the importance of 'readying' the community and economy for what's coming through early targeted planning and advocacy work, as well as regular, clear and meaningful engagement and communication.

Major inflow of construction workers placed an enormous strain on housing and accommodation

The three-year construction phase required approximately 10,500 workers, with an annual peak of 4,500. Workers were sourced from the local, regional and state area, with workers from outside of the local area requiring temporary housing and accommodation.

The impact on housing and accommodation was the most significant issue that was experienced during the construction phase of the VDP. Key findings from the *Bass Coast Shire Affordable Housing – Desalination Plant Benchmark Assessment Report* are as follows:

- Competition for rental properties in larger townships (e.g. Wonthaggi) increased substantially, and placed upward pressure on rents and impacted housing affordability. This displaced many local residents and forced them to seek housing elsewhere; in some cases outside of the municipality.
- Short stay rental properties in coastal townships (e.g. Cape Paterson, Inverloch) typically utilised as holiday/leisure accommodation during peak were occupied by workers, which impacted the region's visitor economy.

- The Shire recorded a dramatic decline in affordable rental properties from 2009 to 2012 due to the temporary raising of rental returns by landlords during the period of construction of the VDP
- Low income households were displaced during the construction phase due to the increase in rents, the decrease in tenancy periods and the creation of a new rental market (furnished rentals)

Prior to construction commencing, Bass Coast Shire was the 18th most affordable regional municipality in Victoria (out of 48). By 2011, the Shire was ranked the least affordable of any regional Council, including the 12th most expensive for rental tenure; recording between 40-50% growth in rents between 2007 and 2012. The highest rent increases were recorded in the town of Inverloch – approximately 19 km (18-min drive) from the Desalination Plant.

Although the housing market in Bass Coast is fundamentally different to Wellington Shire, the findings of the report highlight major adverse impacts to housing availability and affordability, particularly for lower income households.

Local construction business demand was re-directed from local projects

Anecdotally, the construction phase of the Desalination Plant utilised local construction suppliers and sub-contractors, particularly for general trade workers such as labourers, concreters, machine operators and truck drivers.

Competition for local trades increased substantially during this time, and as a result re-directed business activity away from local projects. Local residential and commercial projects suffered from supply-chain delays, escalated costs and general delays that pushed project completions back.

This demonstrates that using local suppliers to support the construction phase of renewable projects could also lead to negative implications through the re-direction of business activity.

Ongoing economic benefits generated by the Desalination Plant are negligible

The VDP project led to an economic boom for the Shire during construction, largely from an increase in demand for local goods and supplies and services such as retail, food and beverage and fuel supplies. However, positive economic impacts of the project were short lived and the ongoing benefits of the project are negligible. Further, the economic benefits during the construction phase were largely offset by the major issues around housing, accommodation and the re-direction of local construction suppliers.

Anecdotally, the Plant currently supports 50 ongoing jobs. The VDP is exempt from municipal rates liability, which is estimated in the order of $9 million per annum that could be re-invested into the community.

Ultimately, the disbenefits of the project eroded social license and created community angst. A key lesson learned through the Desalination Plant example is the need to build social license within the community. This could take many forms such as investment in social and community infrastructure and services that can leave a lasting benefit.

CASE STUDY 3: UK OFFSHORE WIND INDUSTRY

The deployment of offshore wind in the UK has been a major success story over the past 20 years. The industry has expanded from two small turbines off the coast of Northumberland at the turn of the century, to over 2,000 turbines spread along the UK continental shelf, with new projects growing in number and turbine size. The share of offshore wind in total electricity generation has steadily increased, hitting 13% in 2020 (see Figure 43).

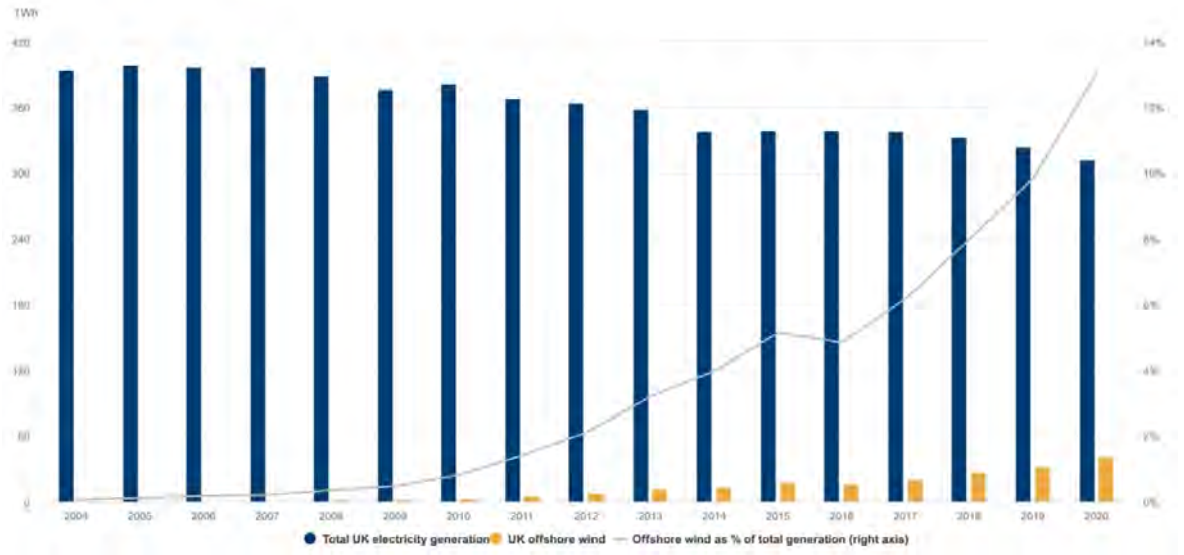
Despite the success of the rollout in the UK, there have also been a number of challenges that have arisen as a result of government intervention and market forces. *An Efficient Energy Transition: Lessons From the UK's Offshore Wind Rollout* (2022) provides a summary of the learnings from the industry's development to date.

KEY LEARNINGS

- **Long term policy commitment is crucial to drive low-cost deployment and domestic benefits.**
- **A healthy project pipeline is key for competition and supply-chain development.**
- **Partnership between industry and government can deliver sustained investment.**
- **Strategic and coordinated systems thinking is required to deliver transmission.**
- **A clear strategy is needed for optimising domestic economic benefits.**

Key lessons are discussed in-turn.

F43. UK OFFSHORE-WIND AS A PROPORTION OF TOTAL ELECTRICITY GENERATION



Source: BEIS, UK Energy in Brief 2021 Dataset

Long term policy commitment is crucial to drive low-cost deployment and domestic benefits

Evidence from the UK suggests that sustained political support for offshore wind provides investors and developers with confidence in their future pipeline, which in turn delivers strong inward investment in technology and supply chain development. That inward investment drives cost reductions and supports local job creation, meaning that government support feeds all the way through to delivering objectives on cost reduction and domestic content.

