



**WESTERN PORT  
BIOSPHERE**

Mornington Peninsula and Western Port Biosphere Reserve  
Foundation

# Crib Point Gas Import Jetty and Pipeline Project

Submission to Crib Point Inquiry and Advisory Committee

August 2020



Throughout the remainder of the document, text in blue type is copied directly from the various chapters of the EES as indicated. Text in black type is Foundation comment.

### **The proposed project**

AGL Wholesale Gas Limited (AGL) and APA Transmission Pty Ltd (APA) are proposing to develop the Gas Import Jetty and Pipeline Project (the Project) to supply imported natural gas into the south-eastern Australian gas market for industrial, commercial and residential gas customers.

### **The need for an EES**

On 8 October 2018, the Victorian Minister for Planning issued a decision determining that an Environmental Effects statement (EES) was required for the Project as:

- the Project has the potential for significant environmental effects, including on native vegetation and the habitat of threatened terrestrial and aquatic species listed under the Flora and Fauna Guarantee Act 1988 (Vic), as well as risk to some aspects of the ecology in the North Arm of the Western Port Ramsar site.
- there are potential effects from construction and operation of a gas pipeline on water quality of waterways and the Western Port Ramsar site and on Aboriginal cultural heritage.
- the effects and relevant uncertainties of the Project (should be) rigorously investigated as part of an integrated assessment process before any statutory approval decisions are made.

### **Mornington Peninsula and Western Port Biosphere Reserve Foundation**

The Mornington Peninsula and Western Port Biosphere Reserve Foundation (the Foundation) was established within the United Nations Education, Scientific and Cultural Organisation (UNESCO) program Man and the Biosphere (MaB) in 2002. The central idea behind the MaB program was that conservation and development should not be mutually exclusive, that we could meet human needs without damaging the environment on which and all other species depend. This recognizes that development is necessary to meet human needs but should be done with as little as possible detriment to the natural environment.

The Foundation was given its charter by UNESCO in recognition of the natural values of the Western Port environment. This followed its listing as a Ramsar Wetland and its inclusion in international migratory bird agreements between Australia and China, Japan and the Republic of Korea (CAMBA, JAMBA and RoKAMBA respectively). Further, developments within the Biosphere Reserve that affect particular species, both floral and faunal, would trigger a referral under the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999*.

Any major proposal that would significantly modify the Western Port environment should be regarded as harmful until proven otherwise. The Foundation views the Project through the lens of whether the changes that result will cause undue detriment to the natural environment and the species that depend upon it for survival? From this perspective comments made upon the EES may appear to be predominantly negative.



### **Balancing conservation and development**

The Foundation considers it inevitable that the project will result in harm to the Western Port environment. With no gas terminal in Western Port currently, there is relatively little disturbance to its natural values and the marine and birdlife that depend upon its waters have adaptations that have led to the bay having a rich biota. An active community of concerned citizens would like to see it remain that way.

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As an organisation that has stewardship over aspects of the Western Port environment, the Foundation looks for a high degree of confidence that if the project does go ahead, the risks posed can be mitigated. This EES has yet to deliver that high degree of confidence.

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The project proposes taking in very large volumes of sea-water and therefore biota, as well as the discharge of chlorinated and low-temperature sea water into Western Port. The effects on the natural environment of the discharge will be to a greater or lesser extent dependent upon project implementation.

### **The future for gas**

The Foundation accepts that gas has immediate and required uses in the Victorian community. Whether there will be a greater or lesser need into the short term, medium term and long term is a moot point. The Paris Agreement, entered into by nations around the world to limit the use of carbon-based fuels lists Australia as a signatory. While gas as fuel has lower emissions than coal and oil, it is nonetheless carbon-based and its use will decline as non-carbon based fuels rise. The AGL APA project will challenge Australia's capacity to achieve the targets that it has accepted in signing the Paris Agreement.

With the pace of change internationally on the use of carbon-based fuels, it is extremely unlikely that the policy settings governing gas projects will persist over the life of the project. It is quite likely therefore that the portability of the FRSU would see it removed before the end of the proposed 20-year life-span, leaving the land-based infrastructure as stranded assets within the Western Port environment. Is there a requirement that AGL and APA make good and remove and remediate plant and infrastructure after the life of the project?

In an article in *The Age*, 23 July 23 2020, *Australia is sponsoring a failing gas industry*<sup>j</sup>, Bruce Robertson, a gas/LNG financial analyst with the Global Institute for Energy Economics and Financial Analysis, wrote as follows:

"The very last thing the world needs is more gas. Far from seeing the "gas-powered recovery" our politicians desire, we are seeing a gas-fired depression around the globe. In the US, the number of operating drill rigs has fallen 73 per cent in the past 12 months. And US LNG exports have more than halved so far in 2020.

Domestically, the industry is faring little better. On Tuesday, Santos, the proponent of the Narrabri gas project, wrote off a further \$950 million from its failed Coal Seam Gas to Liquefied Natural investments in Australia. Its total write-downs since 2014 are close to \$8 billion.

Globally, renewables continue to overwhelm new fossil fuel and nuclear power station builds. Since 2010 renewables have grown by about 148 per cent while nuclear plus fossil fuels have declined by 38 per cent.



This year alone, 200 gigawatts of renewable power plants have already been built, compared with only 100 gigawatts of fossil fuel energies and nuclear. Fewer gas power plants have been built in 2020 than in 2001. Investors are fleeing the gas industry and investment is flooding into renewables.”

The proponent AGL, on their website<sup>ii</sup> states as follows:

AGL Greenhouse Gas Policy April 2015

“Continued use of coal and gas for power generation by mid-century is likely to be dependent upon cost-effective deployment of very low emissions technology, such as Carbon Capture & Storage (CCS). Long-term policy certainty is a pre-requisite for decarbonisation to occur efficiently and affordably for consumers. Both renewable and lower-emission fossil fuel generation will form an integral part of the energy generation mix throughout the transition to a low-emission global economy.”

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There is nowhere in the world that CCS is in operation in the stationary energy industry beyond extremely expensive and minuscule trial programs. Within the concept of low-emissions technology, ‘low’ is a relative term and a target to fully decarbonise industry will require ‘no-emissions technology’. It is difficult to see that any carbon-based fuel has a future within the life-span of this proposed project.

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**Environmental performance of AGL**

There are inevitably risks in a proposal that involves large quantities of natural gas, regasification using sea water as a heat exchange, chlorination, transport of large volumes of liquid nitrogen and the disturbance of acid sulphate soils. The question to be asked relates to the capacity of AGL, as the proponent to mitigate these risks. Even with risk treatments in place, there is always the potential for failures to occur.

In the quite recent past, AGL has suffered failures, examples of which are documented in Appendix One.

Even one breach of environmental standards is one too many. Risk plans and associated mitigation measures cannot completely preclude accidents. To site a project where, if an accident was to happen, unacceptable detriment to the environment would occur, is simply not justifiable.

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From this point forward the Foundation’s comments focus on elements from selected specific chapters of the EES.



## **EES Chapter 1 Introduction**

The Draft evaluation objectives from Table 1.1 below consistently focus on minimisation rather than avoidance. ‘Avoid’ is what is needed. ‘Minimise’ is a relative term, accepting that there will be adverse effects. ‘Offsets’ are an admission that there is damage to be set against making good elsewhere. Offsets are a deficit response. If vegetation and species are in any particular location, it is because the set of environmental conditions that meet specific needs is present. An offset will not replicate the vegetation and species; it will be a salve not a solution. ‘Don’t cause the need to offset’ is the preferred response.

