

Chapter 24

Sustainability



24.1 Overview

This chapter reviews how the Gas Import Jetty and Pipeline Project (the Project) aligns with the principles and objectives of ecologically sustainable development.

The following scoping requirements for this Environment Effects Statement (EES) refers to the principles and objectives of ecologically sustainable development:

Overall, the main report should include the following: ...evaluation of the implications of the Project and alternatives for the implementation of applicable legislation and policy, including the principles and objectives of ecologically sustainable development and environmental protection.

(Scoping requirements for the Gas Import Jetty and Pipeline Project EES, DELWP (Jan 2019), p.7-8).

This chapter responds to the ecologically sustainable development component of this requirement. Specifically, the chapter presents a desktop review of how the Project aligns with the principles and objectives of ecologically sustainable development. Other EES chapters consider the implications of the Project on the environment.

The chapter uses a sustainability framework to review the Project rationale, the findings and mitigation measures of the EES and sustainability commitments of AGL and APA in the context of the principles and objectives of ecologically sustainable development (ESD).

24.1.1 Sustainable Development

The 1987 World Commission on Environment and Development was influential in defining the meaning of 'sustainable development' as:

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.¹

The 2005 World Summit on Social Development recognised three interdependent 'pillars' of sustainability: economic development, social development and environmental protection.² These three pillars have served as a common ground for sustainability standards and certification systems that have been developed and applied since 2005.³

In 2015, the United Nations General Assembly adopted the Sustainable Development Goals (SDGs), as an integrated set of 17 international development targets. These are also referred to as Agenda 2030. The 17 SDGs address the most important economic, social, environmental and governance challenges of our time. The SDGs are set out in **Figure 24-1** and provide a general framework to guide public, private and civil society sectors on how to ensure their activities advance sustainable development.

1 United Nations General Assembly (World Commission on Environment and Development: Our Common Future. Transmitted to the General Assembly as an Annex to document A/42/427 – Development and International Co-operation: Environment.
2 United Nations General Assembly (2005). 2005 World Summit Outcome, Resolution A/60/1, adopted by the General Assembly on 15 September 2005.
3 Manning, S., Boons, F., Von Hagen, O., Reinecke, J. (2012). "National Contexts Matter: The Co-Evolution of Sustainability Standards in Global Value Chains." Ecological Economics, Vol.83, pp. 197-209.

▼ **Figure 24-1:** United Nations Sustainable Development Goals (goals relevant to this Project are indicated in colour – see Section 24.4 of this chapter)



24.1.2 Ecologically sustainable development

ESD is generally analogous to sustainable development, but with greater emphasis on environmental protection. Development is assessed primarily on the basis of its (potential) environmental impacts, with economic and social aspects being secondary considerations.

Australia's National Strategy for Ecologically Sustainable Development 1992 defines ESD as:

Using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.⁴

⁴ Prepared by the Ecologically Sustainable Development Steering Committee, Endorsed by the Council of Australian Governments December 1992. ISBN 0 644 27253 8.

24.2 Sustainability framework for this EES

To enable a review in the context of the *principles* and the *objectives* of ESD, a sustainability framework was developed for this Project.

The sustainability framework has two components:

- ESD principles, drawn from relevant national (Commonwealth) and state (Victorian) legislation
- ESD objectives, drawn from the relevant United Nations SDGs.

Figure 24-2 illustrates the sustainability framework used to review how the Project aligns with the ESD principles drawn from state and national legislation and ESD objectives drawn from the United Nations SDGs.

This sustainability framework was used to review how the Project aligns with relevant ESD principles and objectives. This involved a desktop review of APA's and AGL's sustainability commitments and the EES risk registers, technical assessments and proposed mitigation measures.

▼ **Figure 24-2:** Sustainability Framework



24.3 Identifying ESD principles in Commonwealth and Victorian legislation

This section identifies the principles of ESD based on relevant Commonwealth and Victorian legislation. The legislation that specifically defines ESD are the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the Victorian *Environment Protection Act 1970*. Both Acts list a similar set of principles, which are detailed in **Table 24-1**.

Table 24-1 also provides a comparison of the ESD principles listed in the EPBC Act and Environment Protection Act and identifies a set of combined ESD principles, which are summarised in the fourth column of the Table. This set of combined ESD principles was used to review how the Project aligns with ESD principles in **Section 24.6** of this chapter.

Table 24-1: Summary of the principles of ecologically sustainable development as defined by Commonwealth and Victorian legislation

Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> – principles of ecologically sustainable development	Victorian <i>Environment Protection Act 1970</i> - guiding principles for the administration of the Act	Summary: ESD Principles that should inform decision-making
Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations. – Section 3A(a)	That decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equity considerations. – Section 1B(2)	Integrate long-term and short-term economic, environmental, social and equity considerations
If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. – Section 3A(b)	If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. – Section 1C(1)	Take a precautionary approach - lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
The principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. – Section 3A(c)	The principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. – Section 1D	Consider future generations by maintaining or enhancing the health, diversity and productivity of the environment
The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making. – Section 3A(d)	The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making. – Section 1E	Hold the conservation of biological diversity and ecological integrity as a fundamental consideration in decision-making
	The need to provide community access to reliable and relevant information in appropriate forms to facilitate a good understanding of issues of harm or risks of harm to human health and the environment and of how decisions are made. – Section 1L(2)(a)	Facilitate community access to reliable information on the risks of harm to human health and environment and ensure involvement in decisions and actions on issues that affect the community
	The need to facilitate community involvement in decisions and actions on issues that affect the community. – Section 1L(2)(b)	

To reinforce that the ESD principles outlined in **Table 24-1** are appropriate to use for reviewing how the Project aligns with ESD principles, relevant Victorian legislation and local Planning Schemes were also reviewed.