A healthy project pipeline is key for competition and supply-chain development

A healthy project pipeline is a fundamental element of the stable rollout of offshore wind. It ensures competition between different developers – a key driver of price discovery – and it delivers forward certainty to supply chains, unlocking investment in manufacturing facilities and skills development. Creating a coherent investment proposition will be the best way for government to build a healthy project pipeline, minimising the associated costs and maximising domestic benefits.

Partnership between industry and government can deliver sustained investment

Combining the strengths of industry and government to identify and overcome barriers to deployment is crucial to ensuring success of the industry. In the UK, offshore wind has benefitted from consistent and productive collaboration between industry and government. Initiatives such as the Offshore Wind Industry Council (established in 2013) and the Offshore Wind Sector Deal (signed in 2019) provide a strong signal of government support and create a formal dialogue between industry and government. This facilitates better understanding of the challenges being faced by both parties and drives collaboration to overcome them, smoothing the deployment trajectory and delivering sustained investment.

Strategic and coordinated systems thinking is required to deliver transmission

One of the failures of the offshore-wind rollout in the UK has been the short-sighted approach to grid infrastructure, with each new wind farm having an individual transmission connection onshore. This approach is costly and the numerous onshore connection points result in environmental issues and backlash from local communities.

With further expansion expected over the next 20 years, the government is now considering options for an integrated offshore transmission network that will reduce onshore connection points and increase flexibility by strengthening connections between the UK grid and the continent.

A clear strategy is needed to optimise domestic economic benefits

One of the criticisms of the UK offshore-wind sector to date has been its failure to maximise the potential economic benefits that flow to local communities and the UK as a whole.

The domestic content of early projects was estimated at around 32%, a surprisingly low level given the UK's position as global leader in deployment. This has increased to closer to 50% recently, and industry has now set a 60% target for 2030.

The government made an initial assessment of the role that some technologies would play in the UK's future energy system through the Energy Innovation Needs Assessments, but a much more comprehensive piece of work is needed to identify international and local opportunities from the net zero transition and develop deployment strategies to reflect them.

A strategic assessment is required of domestic capabilities, possible productivity and economic benefits, and international competition to identify the technologies and markets in which a country or region may have a comparative advantage.

REGIONAL LAND SUPPLY CONTEXT

Labour, housing and supplies will be sourced from across the region.

The majority of jobs (cumulative) during the construction phase for offshore wind will be concentrated in and around Port of Hastings. If BBMT/Port Anthony performs a supporting role alongside onshore jobs requirements, then towns in southern Wellington and South Gippsland may perform key service roles, including Yarram and Foster.

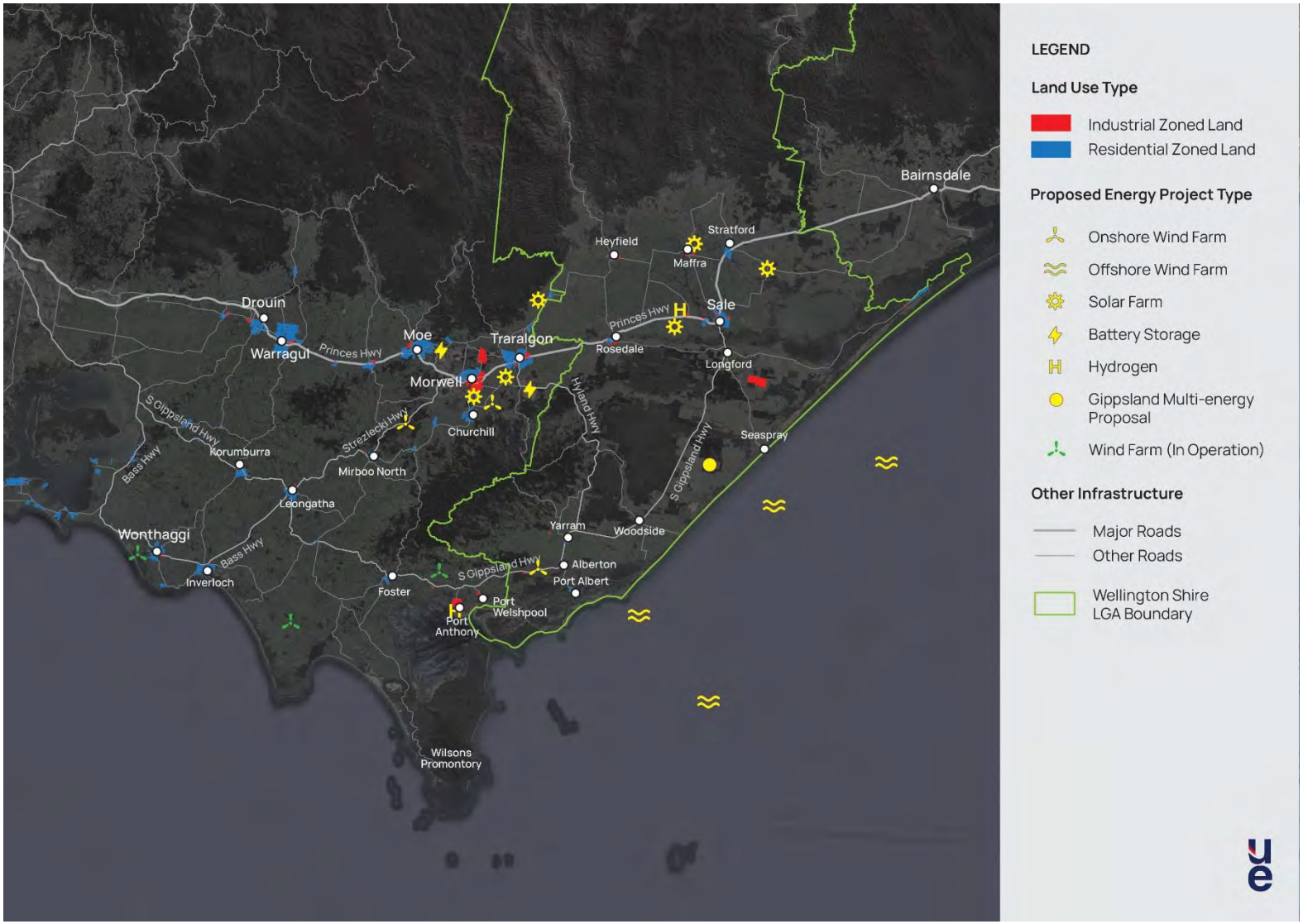
Figure 44 shows the spatial distribution of zoned residential and industrial land supply across the region. The majority of land supply is concentrated to regional centres along the Princes Highway corridor.