**Table 1-1: 1 Draft evaluation objectives**

<i>Energy efficiency, security, affordability and safety</i>	<i>To provide for safe and cost-effective augmentation of Victoria’s natural gas supply in the medium to longer term.</i>
<i>Biodiversity</i>	<i>To avoid, minimise or offset potential adverse effects on native flora and fauna and their habitats, especially listed threatened or migratory species and listed threatened communities</i>
<i>Water and catchment values</i>	<i>To minimise adverse effects on water (including groundwater, waterway, wetland, estuarine, intertidal and marine) quality and movement particularly as they might affect the ecological character of the Western Port Ramsar site.</i>
<i>Cultural heritage</i>	<i>To avoid or minimise adverse effects on Aboriginal and historic cultural heritage.</i>
<i>Social, economic, amenity and land use</i>	<i>To minimise potential adverse social, economic, amenity and land use effects at local and regional scales.</i>
<i>Waste management</i>	<i>To minimise generation of wastes by or resulting from the Project during construction and operation, including accounting for direct and indirect greenhouse gas emissions</i>

## **EES Chapter 2 Project rationale**

### **2.2.6 Infrastructure constraints**

In this section, a range of alternative transport options are considered but ruled out as uneconomic. Clearly, uneconomic is a judgement and will lead to a proposal that incurs the least cost. Whichever option is adopted, there is a cost and so a price to be paid. But who pays the price? Is it the proponent, where the price is passed on to the consumer, where there will be a greater or lesser preparedness to pay with all manner of market interventions including transfers? Or is the price to be paid by the environment?

### **2.3 Gas is an important enabler of the energy transition?**

In this section AGL states that gas is an important enabler of the energy transition. It is recognised that AGL has a track record in this context and is to be congratulated.

#### **2.5.2 Siting**

It is noted that Australian Industrial Energy (AIE) is planning to develop a gas import terminal at Port Kembla to service the New South Wales market. AIE also considered Port Botany and Port of Newcastle in its assessment of sites. Of these locations, the Port Kembla site was preferred during the AIE



assessment of alternatives noting that the AIE proposal is focused on meeting the gas needs of the New South Wales market and is proposing to dredge a new berth pocket in the Inner Harbour.

Figure 2-11 extracted from the EES shows major pipelines on the east coast of Australia. There is connectivity between the Port Kembla site and the Victoria gas market so it is assumed that AGL wishing to develop and operate its own pipeline is a commercial decision. As is mentioned above, it is the environment that pays the price for this decision.

In evaluating the three shortlisted sites for the facility, the following is an excerpt of Table 2-3: LNG import siting evaluation.

<i>Option/criteria</i>	<i>Port Adelaide</i>	<i>Port Kembla</i>	<i>Crib Point</i>
<i>Environmental effects</i>	<ul style="list-style-type: none"> <li><i>Located in proximity to dolphin breeding area</i></li> <li><i>Extensive dredging required</i></li> <li><i>Potential for contaminated dredge spoil.</i></li> </ul>	<ul style="list-style-type: none"> <li><i>Extensive dredging required</i></li> <li><i>Potential for contaminated dredge spoils.</i></li> </ul>	<ul style="list-style-type: none"> <li><i>Located within the Western Port Ramsar site</i></li> <li><i>No capital dredging required.</i></li> </ul>

That Crib Point is ‘located within the Western Port Ramsar site’ is the only, and an oblique, reference to the biodiversity of Western Port. Yet it is this very biodiversity that led to Western Port being designated a Ramsar Wetland of International Significance and to its inclusion in the Australia Migratory Bird Agreements with China, the Japan and Republic of Korea (CAMBA, JAMBA and RoKAMBA respectively), not to mention its being included as one of only four Australian Biospheres within the global UNESCO program Man and the Biosphere.

The Crib Point site assessment includes an extensive list of issues that relate to infrastructure and operational matters. Given the sensitivity of the acknowledged environmental values of Western Port, that the environment, as recognised internationally, is absent in the site assessment is a major omission.

**2.6.3 Pipeline alignment selection**

**Public safety**

Public safety is a key consideration in pipeline construction and operation. Pipeline design must consider existing and reasonably foreseeable land use and proximity to sensitive receptors. In particular, avoiding areas where potential interference with the pipeline may occur is essential to ensuring public safety ...

Due to the location of the pipeline alignments within and in close proximity to Hastings, those assessed occur within an environment that would be considered high density residential. In terms of pipeline design, these would require additional physical and procedural controls to protect against failure.

We need to know what are these ‘additional physical and procedural controls’? They are not stated. It is to be assumed that the Bayswater and Liddell Power Stations referred to in 6.1 and 6.2 above also had ‘physical and procedural controls’ to protect against failure. How confident should the Western Port community be that a failure will not occur?



## EES Chapter 3 Project Development

### 3.2 Gas Import Jetty Works design development

#### 3.2.1 Seawater intake

##### Intake grille and screens

Grilles to be fitted to the FSRU seawater intakes would reduce the likelihood of larger mobile marine animals and drifting debris from entering the seawater heat exchange system and consist of a screening grille with vertical dimension spacing of 100 millimetres by 100 millimetres.

Does a 'grille with vertical dimension spacing of 100 millimetres by 100 millimetres' mean that the grille has a mesh size of 100mm x 100 mm? If so, there will not just be 'plankton and other small biota' passing into the FSRU. For example, a one-kilogram King George whiting would fit through such a grille. The 'vertical dimension spacing' would need to be an order of magnitude smaller to limit entrainment to 'plankton and other small biota'. Otherwise, the productivity of the waters of Western Port would be seriously challenged. There would be significant effects on the food resources available to the migratory birds that led to the listing of Western Port as a Ramsar site while the anglers of Western Port would certainly note a precipitous decline in their catch.

#### 3.2.6 Regasification assessments

##### Potential impacts on the marine environment

The use of seawater for regasification and other processes on the FSRU has the potential to impact small marine biota from entrainment and the return of cooler water to the sea (including exposure to residual chlorine in discharge seawater). As more seawater is used in open loop mode than in closed loop mode, the risk of impacts are (sic) higher.

As described in **Section 6.3** in **Chapter 6** Marine biodiversity, 53 individual potential risks to the marine environment from the construction and operation of the Project were identified and assessed in detail. The marine risk and impact assessment carried out for the Project identified that the main risks to the marine environment are associated with seawater use by the FSRU including:

- entrainment of plankton and other small biota in seawater taken into the FSRU for warming the LNG from a very cold liquid to a gas at ambient temperature, and other purposes
- discharge of chlorine-produced oxidants and products from the electrolysis of seawater used to control biofouling in the piping network and heat exchangers on the FSRU
- discharge of seawater colder than ambient, and also discharge of seawater warmer than ambient, from alternative modes of operation on the FSRU.