Table 24-2 identifies the legislation relevant to this EES that reference ESD and demonstrates that the ESD principles selected in **Table 24-1** are reinforced in other state and local legislation.

Table 24-2: Relevant legislation to this EES that reference ecologically sustainable development

Regulation	Relevant section
Planning and Environment Act 1987 (Vic)	<p>Outlines specific objectives for planning in Victoria, including – Section 4(1):</p> <ol style="list-style-type: none"> to provide for the fair, orderly, economic and sustainable use, and development of land. to provide for the protection of natural and man-made resources and the maintenance of ecological processes and genetic diversity. to secure a pleasant, efficient and safe working, living and recreational environment for all Victorians and visitors to Victoria.
Pipelines Act 2005 (Vic)	<p>The Act gives consideration to principles of sustainable development, including:</p> <ol style="list-style-type: none"> individual and community wellbeing and welfare should be enhanced by following a path of economic development that safeguards the welfare of future generations; there should be equity within and between generations; biological diversity should be protected and ecological integrity maintained; both long and short term economic, environmental, social and equity considerations should be effectively integrated into decision-making; if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation; decisions and actions should provide for community involvement in issues that affect them.' (Part 1)
Marine and Coastal Act 2018 (Vic)	<p>One of the guiding principles for the planning and management of the marine and coastal environment is Ecologically Sustainable Development: 'use and development that affects the marine and coastal environment should be focused on improving the total quality of life of Victorians, across current and future generations, in a way that maintains the ecological processes on which life depends.' (Part 2)</p>
Mornington Peninsula Planning Scheme	<p>Embeds sustainability and climate change objectives in its local planning policy framework and municipal strategic statement.</p> <p>Clause 15.02 Sustainable development and Clause 15.02-1S Energy and resource efficiency: Encourage land use and development that is energy and resource efficient, supports a cooler environment and minimises greenhouse gas emissions.</p> <p>Clause 21.03-2 A shared vision – Council's Corporate Plan includes in its vision 'a place where environmental sustainability is applied as a guiding principle'.</p> <p>Clause 21.08 Foreshores and Coastal Areas includes an objective 'to protect and enhance the natural ecosystems and landscapes of the coast for the benefit and enjoyment of present and future generations' (Objective 1) and an objective 'to achieve coordinated development of public and private facilities that increases the sustainable social, economic and recreational value of the coast and foreshore to the community'. (Objective 2).</p> <p>Clause 21.10 Marine Port Area Development places emphasis on 'meeting the need to pursue the economic advantages of the area, whilst ensuring the protection of the environment'. Also included is an objective 'to ensure that port and port related development does not adversely affect or compromise the ecosystems and recreational resources of Western Port'. (Objective 2).</p> <p>Clause 22.14 Land Units and Clause 22.14-2 Objectives: promotes the sustainable use and development of rural land, sustainable land use practices and integrated land management, including the retention and enhancement of habitat corridors along streamlines and the protection of wetlands.</p>

Regulation	Relevant section
Cardinia Planning Scheme	<p data-bbox="379 383 1426 443">Embeds sustainability and climate change objectives in its local planning policy framework and municipal strategic statement.</p> <p data-bbox="379 465 1426 548">Clause 15.02 Sustainable development and Clause 15.02-1S Energy and resource efficiency: Encourage land use and development that is energy and resource efficient, supports a cooler environment and minimises greenhouse gas emissions.</p> <p data-bbox="379 571 1426 631">Clause 21.02-8 Resource Conservation: Objective: To develop and promote more environmentally sustainable ways of living and working, including greenhouse gas emission reductions</p>
Casey Planning Scheme	<p data-bbox="379 638 1426 698">Embeds sustainability and climate change objectives in its local planning policy framework and municipal strategic statement.</p> <p data-bbox="379 721 1426 804">Clause 15.02 Sustainable development and Clause 15.02-1S Energy and resource efficiency: Encourage land use and development that is energy and resource efficient, supports a cooler environment and minimises greenhouse gas emissions.</p> <p data-bbox="379 804 651 833">Clause 21.04 Environment:</p> <p data-bbox="379 855 1426 916">21.04-2 – Objective 1: To protect and significantly restore Casey’s biological diversity, recognising its fundamental importance in achieving a healthy environment and way of life for current and future generations.</p> <p data-bbox="379 938 1426 999">21.04-3 – Objective 2: To progressively improve the health of Casey’s built and natural environments through ecologically sustainable land use and development practices.</p>

24.4 Defining ESD objectives and key sustainability themes for this EES

This section defines the objectives of ESD using the United Nations SDGs. Relevant United Nations SDGs were selected based on the nature and scope of the Project.