Figure 45 shows existing towns within a 60 minute (drive) catchment of Corner Inlet (BBMT / Port Anthony). The following considerations are relevant:

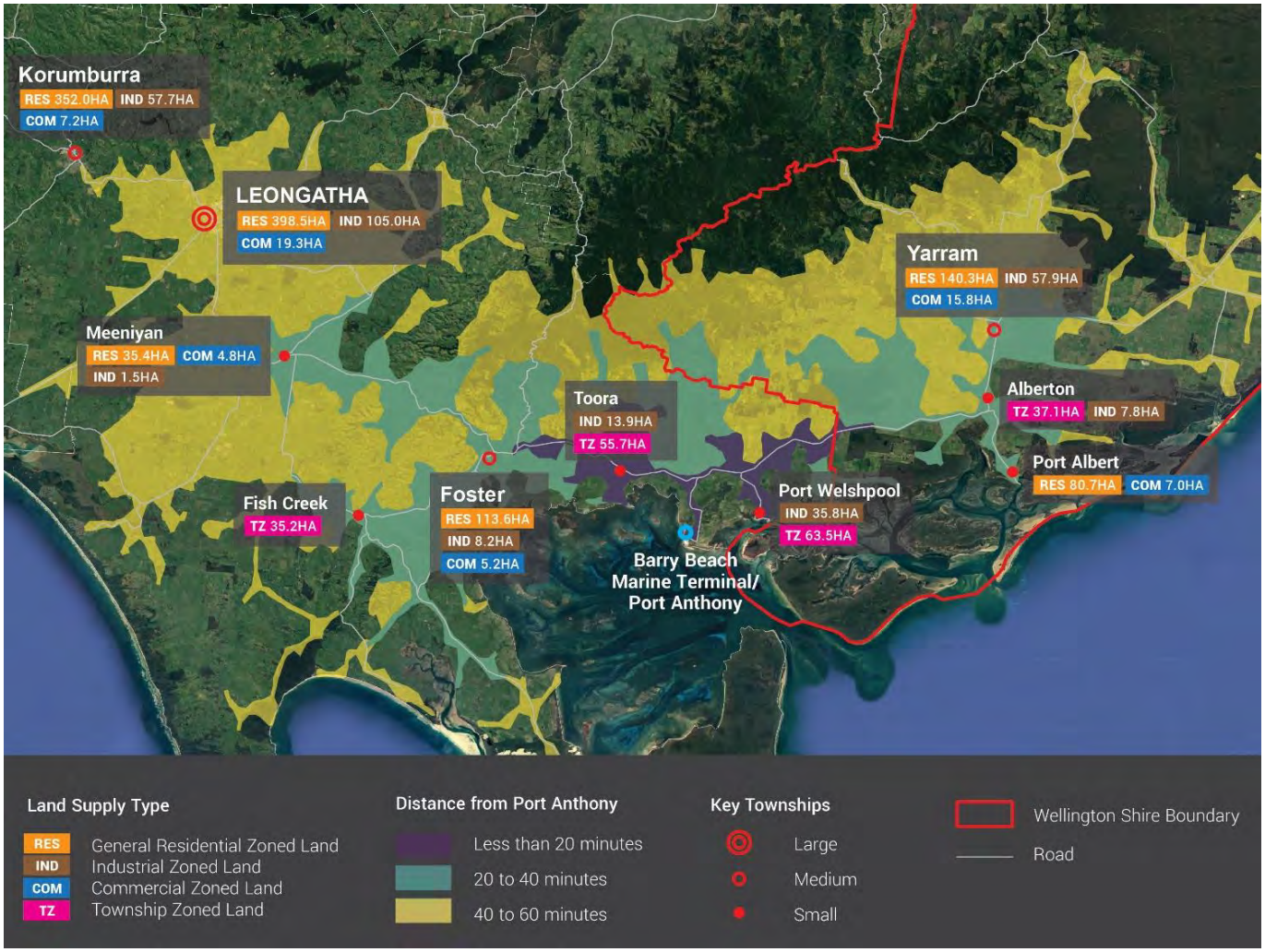
- Yarram and Foster are the closest 'service centre' townships to BBMT & Port Anthony and are likely to appeal to workers from a housing and accommodation perspective due to proximity and access (approx. 25-30 min drive) along with existing amenity and services.
- Yarram has a higher provision of residential, commercial and industrial zoned land compared with Foster.
- Smaller settlements located less than 40 mins (drive) from BBMT & Port Anthony could play a housing role for workers (depending on availability), including Alberton, Port Albert, Port Welshpool, Toora, Fish Creek and Meeniyan.
- Leongatha is the only 'large town' within 60 mins (drive) of Corner Inlet, with the added advantage of being located closer to Hastings and Melbourne.

The figure shows that there are limited options to seek any scale of housing, industrial or employment land in existing zoned areas within a reasonable distance from Corner Inlet, with the exception of the mostly unused industrial land at BBMT. Several towns within a 60-minute catchment of BBMT/Port Anthony are likely to be utilised as a result, especially for ongoing housing needs.

F44. REGIONAL ZONED LAND SUPPLY (INDUSTRIAL AND RESIDENTIAL)



F45. RESIDENTIAL & EMPLOYMENT LAND SUPPLY PROXIMATE TO CORNER INLET



Source: Urban Enterprise, 2022

LAND SUPPLY: SALE

INDUSTRIAL

In 2018, Urban Enterprise undertook a detailed analysis of industrial land demand and supply in Sale and surrounds[18]. The analysis concluded that:

- Industrial land in Sale is fragmented across multiple precincts, many with interface conflicts with nearby residential uses and poor transport accessibility.
- There was approximately 19 ha of vacant industrial land in Sale across 4 precincts, along with several larger sites that are either underutilised or disused (eg. Nylex).
- There was only one broadhectare site appropriate for new large industrial businesses, which was being progressively subdivided (Wellington Business Park). The remaining supply of land available for small and medium business had a total area of approximately 9 hectares across 25 smaller lots.
- Gaps identified in the land supply primarily related to the lack of opportunities for large format industrial sites with separation from sensitive uses and ready access to major roads. The land size gaps were primarily in the medium to large lot sizes of 0.5-1 ha, 1-2 ha and 2 ha+.
- Given that investors and businesses typically prefer to locate on newer, higher quality lots, rather than existing lots with improvements or interface / access issues, there was a distinct lack of the type of land that would be attractive to new industrial businesses in Sale.
- Council should plan to accommodate larger businesses by providing a suitable supply of land with larger lot sizes over the next 15-20 years (of at least 1ha and up to 10 ha).
- An allowance for at least 40 hectares (lot area) was recommended which could accommodate 5-10 large businesses and a range of medium businesses. Rezoning further land as a contingency was also supported given the long lead times associated with planning for employment areas.