##### Entrainment of plankton and other small marine biota

Natural mortality rates for plankton and invertebrate larvae vary from about five per cent per day to more than 20 per cent per day. For the peak rate of gas production, the predicted rate of entrainment is 0.22 per cent after 14 days or 0.40 per cent after 28 days. This corresponds to an additional mortality rate for plankton of 0.014 per cent per day (assuming complete loss of viability of all plankton passing through the chlorination and piping system). The predicted contribution of entrainment is unlikely to have a significant effect on the Western Port ecosystem. There would be only a slight reduction in abundance amongst plankton species and a slight loss of fish eggs and larvae.



There are no data provided to show which marine species would actually be entrained in the seawater intake system and in what numbers. This one of the most basic elements required to assess the impacts of this project on marine life.

The impingement of larger marine organisms is not adequately discussed in the AGL assessment of risks associated with the FSRU seawater intake. The presence of many fish species in the vicinity of the proposed project suggests that the issue of impingement needs to be addressed.

There is a further significant concern. Rather than the percentage of plankton and invertebrate larvae that is removed, what is the mass and/or volume of biota taken out of the food chains and webs, ie the percentage decrease of food items in the surrounding marine environment? What is the impact on the macrofauna of Western Port? Has this been modelled?

There is a small predicted decrease in primary productivity from phytoplankton in North Arm. There is no loss of organic carbon or nutrients due to entrainment. The organic carbon and nutrients in the plankton entrained will remain in North Arm and be cycled by bacteria and infauna.

It is claimed that there will only be a 'slight reduction in abundance amongst plankton species and other small marine biota' with a 'small predicted decrease in primary productivity'. The issue is that as a result of entrainment, they'll be 'dead', they'll be ex-plankton. As an energy source within food chains and webs, there is quite a difference between living and dead organisms so the claim of 'a small predicted decrease' is quite misleading.

*The predicted entrainment effects from the FSRU on fish larvae and eggs would be highest in spring and summer when fish larvae and eggs are present in large numbers, reflecting the strong seasonal pattern in North Arm of Western Port. Spring and summer also coincide with the period when the majority of larvae that are important in terms of conservation, fishing and ecological values may be present in the water column in North Arm of Western Port.*

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 the majority of fish eggs and larvae expected to be present in the water column in North Arm of Western Port, a limit on the continuous amount of seawater that can be drawn into the FSRU for regasification purposes is proposed during spring and summer (over any 14-day period).

The likelihood that a significant proportion of fish larvae would be entrained in the spring and summer period is very small. The modelling and assessment carried out for the Project also identified that the percentage of fish eggs and larvae that are predicted to be entrained into the FSRU is very small compared to the predicted loss via flushing to Bass Strait. The fish species that are present in North Arm are highly fertile and common throughout Western Port and elsewhere. Fish larvae and juvenile fish also enter Western Port from other breeding and nursery areas via Bass Strait

### Discharges

The 'worst-case' modelled scenario for temperature and chlorine is when the FSRU is operating in open loop at peak regasification (i.e. all three regasification trains are operating with the largest seawater discharge rate) and an LNG carrier is berthed adjacent to the FSRU. The LNG carrier when berthed adjacent partially obstructs the discharge ports on the starboard side of the FSRU, decreasing the efficacy of mixing.

Among the concerns regarding discharges relating to the release of chilled water and of chlorinated water, Dr Angela Freeman has made comments as follows:

There is no discussion or modelling of the impacts (of chilled water) on the marine biota and environment at a local level over a prolonged period of operation (365 days/year for 20 years).



Although AGL considers the impact of chlorine on marine fauna to be negligible in the context of the whole of Westernport, the impact in the Crib Point region over a prolonged period of time is not considered. It is important that any potential long-term degradation of this area due to the presence of a chlorine plume over a 20-year period is included in the modelling.

### 3.2.6 Selection of the proposed FSRU regasification mode

Open loop gives energy benefits and carbon emission reductions at the expense of entrained biota and biota downstream in the discharge of chilled water and the chlorinated stream. The entire exercise involves trade-offs; the question is which are acceptable?

To minimise potential entrainment impacts during periods of the year when fish eggs and larvae are more prevalent in Western Port's North Arm, a 14-day average (mean) flow of 312,000 m<sup>3</sup>/day is proposed between September and February (inclusive).

If development approval is given, strict adherence to seasonal variation in intake volumes would need to be given as a threshold condition against which rigorous monitoring must occur.

## **EES Chapter 4      Project description**

### 4.3.1 Floating storage and regasification unit

The FSRU would use seawater for a range of purposes, including:

- regasification to convert stored LNG into natural gas
- emergency fire water
- water curtain, a spray to ensure there is no direct contact between LNG carrier and the hull of the FSRU if LNG were to escape during unloading operations, is to protect the hull from cryogenic temperatures.

The cryogenic exposure of carbon steel causes embrittlement, possibly resulting in structural failure.

The escape of LNG during unloading operations is a scenario that must be considered to have some likelihood for it to be included as above in the EES. If this were to occur, there would be a failure of the FSRU. In 'EES Technical Report K - Safety, hazard and risk assessments', all references to cryogenic liquid hazards and treatments refer to hazards to personnel, there is neither reference to, nor mitigation of, risks because of cryogenic exposure to carbon steel. This appears to be an incompetent risk assessment.

### Proposed mode for regasification for the Project

To minimise potential entrainment impacts during periods of the year when fish eggs and larvae are more prevalent in Western Port North Arm, a 14-day average (mean) regasification flow of 312,000 m<sup>3</sup>/day is proposed between September and February (inclusive).



Table 4-6: Proposed FSRU regasification operating parameters

Season	FSRU regasification mode	Mean daily seawater <sup>a</sup> regasification flows (m <sup>3</sup> /day, 14-day average)	Equivalent gas production rate (mmscf/day)
Autumn and winter (Mar – Aug)	Open loop	468,000	500-750
Spring and summer (Sep – Feb)	Open loop	312,000	250-500

Has modelling of reduction of biomass in Spring and Summer when the volume of sea-water is reduced by 1/3 on Autumn and Winter operations been conducted? What is the reduction in biomass that is entrained? What is the reporting regime to which AGL will submit such that the seasonal changes to volumes of water used is assured?

## EES Chapter 5 Key approvals and assessment framework

### 5.2 Key Approvals

- permits under the *Flora and Fauna Guarantee Act 1988* (Vic) for the removal of FFG Act-listed species (and may be required for ‘taking’ of fish by the FSRU water intake process).

What agency has oversight and what regulatory instruments are available to the agency to ensure compliance with the FFG Act?

Following is an overview of Chapters 6, 7 and 8.

The analysis has been prepared by Lance Lloyd, (B.Sc., M.Sc. [Research] University of Adelaide), Project Officer, Western Port Biosphere. Except <sup>@</sup>Indicates text paraphrased from **Dr Angela Freeman, B.Agr Sci (Hons.) University of Melbourne Ph.D. (Marine Biology) University of Melbourne**, a Biosphere member and member of the Board’s Science and Education Committee.

There is an overarching problem with the separation of the chapters on freshwater and marine biodiversity issues which ignores the interconnection that estuaries provide between marine and freshwater habitats. Given they are interconnected and interdependent ecosystems, separate consideration of impacts on them leads to a lower risk profile. This lack of recognition and the structure of the report means the risks are underestimated in the EES.

This point is identified by Dr Angela Freeman who notes that <sup>@</sup>AGL has not provided an adequate description or data on the ecology of the bay, that is, the complex interactions between the flora and fauna and their physical environment over space and time. This information is essential to inform the proponent’s proposed research methodology. This deficiency may be due to a complete lack of understanding of the ecology of the Bay or a deliberate simplification of the many complex interactions which occur between the system components.