Given the Project is proposing to import liquified natural gas (LNG), to store and regasify LNG using a floating storage and regasification unit (FSRU), and to transport gas using a 57-kilometre-long underground pipeline across land, the most material sustainability impacts relate to the following five United Nations SDGs:

- SDG 7 Affordable and Clean Energy – Ensure access to affordable, reliable, sustainable and modern energy for all
- SDG 12 Responsible Consumption and Production – Ensure sustainable consumption and production patterns
- SDG 13 Climate Action – Take urgent action to combat climate change and its impacts
- SDG 14 Life Below Water – Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- SDG 15 Life on Land – Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

To facilitate the review of how the Project aligns with ESD objectives, these United Nations SDGs have been grouped into the following key sustainability themes, as shown as **Figure 24-3**:

- Climate Change and Energy Security (SDG 7, SDG 13)
- Resource Efficiency and Supply Chain Influence (SDG 12)
- Marine Biodiversity (SDG 14)
- Terrestrial Biodiversity (SDG 15).

▼ **Figure 24-3:** Selection of relevant United Nations SDGs grouped into key sustainability themes



24.5 AGL and APA sustainability commitments

The sustainability policies, charters, codes and reports of AGL and APA present a suite of commitments relating to the effect of their operations on the environment, society (employees, customers, communities, vulnerable groups and stakeholders) and their economic performance. These commitments have a strong correlation to the relevant SDGs listed in **Section 24.4**.

The AGL and APA documents are summarised in **Table 24-3** and **Table 24-4**, respectively. These documents and related sustainability commitments are referenced in the review of how the Project aligns with the ESD objectives in **Section 24.7** of this chapter.

Table 24-3: AGL sustainability policies, charters, codes and reports

AGL sustainability policies, charters, codes and reports	
Document	Relevance to ecologically sustainable development
2019 Annual Report ⁵	Includes scorecards for business value drivers one of which is Environment.
2018 Sustainability Report ⁶	Includes 2019 sustainability targets.
2018 Powering a Resilient Economy ⁷	Sub-report to the 2018 Sustainability Report, which focused on AGL's approach to climate-related financial risk.
Australian Energy Charter (2019) ⁸	Industry led whole-of sector initiative to address customer expectations. Commits to provide energy safely, sustainably and reliably, including facilitating new services and technologies that support sustainable energy solutions that meet the changing needs of the market.
AGL Environment Policy (2019) ⁹	<p>AGL's environment commitment includes:</p> <ul style="list-style-type: none"> • Adhere to high standards to protect the environment where we do business; • Strengthen our business by integrating environmental considerations into all business activities; • Meet or exceed our regulatory obligations; • Analyse and improve the way we do business to reduce environmental risks and impacts; • Continuously improve our environmental performance through developing and reviewing effective management systems, measurement and targets; • Share our environmental objectives and commitments with employees and stakeholders; Minimize the risk of environmental incidents; • Respond quickly and effectively to environmental incidents from our operations; • Actively participate in the development of regulations, codes of practice, standards and policies to share scientific knowledge and support informed decision-making; • Contribute to research and adaptation to new technologies that improve environmental outcomes; • Use resources and energy efficiently, minimising emissions and waste; and • Educate our employees, our contractors and suppliers and hold them accountable for complying with this policy.
AGL Greenhouse Gas Policy (2015) ¹⁰	<p>AGL's commitment to provide the market with safe, reliable, affordable, and sustainable energy options, including but not limited to:</p> <ul style="list-style-type: none"> - a phase-out of coal-fired power stations by 2050 - improvement of the AGL's operational greenhouse gas efficiency - investment in new renewable and near-zero emission technologies.
AGL Supplier Code of Conduct (2015) ¹¹	AGL's approach to embedding sustainability principles in its supply chain practices, including a utilisation preference of suppliers who act responsibly in managing the environmental impacts of their business operations.

5 <www.2019annualreport.agl.com.au/>

6 <www.2018sustainabilityreport.agl.com.au/>

7 <www.2018sustainabilityreport.agl.com.au/xmlpages/tan/files?p_file_id=13>

8 <www.theenergycharter.com.au/signatories/>

9 AGL Environment Policy, January 2019

10 <www.agl.com.au/-/media/aglmedia/documents/about-agl/who-we-are/corporate-governance-policy/corporate-governance-policies-charter/20170530-agl-greenhouse-gas-policy.pdf?la=en&hash=F3E0E449D3B17387F1850CD85ED9989E>

11 <www.agl.com.au/-/media/agl/about-agl/documents/media-center/corporate-governance-policies-charter/20170620-supplier-code-of-conduct.pdf>