Since these recommendations were made, the following changes have occurred:

- Several vacant properties have now been occupied. A review of aerial imagery in 2021 indicated that approximately 8ha of land previously identified as vacant is now occupied, equating to an average annual consumption of 2ha per annum (2017 – 2021). This consumption has occurred in a constrained supply environment with relatively limited choice of lot sizes and locations available.
- The West Sale industrial area was rezoned to provide a further 54 ha (gross). This area is currently the subject of detailed development planning and is not yet 'development ready'. The area is located adjacent to the aerodrome and other public land, some of which is to be used for a hydrogen project (H2X).

At present, there is an acute lack of industrial land supply that is ready to occupy in Sale, and no vacant and available sites greater than 2ha.

F46. WEST SALE AERODROME INDUSTRIAL AREA

Source: VicPlan, 2022.

[18] West Sale and Wurruk Industrial Land Supply Strategy (2018).

RESIDENTIAL

A residential land demand and supply assessment prepared for the urban areas of Sale and Wurruk in 2021 by Urban Enterprise found that:

- There was likely to be less than 8 years supply remaining in Sale and Wurruk combined in 2021, well below the planning scheme period of 15 years.
- A total of 53 lots remained undeveloped in the North Sale Growth Area, meaning that broadhectare land was mostly exhausted with the exception of the broadhectare site in Wurruk which required a Development Plan before development could commence.

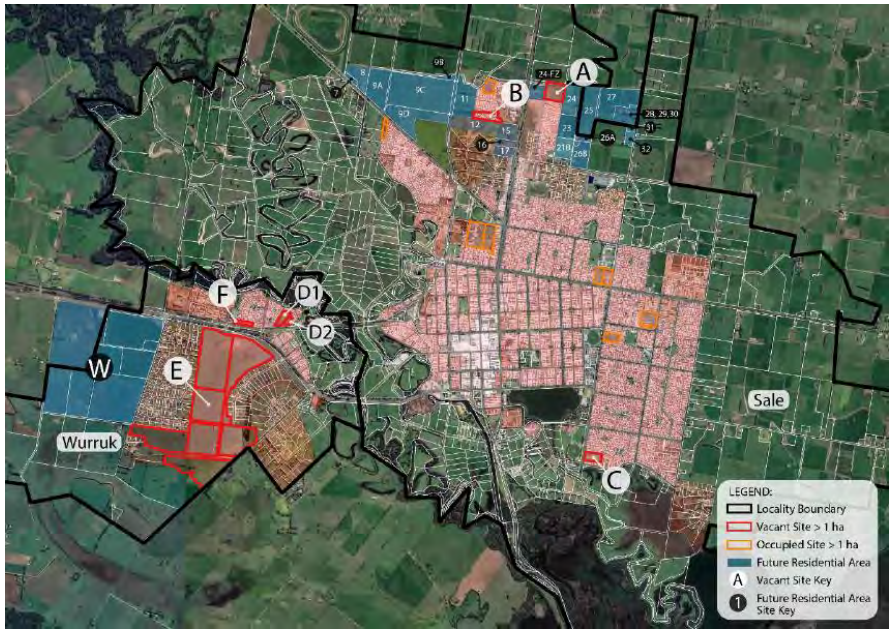
Since the assessment was prepared:

- The Wurruk Development Plan was approved, with an estimated capacity for 1,047 and 1,256 lots.
- The final stage of Cobains Estate in North Sale has been mostly sold or is under offer; and
- Council has exhibited a Planning Scheme Amendment to rezone further land in the North Sale Growth Area (C115, 10ha, 84 lots).

Current land supply is expected to be at least 1,200 lots, which could accommodate approximately 15 years demand, however the supply is almost exclusively concentrated in a single development area.

Further land in North Sale is subject to a growth area plan but is yet to be rezoned.

F47. RESIDENTIAL LAND SUPPLY, SALE



Source: Urban Enterprise, 2021.

LAND SUPPLY: SOUTHERN WELLINGTON TOWNS

YARRAM

Vacant land supply in Yarram includes:

- 23 ha of GRZ1 land across 43 parcels, mostly in the south-eastern section of the town;
- 23 ha of LDRZ1 across 2 parcels to the north of the town (Parrots Road); and
- 11 ha of IN1Z across 5 properties to the south-west of the town.

This data, supplemented by consultation with real estate agents, identified the following land supply challenges in the town:

- Most GRZ capacity is on Hihos Lane, an area with known drainage challenges.
- Other vacant residential parcels are mostly smaller lots with limited subdivision potential.
- The southern section of the industrial precinct remains vacant. Although there is currently some development interest, a major drainage scheme and investment is needed to facilitate any subdivision.

T25. LAND SUPPLY SUMMARY, YARRAM

Zone	Occupied	Vacant/underutilised	Total
C1Z	7.4 ha	4.4 ha (4 parcels)	11.8 ha
C2Z	4.1 ha	0	4.1 ha
GRZ1	117.4 ha	22.95 ha (43 parcels)	140.4 ha
LDRZ	15.55 ha	23.54 ha (2 parcels)	39.10 ha
IN1Z	66.94 ha	11.4 ha (5 parcels)	78.34 ha

Source: Urban Enterprise 2022, derived from Wellington property rates database 2022.

F48. VACANT LAND SUPPLY, YARRAM

Source: Urban Enterprise 2022, derived from Wellington property rates database 2022.

ALBERTON

Vacant land supply in Alberton includes:

- 14.5 ha of TZ land across 29 parcels;
- One site in the IN3Z (4.2 ha) which is mostly vacant located north of the timber mill, with a single dwelling occupying a small part of the site.

Given infrastructure constraints (particularly drainage). Alberton is unlikely to materially support any significant housing and business demand associated with renewable energy led demand, other than infill development.

T26. LAND SUPPLY SUMMARY, ALBERTON

Zone	Occupied	Vacant/underutilised	Total
TZ	35.1 ha	14.5 ha (29 parcels)	49.6 ha
IN3Z	3.6 ha	4.3 ha (1 parcel)	7.9 ha

Source: Urban Enterprise 2022, derived from Wellington property rates database 2022

F49. VACANT LAND SUPPLY, ALBERTON

Source: Urban Enterprise 2022, derived from Wellington property rates database 2022

PORT ALBERT

Vacant land supply in Port Albert includes:

- 65 vacant lots in the GRZ1 totalling 16 ha; and
- A small number of vacant commercial sites.