Dr Freeman also notes that siting of this FSRU compared to overseas FSRUs. <sup>@</sup>AGL acknowledge that this proposal at Crib Point is part of the internationally significant wetland the Western Port Ramsar site. But the documentation does not highlight that the overseas projects indicate proponents select sites with



low environmental impacts, with FSRUs moored at jetties at industrial ports or out in open water. Further, the documentation provided by AGL in the EES does not include consideration of any other sites for the proposed project other than Crib Point.

#### EES Chapter 6: Marine Biodiversity and accompanying Technical Report A.

The risk assessment for impacts fails to adequately identify or assess the risks involved, many examples exist but some are provided below.

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The use of marine water which will be used to cool and heat the gas, will have significant impacts on the Western Port environment including the death of entrained animals. The volume of water to be used is downplayed by separating the water used between various processes such as ballast, water curtain, for cooling and heating. However, when added together it could be >700 ML/day or >260,000 ML/yr particularly under open loop operation (>53 ML/day for ballast, >5 ML/day for water curtain, ~187 ML/day for cooling & ~468 ML/day for heating -under open loop operation).

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Heating and cooling of seawater will vary temperature by up to 5°C which will have a significant impact on the marine ecosystems by disruption of biological cues and ecological processes.

The treatment of this water via chlorine, will result in three impact pathways which are not adequately addressed, or even identified, in the risk assessment:

- a) chlorine and chlorine by-products (chloramines) released into the waters every day of the operation over long time periods which are likely to be toxic to aquatic life around the FSRU
- b) the death of entrained and “biofouling” organisms which will colonise the pipe system (the purpose of chlorine treatment), will mean that these dead and rotting organisms will accumulate nearby on the sea floor. As they rot, oxygen will be used which could drop the dissolved oxygen levels to zero which would then result in the loss of all gill breathing organisms locally, and animals avoiding that zone.
- c) A zone of poor water quality (from the chlorine treatment, the temperature variations and the low dissolved oxygen) will become a barrier for migrating organisms. For example, Australian Grayling larvae (an EPBC species listed as vulnerable) returning to Western Port would need to pass by the FSRU. The area of hostile water quality will inhibit their ability to recolonise areas into the western side of Western Port adjacent to the FSRU (likely to be the major route for catadromous fish moving from freshwater, to marine environments and back again in Western Port.

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@Entrainment of marine organisms (plankton to fish) is not assured due to the large size of the openings in the grille, aimed at avoiding entrainment of “larger organisms”, with the planned 100mm x 100mm, which is large enough to entrain a wide range of fish and other marine organisms. The statements that larger, older fish larvae may be able to avoid the FSRU intake by active swimming” is an extraordinary statement with no evidence or data provided to suggest that this is the case

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The entrainment of fish and other marine organisms is dismissed with no evidence. Is there any reason why fish and other organisms would “sense danger” and swim away? Marine organisms commonly swim



through underwater structures such as shipwrecks and there is no reason given to assume that they would not do the same when approaching the FSRU water intake grille.

Further, low dissolved oxygen levels at the sediment-water interface (resulting from the processes listed in b above) will also encourage the process of nutrient streaming from the sediments on the sea floor. These nutrients will promote the growth of nuisance algae and phytoplankton which could be toxic or reduce habitats for other species or amenity for humans.

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@The purpose of the environmental protection overlays on the Westernport Bay and its environs is to protect the area from environmentally damaging development. The AGL proposal does not fit with legislation to prevent dumping of waste-water in the Bay. The long-term impacts on marine organisms and the marine environment of the dumping of 465,000 m<sup>3</sup> of cooled or heated chlorinated seawater in the Crib Point region of Westernport Bay, 365 days/year for 20 years, in this area are unknown.

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This issue has not been addressed in the EES.

@Although AGL considers the impact of chlorine on marine fauna to be negligible in the context of the whole of Westernport, the impact in the Crib Point region over a prolonged period is not considered. It is important that any potential long-term degradation of this area due to the presence of a chlorine plume over a 20-year period is included in the modelling.

## **EES Chapter 7: Terrestrial and Freshwater Biodiversity and Technical Report B.**

This chapter aims to assess the impacts of the project on the terrestrial and freshwater species. The report concentrates on the impacts of the pipeline but does not address the impacts of species which migrate between marine and estuarine habitats to freshwater habitats and therefore is deficient.

It is also flawed as it concentrates on the presence or absence of threatened species and downplays the risks due to the lack of presence of these species in surveys which were undertaken in limited time periods. The EES report has undertaken searches of databases but has had limited success in identifying species present. The Victorian Biodiversity Atlas database, however, contains species records collected over many years with a variety of techniques.

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Our searches of the Victorian Biodiversity Atlas database for species present within a two-kilometre radius around Crib Point indicate there are 46 listed species under the FFG Act or EPBC Act from a total of 547 species present (see Appendix Two). This includes multiple waterbirds, Southern Brown Bandicoots, Swamp Skinks, Glossy Black Skinks and multiple sun-orchids. The potential impact on these species is not adequately addressed in the EES.

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The pipeline cuts across native vegetation, wetlands and creeks and includes 57 creek crossings of which four will not be avoided. It also crosses significant areas of swampy and wetland areas which includes habitat for at least four nationally listed species:

- Southern Brown Bandicoot
- Growling Grass Frog
- Australian Grayling
- Dwarf Galaxias



The potential impact of the pipeline works on these and other species is dismissed without due consideration.

**The following further comments on Chapter 7: Terrestrial & Freshwater Ecology are provided by Foundation staff member Stephen Brend.**

The AGL- APA EES states “All terrestrial and freshwater biodiversity risks associated with the Project’s operation are rated as low or very low.” Foundation analysis of the EES does not lead to the same conclusion. The footprint of the Gas Import Jetty and 55km pipeline suggest that there will be more than a low risk, especially as the pipeline will not be completely revegetated after construction. This will create a “habitat free” corridor along the pipeline’s length. Part of the route will cross previously cleared land but will also cut through existing native vegetation and waterways.

There is no evidence presented that Horizontal Directional Drilling (HDD) and other mitigation strategies will fully offset the environmental impacts of construction and operation, which include removal of 1,603 hectares (one-third) of the swamp scrub at Gas Import Jetty Works and a further 15,352 hectares along the pipeline. Concerns about AGL-APA’s assessment of these impacts was only increased by their noting the lack of revegetation along the pipeline’s right-of-way (ROW) was only commented on in Chapter 14 (Landscape and Visual: “Vegetation clearing would therefore continue to have a landscape and visual impact once the pipeline was operating”), not when discussing terrestrial ecology.

There are additional concerns about the impact of the proposed development on the avian-fauna of the region, particularly shorebirds which are an integral part of Western Port’s listing as a Ramsar site, a [wetland of international importance](#). Specifically, the proponents state:

- “[surveys] did not highlight any **significant** usage (our emphasis) by waders and water-birds of habitats within the immediate vicinity of the Crib Point Jetty”
- “It is therefore unlikely that waders/water-birds that may use the surrounding area at Crib Point would be adversely impacted by **noise** (our emphasis) from the Project.” And
- “It is likely that Lewin’s Rail and Eastern Great Egret would temporarily lose small areas of suitable foraging or dispersal habitat within areas of agricultural land that becomes seasonally inundated due to this land being used for construction of the pipeline. Noise and vibration impacts as well as lighting impacts from HDD may also temporarily displace these species from the immediate vicinity of the construction works. These impacts are considered unavoidable and are short term.”