Table 24-4: APA sustainability policies, charters, codes and reports

APA sustainability policies, charters, codes and reports	
Document	Relevance to ecologically sustainable development
2018 Sustainability Report ¹²	Includes 2019 Sustainability Targets.
Australian Energy Charter (2019) ¹³	Industry-led whole-of sector initiative to address customer expectations. Commits to provide energy safely, sustainably and reliably, including facilitating new services and technologies that support sustainable energy solutions that meet the changing needs of the market.
APA Health, Safety and Environment (HSE) Policy (2018) ¹⁴	APA's overarching environmental practice principles, including compliance with applicable HSE legislation and best practice requirements to which APA Group subscribes. APA is proactively seeking to identify hazards and reduce the risk of environmental harm.
APA Code of Conduct (2018) ¹⁵	APA key standards of personal conduct, professional behaviour and ethics, including a commitment to reducing the company's environmental footprint, including greenhouse emissions, as part of daily operations.
APA Supplier Prequalification Program (ASP Program) ¹⁶	APA procurement mechanism to provide best value for money on a total cost basis, based on competitive pricing and having regard to health and safety, environmental, technical, quality, and timeliness requirements. Ensures that suppliers and contractors understand requirements to comply with stringent legislative and corporate social responsibility standards.

12 <www.apa.com.au/globalassets/documents/annual-reports/2018-annual-reports/apa-group_sustainability-report_2018.pdf>

13 <www.apa.com.au/about-apa/the-energy-charter/>

14 <www.apa.com.au/globalassets/documents/governance-docs/apa-hse-pol-001-health-safety-and-environment-policy-2.pdf>

15 <www.apa.com.au/media/27351/code%20of%20conduct%2026%2010%202007%20In%20revisions11072011.pdf>

16 <www.apa.com.au/archive/OLD-suppliers-and-contractors/current-suppliers/>

24.6 Project alignment with ESD principles

Table 24-5 summarises the Project's consistency with the relevant ESD principles identified in Commonwealth and State legislation listed in **Table 24-1**.

Table 24-5: Summary of the Project's alignment with the relevant ESD principles

ESD principles:	Review of how the Project aligns with ESD principles
Integrate long-term and short-term economic, environmental, social and equitable considerations	In terms of long-term considerations and intergenerational equity, climate change is the most significant sustainability issue for this Project. Chapter 2 Project rationale of this EES demonstrates how the Project is balancing two important sustainable development goals: combating climate change (SDG 13) and energy security (SDG 7). The Project is an investment in energy security for Victoria and has been selected over the alternative of investing in domestic pipeline expansion in recognition that, in the medium-term, the energy sector in Victoria will continue to transition to low-to-zero emission energy technologies. The Project can adjust to changing gas demand as renewable energy becomes more available. This means the Project presents an option that meets a short-term gas and electricity security need while supporting and enabling the incremental transition to renewable energy by avoiding locking-in long-term liquefied natural gas (LNG) infrastructure.
Takes a precautionary approach - lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation	For the specialist studies, where information was unknown or not available, the worst-case scenario was developed and used to assess the potential impacts of the Project on the environment. One example of the precautionary approach is the use of the assumption that all marine biota entrained into the FSRU would be lost. This assumption was used as there is uncertainty about what percentage of marine biota entrained would pass through the FSRU and be discharged back into the marine environment alive and allows for a worst-case assessment of mortality associated with entrainment. Chapter 25 Environmental Management Framework includes contingency measures to respond to unexpected environmental events.
Consider future generations by maintaining the health, diversity and productivity of the environment	The consideration of environmental protection and biodiversity conservation is fundamental to the EES scope. Underpinning the EES is a body of work characterising the existing environment and identifying environmental sensitivities. This was then used to consider the potential Project impacts and to inform decision making processes about the Project design, construction and operation. Many design changes were made to avoid potential adverse effects on the environment based on expert advice and in response to community feedback. Mitigation measures were developed to avoid and minimise the potential impacts of the Project in the environment, and subsequently protect and maintain biodiversity and ecological integrity for future generations.
Hold the conservation of biological diversity and ecological integrity as a fundamental consideration in decision-making	The Project and proposed mitigation measures have been developed to avoid and minimise potential impacts on the marine environment and the terrestrial and freshwater environment, particularly in relation to flora, fauna and their habitats which are protected under State and Commonwealth legislation. The consideration of environmental protection and biodiversity conservation is fundamental to the EES scope. Underpinning the EES is a body of work characterising the existing environment and identifying environmental sensitivities. This is then used to consider the potential Project impacts and to inform decision making processes about Project design, construction and operation. Many design changes were made to avoid potential adverse effects on biodiversity based on expert advice and in response to community feedback. Mitigation measures were developed to avoid and minimise the potential impacts of the Project in the environment, and subsequently protect and maintain biodiversity and ecological integrity. Chapter 6 Marine biodiversity and Chapter 7 Terrestrial and freshwater biodiversity demonstrate how this principle was put into practice. Section 24.7 of the chapter summarises how marine, terrestrial and freshwater biodiversity would be protected.