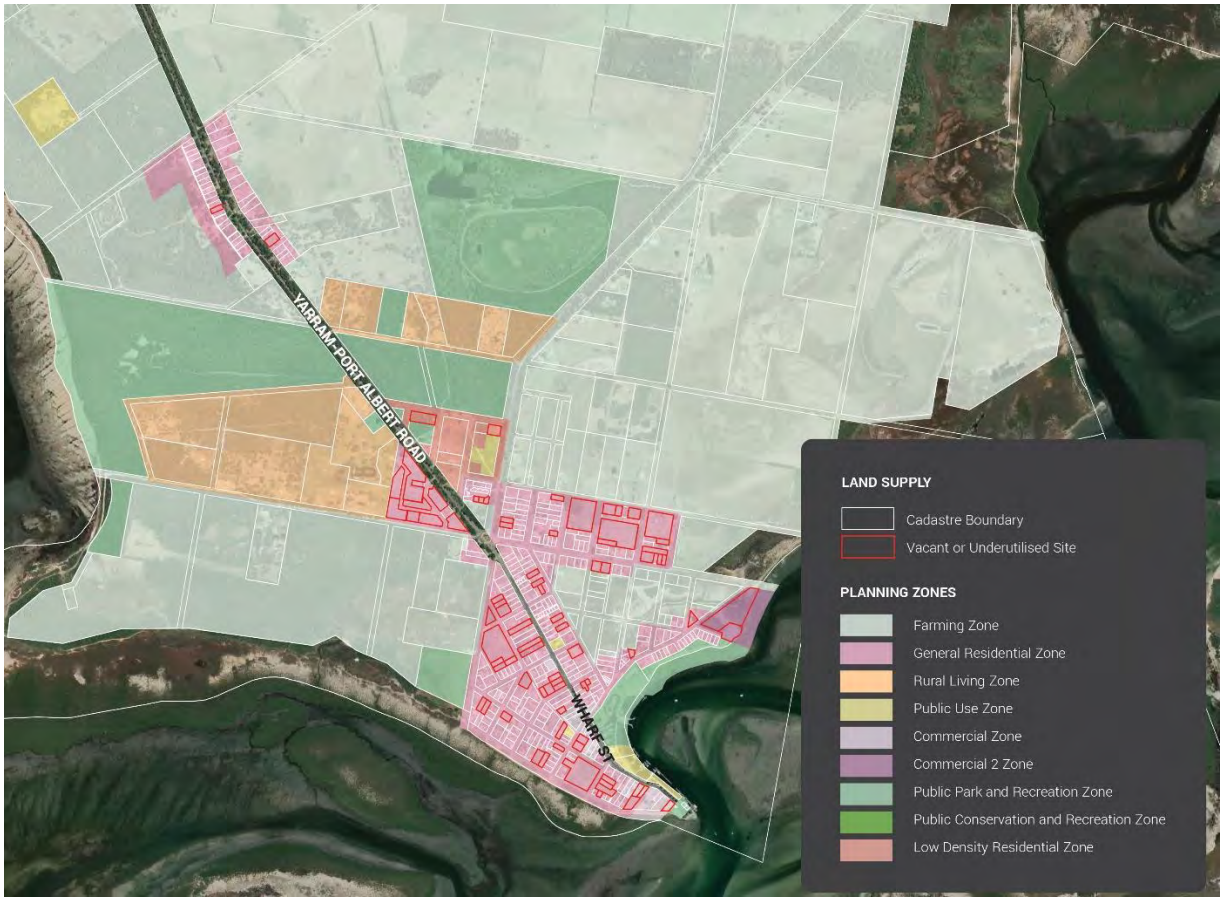
Similar to Alberton, there is opportunity for infill development, but the town is unlikely to support any significant future expansion associated with renewable energy demand.

T27. LAND SUPPLY SUMMARY, PORT ALBERT

Zone	Occupied	Vacant/underutilised	Total
C1Z	3.2 ha	0.3 ha (3 parcels)	3.5 ha
C2Z	0 ha	2 ha (2 parcels)	2 ha
GRZ1	52.2 ha	15.5 ha (67 parcels)	67.7 ha
LDRZ	7.0 ha	0.6 ha (2 parcels)	7.6 ha

Source: Urban Enterprise 2022, derived from Wellington property rates database 2022

F50. VACANT LAND SUPPLY, PORT ALBERT & LANGSBOROUGH



Source: Urban Enterprise 2022, derived from Wellington property rates database 2022

WOODSIDE

Vacant land supply in Woodside includes:

- 4.4 ha in the TZ across 10 parcels.

Woodside has very limited capacity to accommodate future housing or industrial businesses.

T28. LAND SUPPLY SUMMARY, WOODSIDE

Zone	Occupied	Vacant	Total
TZ	7 ha	4.4 ha (10 parcels)	11.3 ha

Source: Urban Enterprise 2022, derived from Wellington property rates database 2022.

F51. VACANT LAND SUPPLY, WOODSIDE

Source: Urban Enterprise 2022, derived from Wellington property rates database 2022

SOUTHERN WELLINGTON LAND SUPPLY SUMMARY

Vacant and underutilised land across southern Wellington is summarised in Table 29. Although there are some opportunities for minor and incremental infill development to occur, the only substantial capacity to accommodate any material increases in demand in response to the renewable energy projects is located in areas of Yarram that are known to be subject to urban drainage issues.

As a result, there is a scarcity of zoned land that could be subdivided to provide 'market ready' lots to accommodate new housing or businesses. Scarcity issues will be compounded by:

- Landownership intentions (i.e. owners with no intention to subdivide or sell their land, which is anecdotally a challenge in Yarram);
- Physical constraints on the land (e.g. topography, vegetation); and/or
- Servicing constraints (e.g. drainage, sewer).

T29. LAND SUPPLY SUMMARY, SOUTHERN WELLINGTON

Town	GRZ1	LDRZ1	TZ	IN1Z	IN3Z
Yarram	22.9 ha	23.5 ha	0	11.4 ha	0
Alberton	0	0	14.5 ha	0	4.3 ha
Port Albert	15.5 ha	0.6 ha	0	0	0
Woodside	0	0	4.4 ha	0	0
Total	**38.4 ha**	**24.1 ha**	**18.9 ha**	**11.4 ha**	**4.3 ha**

Source: Urban Enterprise 2022, derived from Wellington property rates database 2022

INDUSTRIAL LAND DEMAND INDICATORS

Indicators of 'business as usual' industrial land demand in Wellington are assessed in this section, with a focus on southern Wellington.

Industrial-related industries include sectors that either:

- Directly require industrial zoned land to operate (e.g. manufacturing, warehousing, logistics); or
- Indirectly draw on sectors that require industrial zoned land through supply chain (e.g. agriculture, mining).

EMPLOYMENT TRENDS

Employment in industrial-related sectors is prominent in southern Wellington, accounting for more than 40% of local jobs. The total number of jobs, however, remained unchanged between 2011 and 2021.

Jobs in manufacturing, construction and wholesale trade recorded a modest increase, but were offset by declines in agriculture, forestry and fishing, and transport, postal and warehousing.