The assessment of insignificant usage is not, in the view of the Foundation, adequately justified as observations point to shorebirds commonly using all parts of Western Port’s shoreline. Secondly, noise is only one aspect of the disturbance likely to be experienced by birds; they are known to be disturbed by movement, for instance. Finally, to describe a potentially life-threatening event as “short-term” or of “low to very low impact” is disingenuous. This is made explicit in a related comment “Construction activities associated with the Pipeline Works are likely to have a localised impact on Glossy Grass Skink through mortality of individuals and removal of habitat within the ROW.”

The Foundation considers that this chapter unrealistically downplays the likely impacts of the development on terrestrial and freshwater ecology.



## **EES Chapter 8: Surface Water**

Risk assessment for water crossings all underestimate the risks and risk pathways as the consequences are generally rated lower than others would rate these threats and the mitigation measure are over-rated in their effectiveness to reduce the risk.

In particular, the following observations are made:

- a) The EES provides different data on the number of creek and river crossings - how each will be treated – between chapters. Chapter 7 states only 4 creek crossings (out of 57) will be trenched whereas Chapter 8 says 38 of the 64 crossings will be trenched - which means there will be the potential of large amounts sediment into the streams in more than 50% of the crossings.
- b) Chapter 8 attempts to devalue the streams by saying they have been subject to clearing and alterations but these changes do not prevent these waterways from having significant ecological values
- c) Industry accepted mitigation measures to prevent water quality impacts rarely work in practice, so turbidity will be a real problem in the waterways from this project, causing increased nutrients, loss of aquatic vegetation and loss of fish and macroinvertebrates and potentially causing water-bird losses.

## **EES Chapter 10 Contamination and acid sulfate soils**

### **10.5.2 Acid sulfate soils**

Coastal acid sulfate soils (CASS) occur naturally along many parts of Victoria's coastal zone and, if left undisturbed, are largely benign. However, if disturbed, i.e. water drains from the soil and air enters, they can react with oxygen and produce sulfuric acid. This can be detrimental to the environment with impacts that include acidification of water and soil, de-oxygenation of water, poor water quality, dissolution of soil, rock and concrete, and corrosion of metals. Sometimes impacts can be extreme, resulting in fish kills.

#### ***Desktop review***

The Australian Soil Resource Information System (ASRIS) indicates that 16 kilometres of the pipeline alignment intersects an area with a high probability of occurrence of ASS, generally within the upper one metre of soil. A high probability refers to greater than 70 per cent chance of ASS occurrence.

Previous investigations were undertaken for the Project by Monarc in August 2018 and Construction Science in January 2019. Monarc identified the presence of AASS and PASS soils at two out of 10 sampling locations at Woolley's Road in Crib Point. Construction Science also identified the presence of ASS (four locations) and PASS (one location) soils at the Crib Point Receiving Facility.

#### ***Field investigation***

The ASS investigation was undertaken in conjunction with the contaminated soil investigation between 29 November 2018 and 26 April 2019, where a total of 180 soil samples were collected and analysed. The investigation concluded there is a presence of ASS throughout the proposed pipeline alignment, including areas adjacent to 44 watercourse crossings. Of these, trenchless construction methods are proposed for 17 of the watercourse crossings and open trench method for the remaining 27 watercourses.



It is estimated the open cut trench sections of the Pipeline Works and the Gas Import Jetty Works would disturb approximately 91,500 m<sup>3</sup> and 2,500 m<sup>3</sup> of soil (in-situ) respectively. Both sets of works are therefore classified as having high hazard under the Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soils (CASS BPMG, 2010) which may only proceed with an approved environmental management plan.

#### 10.5.3 Contaminated marine sediments

##### *Desktop review*

The Crib Point Jetty was established in 1965 to provide berthing facilities for import of crude oil to the former Western Port BP refinery. The jetty has two berths (Berth 1 and 2) located in the northern and southern portion of the jetty. Berth 1 is currently in operation for the import of refined petroleum products. Berth 2 was decommissioned when the Western Port BP refinery was closed in the 1980s.

Jacobs undertook a baseline environmental contamination investigation of the Crib Point Jetty in 2018 for the Port of Hastings Development Authority (PoHDA). Six different contaminants were identified in marine sediment below the Crib Point Jetty. Concentrations of arsenic, benz(a) anthracene, fluoranthene, phenanthrene, pyrene and Tributyltin (TBT) all exceeded the ANZECC and ARMCANZ (2000) ISQG trigger values. The exceedances were considered generally low and may be considered acceptable for current use of the Crib Point Jetty. No sampling was undertaken from Berth 2.

In accepting exceedances of the ANZECC and ARMCANZ (2000) ISQG trigger values, what is the basis for the exceedances being considered generally low and so may be considered acceptable for current use of the Crib Point Jetty? This could be seen as self-serving in the presentation of comparative data rather than absolute data.

##### *Field investigation*

A total of 20 marine sediment samples including four samples from reference sites located approximately 500 metres north of Berth 1 and south of Berth 2 were collected during the two rounds of sampling undertaken by CEE on 1 March 2019 and 18 July 2019.

Field investigation indicated that contamination from historical and/or existing activities at the Crib Point Jetty is limited to Berth 1, where concentrations of TBT exceeded the Sediment Quality Guideline Value (SQGV). Note that Berth 1 is located outside of the Project Area and is not impacted by the proposed Project activity and that no construction works are proposed beneath the jetty as part of the Gas Import Jetty Works.

PFAS compounds were detected above the laboratory limit of reporting (LOR) at three locations within Berth 2. However, Australian guideline values for maintaining ecosystem health for PFAS in marine sediments is currently not available. Therefore, in the absence of guideline values for PFAS in marine sediments, it is considered that based on low concentrations of PFAS (that is, within the same magnitude of the LOR) the existing beneficial use of protecting water dependent ecosystems and species is protected.

Is the plain English interpretation of the statement 'PFAS compounds were detected above the laboratory limit of reporting' mean that PFAS compounds were detectable and so should be reported to authorities? If so, how far above the laboratory limit of reporting were they? If, as stated, there are no



guideline values for PFAS in marine sediments, what is the basis for the conclusion that existing beneficial use is protected?

The marine sediment investigation concluded that no contamination exceeding the adopted guideline values has been identified at Berth 2 and the existing beneficial use of protecting water dependent ecosystems and species at Berth 2 is protected, and contamination from historical and/or existing activities at the Crib Point Jetty is limited to Berth 1 only. Impacts from contaminated marine sediments are therefore not addressed further in this risk assessment.

If there was no sampling at Berth 2, as is stated, of course 'no contamination exceeding the adopted guideline values' will be found! What are the adopted guideline values and on what are they based? A map showing the precise locations of the samples taken would be of assistance to provide confidence that a total of 20 marine samples is best practice.

#### 10.7.1 Impacts from disturbance of contaminated soils and acid sulfate soils

##### ***Contaminated soils (Risk ID C1)***

A minor quantity of contaminated soils is expected to be encountered during construction of the Project. Although limited in extent, the majority of the contaminated soils are expected to be encountered near the Crib Point Receiving Facility, adjacent to the former Western Port BP refinery and the rail corridor in Hastings during excavation and/or trenching.