ESD principles:

Review of how the Project aligns with ESD principles

Facilitate access to reliable information on the risks of harm to human health and environment and ensure community involvement in decisions and actions on issues that affect the community

The EES process has facilitated community involvement on issues that affect them, through a comprehensive program of stakeholder engagement. **Chapter 26 Stakeholder engagement** provides detail on the community and stakeholder engagement undertaken for the Project. This ongoing engagement has enabled the issues of concern to local communities and stakeholders to be incorporated into the EES. This included carrying forward to the impact assessment issues of concern or importance to stakeholders, even if they were not identified as key Project risks through the risk assessment.

Consultation activities started with key community stakeholders in July 2017 before to the proposed site selection was announced and continued throughout development of the EES. Consultation has included:

- community information sessions, meetings and presentations
- meetings with councils, community groups and peak bodies
- meetings with owners and occupiers of land in the immediate vicinity of the Crib Point Jetty and those along the proposed pipeline alignment.

During the EES development, councils and relevant government agencies were engaged through the EES Technical Reference Group (TRG). The TRG provide advice to the Project team on key issues and concerns from their respective areas of expertise.

The EES, the Works Approval (FSRU only) and the Planning Scheme Amendment (Gas Import Jetty Works (including the FSRU) only) will go on public exhibition allowing the public to submit feedback on the Project. Detailed information on environmental risks and impacts to human health are set out in the chapters of the EES and Technical Appendices and these will all be available for public access either online or other means in accordance with the EES Exhibition requirements. This is followed by a public inquiry where members of the public can hear expert evidence, ask questions and make submissions to an independent advisory committee.

A consultation plan has been developed for the Project and is being implemented in line with the *Pipelines Act 2005 (Vic)*.

If the Project proceeds, AGL would establish a \$7.5 million Community Fund managed by a panel of local community members. The intention of the Community Fund is to share the benefits and ensure fairer outcomes for the local community. The distribution of the funds in relation to community needs has not yet been decided. AGL would work with the community to establish arrangements for the fund to be led and operated by the local community, addressing concerns they identify in their own communities.

AGL and APA have also each made broader commitments to involve and consult with communities on an ongoing basis (which would continue to inform the Project's development).¹⁷

¹⁷ AGL 2019 Sustainability Goal: Work side by side with local communities to develop mutually beneficial energy projects. APA 2019 Goal: Progress the community and stakeholder consultation program of activities for the various new infrastructure projects across the business.

24.7 Project alignment with ESD objectives

The Project's alignment with ESD objectives is discussed in the following sections for each of the key sustainability themes identified in **Section 24.4** of this chapter.

The following sections are based on a review of APA and AGL sustainability commitments (see **Section 24.5** of this chapter) and the EES risk registers, technical assessments and proposed mitigation measures. In each section, relevant APA and AGL sustainability commitments are highlighted to demonstrate that policies and procedures are in place to respond to the relevant ESD objectives.

Climate change and energy security

The United Nations SDGs emphasise the dual imperative to take urgent action to combat climate change and its impacts (SDG 13) while also ensuring access to affordable, reliable, sustainable and modern energy for all (SDG 7). Reliable and affordable energy is one of the key enablers of sustainable development. At the same time, there is a need to transition away from fossil fuel-based energy sources. It is not straightforward to quantitatively compare the impacts of fossil fuel-based energy production and consumption in the short to medium-term to the impacts of climate change. The following paragraphs provide a qualitative discussion on this topic.

A significant sustainability consideration for a natural gas supply project is its contribution to climate change. As the AGL Greenhouse Gas Policy highlights: 'The Intergovernmental Panel on Climate Change AR5 Report states that warming of the climate is unequivocal and that risks associated with climate change are reduced substantially if warming is limited to less than two degrees Celsius (2°C) above pre-industrial levels. Achieving this outcome would require complete decarbonisation of the world economy by 2100 and emission reductions of up to 70 per cent by 2050'¹⁸.

In 2016, the energy sector comprising electricity generation, direct combustion, transport and fugitive emissions, was responsible for 91 per cent of Victoria's total net greenhouse gas emissions¹⁹. Achieving the less than 2°C warming target will require transition to a decarbonised electricity generation sector. Practically, this will require a transition away from brown coal-fired power stations (which generated around 83 per cent of the state's electricity in 2016)²⁰. The Victorian Government has recognised the importance of reducing GHG emissions and transitioning to renewable energy sources. Notably, the *Climate Change Act 2017* (Vic) includes a long-term GHG emissions reduction target set at zero emissions by 2050, and requires the preparation of climate change strategies, adaptation action plans and GHG emissions reduction pledges.

As discussed in **Chapter 2 Project rationale**, the Project has been proposed as an energy security measure for Victoria and other states on Australia's south eastern seaboard, to address an impending gas shortfall. As outlined in the recent 2020 Gas Statement of Opportunities (GSOO), from 2024 onwards, the forecast for gas supply in the south-eastern Australia market (including committed gas projects) is projected to be insufficient to meet forecast demand if no further sources of gas or alternative infrastructure are developed, noting this year shortfall may change given demand²¹.