T30. EMPLOYMENT IN INDUSTRIAL-RELATED SECTORS (POW)

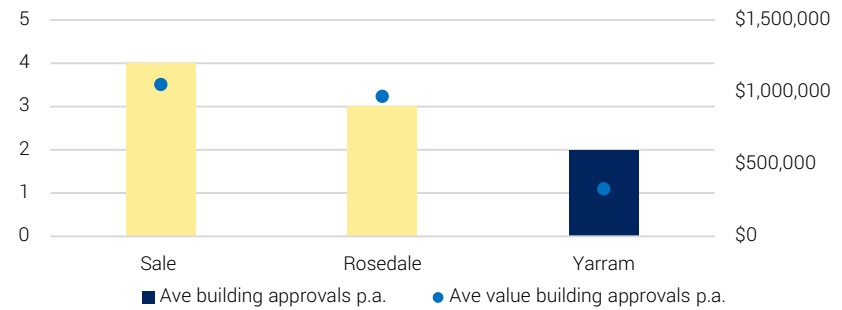
Industry	Wellington Shire			Southern Wellington		
	2011	2021	Change	2011	2021	Change
Total employment in industrial-related sectors	5,078	5,852	+774	802	800	-2
% of total employment	36%	33%		47%	44%	

Source: Census of employment, ABS, 2011, 16, 21

INDUSTRIAL BUILDING APPROVALS

Industrial building approval activity has remained consistently low since 2014, with 4 approvals in Sale, 3 in Rosedale and 2 in Yarram per year as shown in Figure 52.

F52. INDUSTRIAL BUILDING APPROVALS, AVE NO. & VALUES P.A., 2014-21



Source: Industrial building approvals, Victorian Building Authority, 2022.

INDUSTRIAL LAND CONSUMPTION

Since 2017, approximately 8ha of previously vacant land in Sale has been consumed, indicating a demand rate in the order of 2ha per annum.

In southern Wellington, the only industrial land of any scale is in Yarram. Since the last industrial land audit was prepared in 2011, approximately 6.5ha of previously vacant land has been consumed, including:

- 5ha rezoned to industrial in 2014 (C74) which has since been occupied; and
- Smaller industrial buildings replacing houses or previously unimproved land in Rodgers Street and Station Street (total approximately 1ha).

This equates to an average annual consumption rate of 0.6ha per annum during a period of low population growth (the Yarram SA2 population increased from 5,329 residents in 2011 to 5,556 residents in 2021, an average growth rate of 0.4% over the 10-year period).

POTENTIAL INDUSTRIAL & RESIDENTIAL LAND DEMAND GROWTH

INDUSTRIAL

For a range of existing industrial and related businesses, there will be opportunities to form part of the renewable energy supply chain, especially those involved in construction, engineering and transport.

Employment land that is suitably zoned, well-located and readily developable will be critical to leverage the potential for these opportunities to be harnessed.

Given the relative uncertainty regarding the ultimate location of key ports, transmission alignments, sub-stations and so on, and the proportion of supply chain expenditure that will ultimately be captured within Gippsland and Wellington, it is not possible to specify exact locations or industrial land areas that will be needed at this point.

Given the long term planning period for renewable energy investment in Wellington and Gippsland (20+ years), it is critical that 'business as usual' industrial land demand is adequately accommodated by land supply planning. Concurrently and at a more strategic level, it is important that suitable larger industrial sites are zoned (or at least nominated in planning policy) so that major manufacturers or other suppliers interested in locating in Wellington (or nearby) to capitalise on the major investment phase proposed in offshore wind can be readily accommodated. Determining the most suitable locations for renewable energy related industrial businesses is an exercise that should be completed at the regional level.

Table 31 shows a projection of business as usual industrial land demand in Sale and Yarram based on recent consumption, along with indicative contingency amounts for additional renewable energy induced demand over a 20 year period.

It is important to note that consumption projections are preliminary, and the strength and type of industrial land demand in Sale and Yarram should be regularly monitored. This will ensure that sustained periods of high demand and private enquiries can be identified, understood and responded to.

T31. INDUSTRIAL LAND CONSUMPTION PROJECTIONS AND CONTINGENCIES

Indicator	Sale	Yarram
Business as usual annual consumption rate per annum	2ha	0.6ha
Contingency	50%	50%
Total indicative annual demand rate	3ha	0.9ha
20 year land requirement (net)	60ha	18ha
20 year land requirement (gross @130% net)	78ha	23.5ha

Source: Urban Enterprise. Contingencies are approximate based on the extent to which existing land supply was constrained during the consumption period assessed and the potential future opportunity relevant to renewable energy supply chain.

In the case of onshore wind projects in Moyne Shire Council, the town of Mortlake experienced a modest increase in industrial land consumption due to several onshore wind farm projects. The council observed that a number of industrial lots that had been unoccupied for some time were consumed by a local business that expanded their footprint due to growing demand from wind farm projects. In addition, other adjoining vacant lots were used temporarily as lay down areas for wind turbine components.

The Mortlake example (although relevant to onshore wind, not offshore) indicates the advantage of townships having readily available zoned industrial land that is well-located proximate to projects and transport routes, presenting a similar potential outcome for towns such as Yarram.

RESIDENTIAL

The scale of the potential increase in demand for housing in Wellington due to renewable energy projects is difficult to predict at this point given uncertainties regarding:

- Timing and approval of licences and environmental approvals for offshore wind;
- Locations of focus for construction and operations workforces and ports; and
- The proportion of labour that will be drawn from existing residents in the region compared with those temporarily in the area for short periods.

The following indications of scale and location will influence housing demand across the region as a result of the proposed projects:

- The construction phases of projects will result in temporary influxes of workers, many of whom will need short term housing in the area, while others will be drawn from towns in central Gippsland already.
- Cumulative operational jobs are anticipated to be in the order of 1,200 to 1,300 (base case), approximately 1,000 of which will be in offshore wind. Ongoing offshore wind jobs are expected to be a combination of roles that can be undertaken remotely (i.e. off-site) and on-site (i.e. commercial port and offshore).
- If housing requirements in Wellington were to increase by up to 1,000 dwellings in aggregate during the construction and ongoing phases (i.e. ongoing housing demand) as a result of renewable energy projects, this step change in housing demand would equate to approximately 4 years of additional municipal housing growth at recent demand levels[19]. The fact that the majority of this demand would be likely to be concentrated in southern Wellington, along with Sale, indicates that land supply and housing provision levels and contingencies in these areas should equate to at least an additional 5 years of demand relative to business as usual levels.
- Corner Inlet (BBMT/Port Anthony) is well placed to become an operation and maintenance hub for offshore wind farms. If this was to occur, it is expected that demand would increase for housing in reasonable commuting distance from the port. As shown earlier in this report, this would increase demand for housing in the service centres of Yarram and Foster primarily, along with other smaller townships.