Yet in 10.5.2 above

"It is estimated the open cut trench sections of the Pipeline Works and the Gas Import Jetty Works would disturb approximately 91,500 m<sup>3</sup> and 2,500 m<sup>3</sup> of soil (in-situ) respectively. Both sets of works are therefore classified as having high hazard under the Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soils (CASS BPMG, 2010) which may only proceed with an approved environmental management plan."

It would be at least arguable that 91,500 m<sup>3</sup> and 2,500 m<sup>3</sup> of soil, an amount of which would be acid sulfate soils should not be considered a minor quantity of contaminated soils.

##### ***Acid sulfate soils (Risk ID C2)***

Soil disturbance activities undertaken during construction of the Project such as excavation, trenching, horizontal directional drilling (HDD) and thrust boring have the potential to encounter ASS and oxidise PASS.

Acid leachate generation during the construction of waterways crossing using the open trenching method is considered unlikely due to the ephemeral nature of the waterways; and the likelihood is further reduced with the construction to be undertaken during no flow conditions only, as prescribed in mitigation measures MM-SW03 and MM-SW04 (refer to the Chapter 8 Surface water).

In the event of high rainfall during the proposed construction phase, what duration of delay to pipeline construction would be considered when the waterways have flows? Is a month-long delay with on-site plant idle, plausible? Economically tolerable? What about a week-long delay?

In Table 10-4: Contamination and ASS mitigation measures, MM-CO3 refers to an Acid Sulfate Soil Management Plan which is to be developed. There are many statements such as 'the duration of stockpiling of untreated ASS will be minimized', it will 'include a procedure for managing unexpected discovery of ASS/PASS', 'if ASSs are to be stockpiled for an extended time', 'run-off that has the potential



to be impacted by stockpile material will be captured (where practicable)'. Several them are relative rather than absolute, their applicability is arguable and some statements are conditional.

There is very strong advice in several jurisdictions to avoid any disturbance of acid sulfate soils. Appendix Three contains the advice from Water Quality Australia's National Acid Sulfate Soils Guidance for the dewatering of acid sulfate soils in shallow groundwater environments and from the Victorian Government's then Department of Sustainability and Environment's Victorian Coastal Acid Sulfate Soils Strategy.

## **EES Chapter 12: Air Quality**

Our concerns with this element of the EES centre on two points:

- No air quality monitoring data is available for the Western Port area (Dandenong being the nearest EPA certified monitoring centre) and
- "The operation of the FSRU would emit various pollutants primarily from the use of gas-fired boilers and combustion within the dual fuel engines to regasify the LNG" which leads onto the conclusion that "The operation of the Project would require a licence and/ or Works Approval for the FSRU air emissions as the scheduled premises threshold is exceeded for NO<sub>x</sub>, CO, VOC and particulates when the FSRU operates on gas with three boilers at 100 per cent load."

AGL-APA's own research indicates emissions from the FSRU are projected to exceed permissible (unlicensed) limits for all pollutants. We contend that this is an issue that demands more detailed examination.

## **EES Chapter 13: Noise and Vibration**

The focus of this chapter is human amenity. There is, however, reasonable grounds for assessing the impact on wildlife. For instance, if pressure testing (which the Foundation completely accepts as a necessary safety safeguard) warrants notification of nearby residents it is only reasonable to assume that there would be similar disturbance to birds and other animals. That this is not adequately discussed illustrates another weakness of this EES. It is not as comprehensive as its size may suggest.

Regarding issues with noise and vibration, the Foundation wishes to raise three points. The first is the on-going but seemingly unstated impact of the development. As an example, neighbouring properties would always need to be notified if LNG carriers are due to arrive at night. Similarly, "Noise generated by the Project's operation would include continuous noise from the Pakenham Delivery Facility, Crib Point Receiving Facility and the FSRU." Secondly, AGL-APA state "All unavoidable night work would require approval by an independent and qualified representative appointed to the Project." The question is, what happens if the approval is not given? The last point concerns the proposed offers of respite, which include gifting of pre-purchased movie or restaurant vouchers. In a post-COVID-19 world, such offers are no longer appropriate. In any case, night works would likely last longer than a movie or dinner.

## **EES Chapter 14: Landscape and Visual**

As with so much of this EES, the Foundation considers that the proponents' assessment of impact subjective, despite terminology and phrasing which suggests objectivity. This is clearly illustrated in this chapter, with a prime example being the conclusion that "the Project is considered to have a negligible to minor landscape and visual impact across the four identified landscape character areas." Earlier in the chapter this point was discussed, finding that the FSRU would have moderate visual impact but "the

operation of the Gas Import Jetty Works is considered to have a minor impact on the landscape character". This statement is accompanied by several visualisations, including the example Figure 14.10 below.



Figure 14-10: Visualisation of the FSRU and LNG carrier from Woolley's Beach North facing east (United Petroleum carrier present on left).

In the view of the Foundation, the words 'moderate' and 'minor' are unrealistic. There will clearly be a significant impact on views across the bay. Furthermore, new infrastructure would include a 20m high nitrogen storage tank, stainless-steel vaporiser towers, firewater tanks and nitrogen unloading facilities.

As noted earlier, the Foundation has concerns with the observed fact that "vegetation clearing would... continue to have a landscape and visual impact once the pipeline was operating." This represents a potentially significant ecological impact, as well as a visual one.

The final issue with the contents of this chapter is that, once again, another element of the project's impact is only assessed from the viewpoint of human "receptors", in this case light-spill. The Foundation can accept the statement "that no receptors in the surrounding area are subject to increased lux levels from direct light sources" but feels greater examination of the impact of lights on birds and aquatic biota is demanded. This this was not conducted is a significant omission as permanent, new lighting could alter bird and fish behaviour.

Light is a significant environmental determinant. It is known to disrupt the migration paths of many insects and is used by fishing fleets to attract marine life for capture. Further, in Bundaberg, Qld, shelter belts are being planted to screen the light spill from the city. Beach-nesting turtles, which usually orient to moonlight, are unable to find suitable nesting sites when they crawl towards the city lights. That the research on this environmental factor within the EES process is so scant is a serious deficiency.



## **EES Chapter 15: Transport**

Road safety is a general issue as well as being relevant to this proposal. The Foundation respects the analysis that the proponents have done in this chapter. Unfortunately, the results are not positive. Major concerns are as follows:

- “There is also an increased crash risk with school and public buses due to interactions with plant and heavy machinery and non-conforming intersection layouts.”
- “An estimated maximum of 900 trucks per year would be required to provide the liquid nitrogen for the preparation of a rich LNG shipment. It is anticipated that up to five truck deliveries would occur daily”
- “As up to 12 truck movements a day (intermittently during the year) would occur for a 20- year duration, interactions between school/public buses and B-double vehicles may increase the risk of crashes on roads within Hastings.”

Any increase in road usage leads to a higher likelihood of accidents and, obviously, it is unavoidable that a project of this scale will lead to increased traffic. However, the burden of the risk would seem to be carried by local residents and the wider public. Certainly, it is not confined to AGL-APA. In this respect, the Foundation questions whether the costs and benefits are proportionate.