The 2020 GSOO also noted that once the Liddell Power Station is fully retired by 2023, any delays in new investment of renewable energy infrastructure to replace Liddell's generation or further decline in the availability of coal-fired generation will significantly increase gas demand through increased reliance on both existing and new gas powered generation. There will be further pressure on gas demand due to the increased reliance on gas powered electricity generation. The Project seeks to meet this shortfall by securing an alternative supply of gas to maintain security and affordability of gas supply in Victoria and the rest of the south-eastern market.

18 AGL Greenhouse Gas Policy, April 2015

19 DELWP (2018) Victorian Greenhouse Gas Emissions Report

20 NEMReview6, 2018

21 <www.aemo.com.au/-/media/Files/Gas/National_Planning_and_Forecasting/GSOO/2019/2019-GSOO-report.pdf>

The Project provides a reliable and secure supply for quick-start gas powered electricity generation which, in turn, enables a cost-effective energy transition to low carbon to occur, for AGL, and for the broader Australian electricity sector. As the Australian coal-based electricity generation fleet is retired, energy capacity is forecast to be replaced by significant additional renewable sources. Intermittent renewable energy generation such as wind and solar will be supported by ‘firming capacity’ comprising a range of more flexible technologies such as gas-powered generation, hydro, battery storage and demand response. Accordingly, a slight growth in the longer term for gas fired power generation is forecast, although this will depend on the rate of coal-fired retirement.

On an overall basis, renewable generation that is firmed by gas has a very low emissions intensity (that is less than 0.2), as only a small percentage of overall electricity dispatched is provided by the gas peaking plant, with the remainder provided by renewable sources. The combined emissions intensity of the National Electricity Market (NEM) in 2017/18 was 0.82 tCO_{2e}/MWh. Black coal generators are typically higher than this level (around 0.9), with brown coal generation much higher (around 1.2), while renewable energy has an emissions intensity near zero. The overall high intensity of the NEM reflects the high capacity factor of ‘baseload’ coal-fired power stations with a high emissions intensity. The Project, through the use of the FSRU technology can be deployed within a relatively short lead time (thus meeting the projected gas shortfall in 2024) and can be decommissioned and relocated once it was no longer required. The Project presents a flexible energy source and a potential alternative to coal-fired power. It meets a projected short fall in gas supply in Victoria and can be readily decommissioned in the medium-term when advances in renewable energy availability render this supplementary source of energy unnecessary.

Chapter 11 Greenhouse gas assesses the potential greenhouse gas emissions as a result of the Project and sets out mitigation measures to minimise emissions. Greenhouse gas emissions would be generated through various Project activities, including the burning of fossil fuels in plant and vehicles during construction and operation (largely from the operation of the FSRU and LNG carriers), as well as vegetation clearance and the manufacturing of construction materials.

Mitigation measures have been developed to reduce both construction and operating greenhouse emissions. For example, construction emissions would be minimised by avoiding vegetation removal through optimising the pipeline alignment and reducing the right of way (ROW) where possible, sourcing of local materials and considering the use of low embodied energy materials. Greenhouse gas emissions associated with the FSRU would be managed in accordance with the Protocol for Environmental Management (PEM), which should include audit, planning and reporting processes so that emissions are monitored and minimised on an ongoing basis. Also, as shown in the EES Technical Report F: *Greenhouse gas impact assessment*, predicted emissions at peak production in open loop mode (which is the primary proposed operating mode) would be approximately four times less than under a closed loop scenario.

Chapter 23 *Climate change risk* provides an overview of the potential climate change risks to the Project, identifies mitigation measures which would be implemented as a matter of course for a project of this nature.

Table 24-6: Climate change and energy security – applicable AGL and APA sustainability commitments

Relevant AGL 2019 sustainability commitments	Relevant APA 2019 sustainability commitments
<ul style="list-style-type: none"> Contribute to the development of energy market design and a regulatory framework that facilitates safe, reliable, affordable and decarbonised electricity supply from centralised and distributed sources. Progressively decarbonise the energy supply to our customers. Manage our power generation assets efficiently to ensure security of supply for customers. Provide affordable energy solutions for all our customers (households and businesses). 	<ul style="list-style-type: none"> Taking a systematic and risk-based approach to environmental management. Expanding the understanding of Environmental, Social and Governance (ESG) and climate risks across our business. Evaluating further renewable energy and low emission gas generation opportunities. Considering environmental risks in all investment and procurement decision-making.

Resource efficiency and supply chain influence

SDG 12 relates to ensuring sustainable consumption and production patterns throughout the entire production and consumption process. For the purposes of this Project, sustainable consumption and production relates to minimising the use of natural resources and toxic materials and emissions of waste and pollutants during construction and operation of the Project. Regarding the use of natural resources and emissions, a significant sustainability impact of this Project is energy use and greenhouse gas emissions, both of which are addressed in the section immediately below (*Climate change and energy security*).

Other related risks identified and assessed for this Project are potential impacts on groundwater, surface water and the potential impacts associated with the disturbance of contaminated soils, groundwater and marine sediment, and acid sulfate soils (ASS).