Based on the analysis in this report, the following types and locations of housing demand uplift should be planned for:

- Construction and operational phase demand in regional centres such as Sale and those in the Latrobe Valley in response to supply-chain impacts;
- Construction phase demand in areas proximate to major project construction hubs, including for specific projects as well as any port upgrades and transmission line construction. This demand is expected to be relatively concentrated in terms of timeframes (peaks and troughs) and locations (proximity to specific projects and facilities will be important but at this point, difficult to specify). Demand for and short-term accommodation will be particularly important, including visitor rooms, AirBnB, rentals and so on.
- Operational phase demand in both regional centres and areas proximate to O&M hubs (most likely in proximity to BBMT).

The main priority should be to ensure that there is unconstrained 'market ready' zoned land that can be brought to market relatively quickly if and when an uplift in owner occupier and investor housing demand occurs. To achieve this, it will be important for Council to both:

- Closely monitor announcements and engage with proponents on the likely timing and locations of labour and housing needs; and concurrently
- Progress planning and actions to address existing housing challenges and ensure that land supply buffers are provided for in all land supply planning work (allowing at least 5 years more than business as usual).

[19] ABS Dwelling approvals show an average annual dwelling approvals rate of 271 per annum from 2014/15 – 2021/22. Allowing for 10% not proceeding, this results in an average of 244 new dwellings constructed per year over the period.

As a broad indication, the following demand scenario for housing in southern Wellington should be factored into strategic planning:

- Pre-pandemic projections for southern Wellington (VIF2019) projected a need for an additional 20 dwellings per annum in the SA2.
- Forecast ID projections prepared for Council estimate that there will be a need for 285 additional dwellings in the Yarram District over the period 2021 – 2036 at an average annual increase of 19 per annum.
- Given the relative lack of urban infrastructure and growth potential of other smaller towns in the Yarram District and elsewhere in the SA2, it is reasonable to plan for the majority of housing growth in the area to be directed to the urban area of Yarram. Allowing for 10% of the housing stock to comprise infill / units, the remaining housing requirement for Yarram would be 17 dwellings per annum.
- Although the housing impacts of the renewable energy projects remain uncertain, planning for a contingency of 50% over and above business as usual demand would result in an average demand rate of 25 separate dwellings per annum over the forward period. Although indicative, this demand rate is considered reasonable for current land supply planning purposes in Yarram until further information is available regarding renewable energy project needs.
- Over a period of 15 years, this demand would require 375 lots and approximately 45ha of gross residential land (based on an average of 600sqm per lot, allowing 30% for local roads and open space and 30% for drainage and other encumbrances). This would require at least 20ha of additional broadhectare land compared with current vacant supply levels.

CIVIL INFRASTRUCTURE IN SOUTHERN WELLINGTON

The content of this section summarises key findings of a report prepared by Cardno to inform the Wellington Renewable Energy Impact and Readiness Study.

DRAINAGE

The key civil infrastructure challenge for land development in southern Wellington is drainage, with the Land Subject to Inundation Overlay (LSIO) and Flood Overlay (FO) applicable to many parts of the sub-region.

The current state of play for drainage infrastructure capability and capacity in southern Wellington is as follows:

- The southern area of Wellington Shire has substantial drainage challenges and constraints due to flooding and inundation.
- Coastal towns are constrained by a variety of factors including flooding, bushfire risk, vegetation, sandy soils and potential sea level rise. Urban expansion of coastal settlements is also not supported by State planning policy.
- Urban expansion and development in Alberton would be problematic for several reasons, namely the complex lot configurations (highly fragmented ownership), the lack of formal drainage system, and unmaintained local roads.
- Development is possible in Alberton, but would need to be discrete from the town centre (i.e. standalone drainage system - retarding basin/outfall).
- Yarram is the preferred location for any potential urban expansion, but opportunities are limited due to drainage constraints. Figure 53 is typical of many open drainage channels which form part of the main drainage system in Yarram. The drainage channels are flat and do not have any reasonable hydraulic efficiency to effectively convey high flow stormwater.
- Drainage constraints in Yarram are not insurmountable, and require a holistic strategy based on detailed flood modelling and opportunities for growth.

F53. OPEN UNLINED CHANNEL DRAIN, YARRAM

Source: Cardno, 2022.

SEWERAGE RETICULATION

South Gippsland Water (SGW) is the responsible authority for the provision of sewerage reticulation facilities for the Wellington Shire Council. The current reticulation capability and capacity in southern Wellington is as follows:

- It is apparent that Yarram has capacity within the existing water supply and sewerage network to service future growth. As Yarram is relatively flat, growth will not be able to be supported from a purely gravitational system, therefore will need to rely, at least partially, on a sewer pressure driven system or pumping stations.
- The Lawlor Street pump station in Yarram has been refurbished, therefore likely will be able to accommodate further growth.
- Ground infiltration is also a constraint on the network. There could be a need to upgrade rising mains to improve system capacity, to cope with the increased load.
- There is a prospect for pressure driven sewage subdivisions, separate from the main Yarram sewage infrastructure, however this is not preferable.
- Currently, there is sufficient dry weather storage in the sewer system, however the network may need to be optimised to smooth out significant wet weather peaks.
- The development of any sewer system upgrades in Yarram and Alberton will incur costs for the delivery of new infrastructure which is generally borne by developers. For pressure sewer systems, each new allotment is required to fund approximately $14,000 for the onsite collection system, which is in addition to standard contributions.
- For any temporary or short-term accommodation areas proposed (for example, as part of renewable energy projects and construction phases), SGW would consider options for water supply and sewerage reticulation on a case be case scenario. Temporary systems including private onsite treatment maybe supported by SGW.

WATER SUPPLY

Southern Rural Water (SRW) is the responsible authority for the provision of water supply reticulation facilities with respect to groundwater allocation for the Wellington Shire Council. South Gippsland Water (SGW) is the responsible urban authority for the provision of water supply reticulation facilities.

The current water supply and capacity in southern Wellington is as follows:

- There is a reliable water supply for the region from the Tarra River catchment and backup up from groundwater. The water treatment plant is based in Devon North. If new development areas are sufficiently far away from the treatment plant, network expansion will be needed. New urban areas are expected to be able to be serviced with reticulated water.
- South Gippsland Water has a licence to use groundwater for its Yarram urban water supply, although this is largely controlled by Southern Rural water. Groundwater levels in Yarram are steadily declining at a rate of about 1 metre per year, which may result in coastal subsidence. This decline is mainly attributed to offshore fluid extraction from oil and gas production.
- The groundwater consumption for Yarram is almost at the permissible consumptive volume. Any potential for significant population growth in the town may drive this to beyond permissible values.
- There is a cap on licences for groundwater tapping in the Yarram region. If there is insufficient water from the Tarra River, a transfer of groundwater licences between current customers is needed. If there is a scarcity in the water supply of the town, SGW will need to apply to increase their allowable volume (this is unlikely to be problematic given low current volume usage).
- There has been no significant increase in the salinity of the aquifer in recent years, and water is of good quality; as the aquifers are deep therefore not subject to the same risks in salinity.