## **EES Chapter 16: Safety Hazard, Risk**

This chapter is a useful summary of AGL and APA’s assessment of the Health and Safety aspects of the proposal. Here the Foundation only wishes to draw attention to the statement “The odorant to be stored at Crib Point Receiving Facility .... is flammable. In addition, a significant release has the potential to cause general discomfort or nausea in the local community.” As with the issues surrounding road safety, the Foundation suggests examination of whether the risk of exposing neighbours to harm is fair and justifiable.

## **EES Chapter 23 Climate change risk**

**Excerpt from Table 23-1: Summary of climate hazards**

Hazard	Description
Extreme heat	Temperatures in Victoria over the last two decades have increased steadily and climate projections indicate there will be an increase in average temperatures and extreme temperatures. Extreme heat includes days where the maximum temperature exceeds 35°C and heatwaves, a period of three or more days of unusually high maximum and minimum temperatures. On average, there are currently 14.2 days a year above 35°C, per records from the Viewbank weather station (station number 86068). This is projected to increase to an average of 24 days in 2090 under RCP8.5
Extreme rainfall	Recent climate data and future projections show longer periods with little rainfall and conversely more intense rainfall events. As temperatures increase the water cycle intensifies with more evaporation which is what results in more intense rainfall events. Increased extreme rainfall intensity will likely increase the extent and depth of flooding across the Project Area.
Sea-level rise/coastal flooding and erosion	Key impacts of sea level rise include associated erosion and exacerbated storm surge and storm tides. Crib Point has been identified as an area of risk from coastal erosion in the Western Port Coastal Villages and Surrounding Settlements Strategy. Storm surge, elevated sea levels resulting from atmospheric wind and low pressure, and storm tide, sea levels resulting from the combination of storm surge and astronomical tides may also impact the area. Modelling for storm tide and storm surge is complex. No modelling for storm tide and storm surge has been undertaken as part of this EES climate change risk assessment
Bushfire	Climate change is likely to result in more intense and frequent bushfire weather in the future. Historically, the Project Area had an average of 2.7 severe fire danger days per year. This is



	projected to double by 2090. Parts of the Project Area are situated in a Bushfire Management Overlay
Extreme wind / storms	High winds can cause disruption and damage to infrastructure More regular and severe storm events are projected to occur in the region surrounding the Project Area as an impact of climate change

It is quite perplexing as to why no modelling for storm tide and storm surge has been undertaken as part of this EES climate change risk assessment. Wouldn't large ships in relatively enclosed waters be particularly susceptible to storm tides and storm surges?

This and other risks appear in the summary table, an excerpt of which is below.

**Table 23-2: Summary of climate risks to the Project**

2	Gas Import Jetty Works and Pipeline Works	Changes in groundwater levels causes corrosion and/or structural damage to assets, resulting in operational disruption and increased operational and maintenance costs.	Change in groundwater levels	<ul style="list-style-type: none"> <li>Design to standards for piling works in coastal environments</li> </ul>	Moderate
3	Gas Import Jetty Works and Pipeline Works	High rainfall causes flooding, resulting in operational disruption, environmental impacts and/or increased operational costs.	Extreme rainfall	<ul style="list-style-type: none"> <li>Stormwater diversion for assets.</li> <li>Risk reviews incorporated into operating systems and Emergency Management Plans, Emergency Response Procedures.</li> </ul>	Moderate

While there is recognition of an increased likelihood of high rainfall events resulting in flow periods of varying duration in otherwise ephemeral streams, the risk assessment in Ch 10 referring to contamination of soils is unclear on what delay to pipeline construction would be considered when the waterways have flows? With soil disturbance, due to pipeline construction and the generation of sulfuric acid from overland flows due to high rainfall and the rise in groundwater, where is there recognition of CASS-generated sulfuric acid leaching into groundwater?

9	Gas Import Jetty Works and Pipeline Works	Extreme heat causes damage to assets and restricts services (e.g. power), resulting in disruption of operations and loss of productivity.	Extreme heat	<ul style="list-style-type: none"> <li>Uninterruptible Power Supply (UPS) for safe shutdown.</li> <li>FSRU electrically isolated from jetty and generates its own power.</li> </ul>	Low
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Extreme heat stress affects materials, particularly metals. Any above-ground plant would be susceptible to degradation and/or failure in periods of extreme temperatures that are projected



10	Gas Import Jetty Works and Pipeline Works	Extreme wind/storms cause damage to assets (e.g. failure of mooring system) and impacts services (e.g. powerlines), resulting in disruption of operations and loss of productivity.	Extreme wind/storms	<ul style="list-style-type: none"> <li>• Uninterruptible Power Supply (UPS) for safe shutdown.</li> <li>• FSRU electrically isolated from Jetty and generates its own power.</li> <li>• Mooring system designed to meet greater than 1 in 50-year storm event.</li> <li>• PoHDA Emergency Management Plan/ Victorian Regional Channels Authority Harbour Master response manages requirement to put vessels to sea for extreme weather events.</li> <li>• Facilities designed in accordance with Australian Standards (e.g. AS1170.2 Structural Design Actions - Wind Actions).</li> </ul>	Low
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In October 2008, SECCCA, the South East Councils Climate Change Alliance (which includes in its membership Mornington Peninsula Shire) released a report *People, Property and Places – Impacts of climate change on settlements in the Western Port Region*<sup>iii</sup> on an investigation of climate change impacts in Western Port. The project which led to the report was one of five national adaptation projects funded by the Australian Government’s Department of Climate Change, with additional funding from the Victorian Government’s Department of Sustainability and Environment.

The project involved:

(i) projecting changes to key climate drivers and associated biophysical impacts in the region. Changes examined included sea level rises, average and extreme rainfall, storm surge, temperature and fire weather. This phase of the project was conducted by the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

(ii) examining the nature and extent of potential impacts to the region’s built environment (land, housing and public and private infrastructure) as well as an assessment of the social and economic implications of the impacts and the vulnerability of different localities and groups. Marsden Jacob Associates (MJA) conducted this phase of the project, with input from CSIRO.

A relevant excerpt from the report is as follows:

**Mornington Peninsula Shire**

Climate variable	Indicative change*	
	2030	2070
Temperature		
Average annual temperature	↑ 0.5-1.3°C	↑ 1-3.5°C
Days per yr > 30 °C (16 current)	↑ 1 – 5	↑ 4 – 16



Days per yr > 40 °C (0 current)	↑ 1	↑ 2
<b>Average rainfall</b>	2030	2070
Average annual	↓ 0-8 %	↓ 0-23 %
Catchment stream flows (worst case)	↓ 25 %	↓ >50 %
<b>Extreme rainfall</b>	2030	2070
2 hour	↑ 25 %	↑ 70 %
12 hour	↑ 22 %	↑ 61 %
24 hour	↑ 17 %	↑ 50 %
72 hour	↓ 2 %	↑ 48 %
<b>Sea level rise / storm surge</b>	2030	2070
Sea level rise	↑ 0.17 m	↑ 0.49 m
Storm tide – max. height, 1:100 year ARI (current 1.14m, Rosebud)	1.35 m	1.78 m
Storm tide – max. height, 1:100 year ARI (current 2.09m, Somers)	2.28 m	2.74 m
Storm surge – change to 1:100 year ARI	↓ to	↓ to
Inundation area Western Port (1:100 year storm surge)	2.6 sq km	3.3 sq km
<b>Fire weather</b>	2030	2050
No. of very high and extreme forest fire risk days (~ 9 days current)	↑ 1 – 2	↑ 5 – 7
No. of very high and extreme grass fire risk days (~ 95 days current)	↑ 7 – 15	↑ 9 – 30

The report, conducted from 2006 – 2008, was based on climate change projections using data contributed to the 4th Assessment report of the IPCC. The emissions trajectories from which the data was generated are generally accepted as highly conservative within the context of current emissions scenarios.