Chapter 10 *Contamination and acid sulfate soils* addresses the management of contamination (soil, groundwater and marine sediments) and waste. The potential for disturbance and inappropriate management of contaminated soils, groundwater and ASS to affect the ecological character of the Western Port Ramsar site during construction and operation of the Project is considered to be low. The management of construction waste and the management of waste during operations have been assessed to be low risk and would be managed in accordance with an Environmental Management Plan, Construction Environmental Management Plan and an Operational Environmental Management Plan.

Chapter 8 *Surface water* concludes that potential impacts on surface water quality during the Project's construction can be managed through a combination of industry accepted mitigation measures, and that operational activities associated with the Project would have no potentially unacceptable environmental impacts.

Chapter 9 *Groundwater* concludes the potential for groundwater quality and movement to affect the ecological character of the Western Port Ramsar site during construction and operation of the Project is considered to be low. The construction and operation of the Project would also involve the indirect use of resources and generation of waste and greenhouse gas emissions through the Project's supply chain.

Supply chains can be considered in terms of upstream (suppliers) and downstream (use and disposal of goods and services generated by the Project) effects. In terms of downstream effects, the Project would also be generating waste for disposal, which is addressed in **Chapter 10** *Contamination and acid sulfate soils*.

The other significant downstream effect of the Project would be the generation of greenhouse gas emissions through the consumption of the LNG (these 'Scope 3 emissions' have been excluded from the EES scope as discussed in **Chapter 11** *Greenhouse gas*). In terms of upstream effects, materials would be sourced locally, domestically and internationally for the Project's construction and operation. Notable materials being transported to the Project sites from international suppliers would include the LNG and the high-pressure steel pipelines that would be used to transport the gas.

It is the responsibility of the suppliers to manage these indirect impacts. However, the receiving company can require their supplier to provide assurances they are following sustainable practices.

As listed in **Table 24-3**, AGL has a Supplier Code of Conduct and Environment Policy. Its 2018/19 sustainability commitments include a commitment to attach the Code of Conduct to all supplier agreements and to evaluate all material supplier partners for compliance. The AGL Environment Policy adds that AGL will educate their contractors and suppliers and hold them accountable for complying with its Environment Policy.

APA has also made a commitment to considering environmental risks in all investment and procurement decision-making. In 2017/18, the APA procurement team introduced a supplier prequalification assessment and compliance program to manage elements of potential supply chain risk. The new process will measure and monitor each key supplier against critical prerequisites to protect APA from risks such as Health Safety and Environment (HSE) management policies, procedures and breaches.

Relevant AGL and APA sustainability commitments that relate to resource efficiency and supply chain influence are summarised in **Table 24-7**.

Table 24-7: Resource efficiency and supply chain influence – applicable AGL and APA sustainability commitments

Relevant AGL 2019 sustainability commitments	Relevant APA 2018 sustainability commitments
<ul style="list-style-type: none"> • Minimise our environmental footprint in the areas where we operate. • Use resources and energy efficiently, minimising emissions and waste. • Educate our employees, our contractors and suppliers and hold them accountable for complying with our environment policy. • Manage our contractors to reduce risks, and work with our suppliers to ensure their commitment to our sustainable practices. • AGL Supplier Agreements signed in 2018/19 to include the AGL Supplier Code of Conduct: 100 per cent. 	<ul style="list-style-type: none"> • Fostering a culture to ensure our health, safety and environmental obligations show continuous improvement in performance and that risks are identified and managed to prevent harm and build a sustainable future. • Environmental risks will be considered in all investment and procurement decision-making.

Marine biodiversity

SDG 14 relates to the conservation and sustainable use of the oceans, seas and marine resources for sustainable development. Technical specialists have undertaken a detailed assessment of the potential impacts of the Project on the marine environment. The details of the assessment undertaken, the findings and proposed mitigation measures are documented in EES Technical Report A: *Marine biodiversity impact assessment*. The assessment has also informed a discussion of the impacts, mitigation measures and conclusion in **Chapter 6 Marine Biodiversity**. A detailed investigation identified 53 risks relating to the marine environment from construction and operation of the Project. Each risk has been assessed and mitigation measures have been proposed.

The main risks to the marine environment would occur during the operation of the FSRU:

- entrainment of plankton and other small biota in seawater taken into the FSRU primarily for heating the LNG and other purposes
- discharge of residual chlorine from the electrolysis of seawater used to control biofouling in the piping network and heat exchangers on the FSRU
- discharge of seawater cooler than ambient seawater, and also discharge of seawater warmer than ambient seawater, from alternative modes of FSRU operation.

The FSRU is expected to operate at the average rate of production for most months of the year including all spring and summer months. To ensure that there is not high entrainment in the peak season for larvae, a limit on seawater use (around the spring and summer period) is proposed. The likelihood that a significant proportion of fish larvae would be entrained in spring and summer is very small. With regard to seawater discharges, a key outcome from the modelling and assessment is that the combined predicted chlorine and temperature impact envelope is localised to the Port of Hastings area, and well separated from the edges of North Arm, all seagrass and mangrove areas, all of the northern area of Western Port and all areas used by wading birds. Mangroves, saltmarsh, seagrasses, subtidal reefs and water birds are therefore not impacted by the FSRU operating up to peak production, for both open loop and closed loop regasification modes.