YARRAM URBAN EXPANSION INVESTIGATION

Given the infrastructure limitations in other southern Wellington towns and the expected role of Yarram as a service centre to support renewable energy project needs (alongside Foster), the initial infrastructure potential of parts of the town to accommodate urban expansion was assessed in consultation with Cardno, Wellington Shire Council, West Gippsland Catchment Management Authority, South Gippsland Water and the Environment Protection Authority.

The assessment is preliminary and is intended to document general areas with potential for closer investigation for suitability for urban expansion. The primary consideration for this assessment is whether the areas can be readily serviced by infrastructure. More detailed investigation is needed to confirm full details of serviceability and the most suitable boundaries of urban areas.

The broad areas investigated as part of this study are shown in Figure 54 and findings shown in Table 32. Based on the preliminary assessment, the following areas are recommended for further investigation:

- **Industrial:** Area 6 (short term), with a potential longer term industrial role at Area 2.
- **Residential:** Areas 1, 4 and 5.

Further investigation should consider both detailed servicing issues, landowner willingness and flood extents, along with other usual strategic planning considerations.

F54. INVESTIGATION AREAS FOR POTENTIAL REZONING, YARRAM

Source: Urban Enterprise / Cardno, 2022.

T32. INVESTIGATION AREAS SUMMARY

Area	General location	Land use opportunity	Infrastructure considerations	Other considerations	Suitability and timeframe
1	North of Church Road / west of Devonshire Lane	Residential	▪ Outside known flood extent. Unlikely to be subject to inundation during a 1% AEP flood event. ▪ Designated waterway that flows south to the Jack River observed. Performs natural drainage role and will need to be retained in a waterway reserve at least 30 metres wide (either side) and revegetated to enhance the condition of the waterway. ▪ Not currently in the sewer district, but it could be included if boundary extended.	▪ Some agricultural land uses could result in potential contamination. ▪ Existing land uses in the industrial area to the south may influence residential land use where minimum recommended separation distances apply. ▪ Logical extension of an existing residential area to the north of the township. ▪ Landowner interest is a potential barrier to development.	Moderate suitability, medium term opportunity
2	South of Yarram-Morwell Road / west of Petersons Road.	Industrial	▪ The south-west section is likely to be subject to inundation from the Jack River and tributaries during a 1% AEP flood event. Flood depth over the vehicle egress route must not exceed 0.3 metres during a 1% AEP flood event. ▪ Several waterways observed. Perform natural drainage roles and will need to be retained in a waterway reserve at least 30 metres wide (either side) and revegetated to enhance the condition of the waterway. ▪ Not currently sewered or in the sewer district. SGW prefer not to expand sewer district to include this area, presenting a limitation to suitability for fully serviced development.	▪ Good separation from sensitive uses. ▪ Access and good exposure to Yarram-Morwell Road. ▪ Strategic area that could potentially be used without being fully serviced (e.g. laydown areas/storage for renewable energy projects).	Moderate suitability subject to sewer limitations, medium-long term opportunity.
3	North of South Gippsland Hwy / east and west of Buckleys Island Road.	Residential	▪ Further detailed investigation into the 1% AEP flood extent is required for this area to support any proposed rezoning. ▪ Southern portion is low lying and contains an old anabranch of the Tarra River This land may be subject to inundation during a 1% AEP flood event, and if so, would be unsuitable for development. ▪ Not currently in the sewer district. Expansion is not preferred. ▪ Catchment Pumping Station would be required with extensive rising main to connect back into Town sewer system with sufficient capacity. ▪ Some agricultural land uses may carry a medium potential for contamination. ▪ Any proposal to rezone land within the buffer of the closed former Yarram landfill (located to the east of the Hyland Freeway) will require further assessment due to the risk of landfill gas.	▪ Separated from main urban area and services. ▪ Proximate to existing low density residential areas. ▪ Potential for long term low density residential subject to resolution of potential constraints.	Moderate suitability for low density residential in northern section, medium to long term opportunity.
4	East of town centre / north and south of James Street / west of Verlings Lane.	Residential	▪ Outside known flood extent. Unlikely to be subject to inundation during a 1% AEP flood event. ▪ Designated waterway that flows south and east to the Tarra River observed. Performs natural drainage role and will need to be retained in a waterway reserve at least 30 metres wide (either side) and revegetated to enhance the condition of the waterway. ▪ Some of northern section is within the Sewer District. Other parts could be included. ▪ Area to east of high school harder to service without catchment sewer pumping station. Noting that to develop currently zoned residential area off Hihos Lane may also require new catchment sewer pumping station.	▪ Logical extension of an existing residential area to the east of the township. ▪ Landowner interest is understood to be a potential barrier to development.	High suitability north of James Street, short to medium term opportunity.

Area	General location	Land use opportunity	Infrastructure considerations	Other considerations	Suitability and timeframe
			▪ Some agricultural land uses may carry a medium potential for contamination.		
5	South of township / north of Pound Road east and west.	Residential	▪ Outside known flood extent. Unlikely to be subject to inundation during a 1% AEP flood event. ▪ Designated waterway that flows south to the Jack River observed. Performs natural drainage role and will need to be retained in a waterway reserve at least 30 metres wide (either side) and revegetated to enhance the condition of the waterway. ▪ Not currently in sewer district but district could be readily extended here. At least one sewer catchment pumping station is likely to be required. ▪ Some agricultural land uses may carry a medium potential for contamination. ▪ Existing land uses in the industrial area to the west of the Yarram township may impact residential development proposals in cases where minimum recommended separation distances apply.	▪ Logical extension of an existing residential area ▪ Southern area of Yarram is known to have drainage issues which present a challenge to development.	Moderate suitability subject to resolution of drainage issues. Medium term opportunity.
6	South of Mclean Street (adjacent to existing IN1Z area)	Industrial	▪ Sewer provision very limited, including existing IN1 zoned lots. ▪ Provision of sewer would improve the development potential of existing lots. ▪ Likely requires catchment pumping station.	▪ Logical extension of an existing industrial area to the south of the IN1Z precinct, identified in Planning Scheme as an Investigation Area. ▪ Presents an opportunity to serve business as usual demand (e.g. business expansion, relocation etc.).	High suitability subject to resolving drainage and sewer provision for the existing and future parts of precinct. Short term opportunity.

Source: Urban Enterprise, based on input from Cardno, South Gippsland Water, West Gippsland Catchment Management Authority and EPA.

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