The data that relates to extreme temperatures (individual days, runs of above 40 degree days in heatwaves), storm tides and storm surges, extreme winds and storms) suggests that considerable more research is needed, modelling and risk plan updating is required before the project could be contemplated.

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Clearly, a report written in 2008 should not be considered the last word in assessing climate risk. However, it is highly relevant to the Project Area as CSIRO specifically applied their climate models to Western Port. That further modelling has not been conducted for this project is a serious omission

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Coastal inundation is now more common and, as shown through the Bruun Rule, covers a greater area of the coast. When storm surges coincide with high tides, as they will as the incidence of extreme weather rises, increased areas of inundation, and to greater depth for a longer time, require that localised modelling to assess impacts to be essential.



Extreme temperatures are already being felt, showing the data in this 2008 report to be quite conservative. In late January of 2009, there were consecutive days of 43°C, 44°C and 45°C and a week later on Black Saturday in early February, the temperature was 46°C. There were seven days above 40°C in the summer of 2013/14 and three days above 40°C and 12 days above 35°C in 2018/19. Fire seasons are starting earlier, lasting longer and create conditions where threats to life and infrastructure are magnified.

These are all issues that should be considered more seriously than has been presented here and it is a detriment to the credibility of this EES that they are not.

**23.1 Adaptation measures**

10	Gas Import Jetty Works and Pipeline Works	Extreme wind/storms cause damage to assets (e.g. failure of mooring system) and impacts services (e.g. powerlines), resulting in disruption of operations and loss of productivity.	Extreme wind/storms	<ul style="list-style-type: none"> <li>• Uninterruptible Power Supply (UPS) for safe shutdown.</li> <li>• FSRU electrically isolated from Jetty and generates its own power.</li> <li>• Mooring system designed to meet greater than 1 in 50-year storm event.</li> <li>• PoHDA Emergency Management Plan/ Victorian Regional Channels Authority Harbour Master response manages requirement to put vessels to sea for extreme weather events.</li> <li>• Facilities designed in accordance with Australian Standards (e.g. AS1170.2 Structural Design Actions - Wind Actions).</li> </ul>	Low
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An assessment of 1 in 50-year event as being of concern as a basis for modelling is, on current projections for a project with a life of 20 years, seriously insufficient. In the data cited above from the SECCCA report, a 1:100 event is projected to become, by 2030, only halfway through the life of the project, a 1:40 – 1:10 event. A less extreme event with an ARI of 1:50, which is the basis for the design of the mooring system, would be expected to be more common again. Of greater concern though, the probability of a more extreme event with an ARI of more than 1:100, with much greater consequences, could also be expected. That this was not modelled is hard to understand and is a serious deficiency in this EES

As per information in Section 23.6 of this chapter, no risks identified through the climate change risk assessment were rated as high or above when considering relevant controls to be implemented by the Project. Four risks were rated as moderate, with controls considered adequate to manage these risks. Risk 10 simply must be reassessed.

**EES Chapter 26: Stakeholder Engagement**

As a compliment to AGL and APA, the Foundation acknowledges the time they devoted to working with traditional owners “completing field work and cultural heritage surveys” – 124 days in total. It is also



understood that a controversial project of this size can make stakeholder engagement difficult. The proponents are bound to receive a lot of criticism, not all of which may be well founded.

Nevertheless, the Foundation finds the analysis presented in the EES questionable. AGL-APA say “the number [of respondents] concerned about the Project reduced over time” which may be true but completely belies the fact that more than half the respondents remain “somewhat” or “very concerned”, and that “somewhat concerned” remains the overwhelmingly most common response (the second most common is “fairly unconcerned”, which is hardly ringing endorsement).

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The Foundation’s conclusion is that despite ongoing Stakeholder Engagement initiatives and efforts, AGL and APA have failed to secure community backing for the project. It is hard for them to claim otherwise

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### **EES Chapter 27: Conclusion**

The conclusion regarding biodiversity, “there is negligible risk to the ecological character and no significant impacts for threatened and listed species”, simply cannot be supported by the evidence presented

The environmental impacts of the use of sea-water and associated entrainment, impingement and discharge of chilled and chlorinated water, have been significantly under-researched. The proposed management of acid sulfate soils and possible groundwater contamination does not provide confidence that there will be no adverse environmental consequences.

The conclusion states that risk studies continue to be developed as the detailed design of the project progresses. Within this it is implicit that the proponent considers that the project should be approved before these are completed.

The marine and terrestrial life of Western Port does not have a voice. The affected communities, from Crib Point through to Pakenham, can at least give their responses. It is both the marine and terrestrial life and the regional communities that would bear significant, and in the view of the Foundation, unacceptable costs through approval of the proposed project.

The Staff of the Foundation who reviewed relevant chapters would welcome the opportunity to appear before a panel convened by the relevant department to provide any further clarification needed upon the many comments in this response.

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*In light of the many omissions, short comings and misrepresentations in the EES, it is not possible for the Foundation to offer support for this Project.*

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**APPENDIX ONE**

**A *Environmental group slams watchdog after second Hunter power station coal ash problems***

Joanne McCarthy  
Newcastle Herald  
January 17, 2019

“We are aware from testing that some of the coal ash from our Bayswater and Liddell power stations show elevated levels of heavy metals including chromium, cadmium and copper, exceeding limits set by the Environment Protection Authority,” said AGL’s executive general manager of group operations, Doug Jackson.

He acknowledged failures in our own practices”

<https://www.newcastleherald.com.au/story/5856141/agl-admits-hunter-power-station-coal-ash-breaches/>

**B *AGL Macquarie fined \$15,000 for incident at Bayswater Power Station***

NSW EPA  
Media Release  
28 August 2019

“The NSW Environment Protection Authority (EPA) has fined AGL Macquarie Pty Limited \$15,000 for an alleged breach of its environment protection licence at the Bayswater Power Station near Muswellbrook NSW.

It is alleged that in February 2019, a discharge of slurry from the power station’s lime softening plant entered a tributary of Wisemans Creek, resulting in water pollution that made its way to a nearby River Red Gum Endangered Ecological Community.”

[https://www.epa.nsw.gov.au/news/media-releases/2019/epamedia190828-agl-macquarie-fined-\\$15000-for-incident-at-bayswater-power-station](https://www.epa.nsw.gov.au/news/media-releases/2019/epamedia190828-agl-macquarie-fined-$15000-for-incident-at-bayswater-power-station)

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<sup>i</sup> <https://www.smh.com.au/environment/climate-change/australia-is-sponsoring-a-failing-gas-industry-20200723-p55ew6.html>

<sup>ii</sup> <https://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>

<sup>iii</sup> ([http://cmar.csiro.au/e-print/open/2008/prestonbl\\_b.pdf](http://cmar.csiro.au/e-print/open/2008/prestonbl_b.pdf))