In addition to the proposed mitigation measures, it is also proposed to put in place a marine monitoring program to ensure ongoing monitoring of the effects on the marine environment. The marine monitoring program would help ensure that the actual impacts are not greater than predicted, and that any unexpected impacts are detected early and appropriately mitigated and managed.

The detailed technical study and assessment of potential risks on the marine environment concludes that with implementation of the identified mitigation measures, potential impacts on the marine environment would be avoided or minimised.

Table 24-8: Marine Biodiversity – applicable AGL and APA sustainability commitments

Relevant AGL 2019 sustainability commitments	Relevant APA 2018 sustainability commitments
<ul style="list-style-type: none"> • Minimise our environmental footprint in the areas where we operate. • Adhere to high standards to protect the environment where we do business. • Minimize the risk of environmental incidents. • Respond quickly and effectively to environmental incidents from our operations. • Continuously improve our environmental performance through developing and reviewing effective management systems, measurement and targets. 	<ul style="list-style-type: none"> • Maintaining compliance with environmental obligations in all jurisdictions we conduct our business.

Terrestrial biodiversity

SDG 15 relates to the protection and sustainable use of terrestrial ecosystems, including halting land degradation and biodiversity loss. Technical specialists have undertaken a detailed assessment of the potential impacts of the Project on terrestrial and freshwater biodiversity. EES Technical Report B *Terrestrial and freshwater biodiversity impact assessment* details the assessment, findings and proposed mitigation measures. The assessment has also informed a discussion of the impacts, mitigation measures and conclusion in **Chapter 7 Terrestrial and freshwater biodiversity**. Some of the key risks and mitigation measures during construction of the Project are highlighted below.

The Project would almost certainly result in the direct loss of 17.529 hectares of native vegetation, including 79 scattered trees and 50 large patch trees and the removal of individuals, or habitat for, significant flora species. The Project would impact 87 habitat zones which comprise 11 Ecological Vegetation Classes. This loss of native vegetation has the potential to result in habitat fragmentation leading to a disruption in ecosystem function. This finding was made after the proposed pipeline alignment was selected and refined to minimise loss of remnant vegetation.

Vegetation offset requirements for the Project have been identified which when implemented would compensate for the losses of native vegetation and species habitats. An offset strategy for the Project is being prepared to help ensure the offset requirements can be met. Mitigation measures also include steps to avoid unplanned vegetation loss during construction and rehabilitate the site on the ROW.

The Project would result in the short-term loss and fragmentation of habitat for the endangered Southern Brown Bandicoot. This finding was made after the proposed pipeline alignment was selected and refined to minimise loss of remnant vegetation and targeted surveys resulted in further design revisions to avoid the Southern Brown Bandicoot's habitat. Additional mitigation measures have been proposed to mitigate

the impact on the Southern Brown Bandicoot, including: reinstatement of dense cover of suitable native shrubs or vegetation of similar structure in all 19 locations of densely vegetated Southern Brown Bandicoot habitat impacted by the pipeline construction footprint; rapid re-establishment of dense ground cover at any known or assumed sites for the Southern Brown Bandicoot impacted by the pipeline construction footprint; and measures to protect the Southern Brown Bandicoot during pipeline construction.

Merran's Sun-orchid is listed under the *Flora and Fauna Guarantee Act 1988* and is only known to occur at four or five locations in Victoria. Surveys conducted as part of the EES identified a population of up to 391 plants near Crib Point. Originally, it was proposed to use a combination of HDD and open trench construction through the area occupied by the orchids. However, this would have resulted in a loss of approximately 13 per cent of the population and impacts on the population were considered to be a very high risk. Accordingly, it is proposed to avoid any disturbance to the orchid population from trenching by using HDD beneath the entire community. This would involve an HDD of approximately 600 metres in length from the Southern side of Woolleys Road (near kilometre point 1.8) exiting to the south of the orchid population.

With the implementation of additional mitigation measures, most risks have been reduced to a rating of medium or below, with the exception of one risk that remains high: direct loss of native vegetation. Operation of the Project is not considered to have significant impacts on terrestrial flora and fauna values, with all operation risks rated low or very low. There is a negligible risk of change in the ecological character of the Western Port Ramsar site and no significant impacts for listed threatened and migratory species from the FSRU operational processes.

Relevant AGL and APA sustainability commitments to terrestrial biodiversity are summarised in **Table 24-9**.

Table 24-9: Terrestrial Biodiversity – applicable AGL and APA sustainability commitments

Relevant AGL 2019 sustainability commitments	Relevant APA 2018 sustainability commitments
<ul style="list-style-type: none"> • Adhere to high standards to protect the environment where we do business • Minimise our environmental footprint in the areas where we operate • Minimize the risk of environmental incidents • Respond quickly and effectively to environmental incidents from our operations • Continuously improve our environmental performance through developing and reviewing effective management systems, measurement and targets 	<ul style="list-style-type: none"> • Maintaining compliance with environmental obligations in all jurisdictions we conduct our business.