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**Re: EPBC referral, number 2018/8298, title AGL WHOLESALE GAS LIMITED/Energy Generation and Supply (non-renewable)/89C\PP2159, 89D\PP2159, 2040\PP2159/Victoria/Gas Import Facility, Crib Point, Vic**

#### **Summary**

The proposed AGL gas import facility at Crib Point (referral 2018/8298) is likely to have significant impacts on the following matters of national environmental significance: the Western Port Ramsar wetland; listed threatened species, including the Southern Right Whale and Humpback Whale; and listed migratory species, including the Short-tailed Shearwater. The referral and supporting documents are narrowly focussed desktop studies that inadequately address these impacts. Accordingly, we consider that the proposal should be deemed a controlled action and require environmental assessment and approval under the EPBC Act.

The impacts of the proposal are associated with two intense, long-term pressures: a significant increase in shipping (up to 42 percent) and operation of a floating storage and regassification unit (FSRU) for two decades or more.

The ecological character of the Western Port Ramsar wetland is at risk of significant impacts from the introduction of marine pests; pollution from accidents and spills; erosion and turbidity from vessel-generated waves; entrainment and destruction of marine life; and discharge of 450 million litres of cold, chlorinated water per day. The referral does not demonstrate how the risks of the first three impacts will be appropriately managed. Twelve-month studies are necessary to assess the last two impacts and should be completed prior to approval. The associated Crib Point Pakenham

Pipeline proposal (referral 2018/8297) by APA is likely to have indirect effects on the water quality of the Ramsar wetland, and an integrated assessment is necessary.

Southern Right and Humpback whale sightings in Western Port have increased in recent years. The referral fails to consider emerging knowledge of whale movements and habitat use, which is outlined in this submission, and underestimates the risk of significant impacts from collisions with ships and marine noise and vibration. Western Port supports thousands of Short-tailed Shearwaters, including a breeding colony near Crib Point. The referral fails to consider potential disruption to breeding and migration due to light pollution. Many other threatened and migratory bird species would also be significantly impacted by damage to the Western Port Ramsar wetland.

## 1. Introduction

Phillip Island Conservation Society (PICS) is a community group that has worked to protect and enhance Phillip Island's natural assets since 1968. In 2014, PICS formed the Preserve Western Port Action Group in response to the proposed expansion of the Port of Hastings. Together, these groups represent communities in the region and have a considerable body of knowledge about the Western Port environment.

PICS and Preserve Western Port consider that AGL's proposal to construct and operate a gas import facility at Crib Point on Western Port is likely to have a significant impact on the following matters of national environmental significance protected by the EPBC Act:

1. The Western Port Ramsar wetland.
2. Listed threatened species, including the endangered Southern Right Whale and vulnerable Humpback Whale.
3. Listed migratory species, including the Short-tailed Shearwater.

For these reasons, we consider that the proposal should be deemed a controlled action and require environmental assessment and approval under the EPBC Act.

There are two intense, long-term pressures associated with this proposal:

1. A significant increase in shipping in Western Port. Up to 40 LNG carriers, which are large ships of approximately 300 metres in length, will offload cargo each year. This is a 42 percent increase in shipping for Western Port.<sup>1</sup> AGL representatives have stated that deliveries will occur most frequently in winter when gas demand peaks.
2. Operation of the FSRU for two decades or more, which will:
  - a. Entrain up to 450 million litres of seawater per day for heat exchange, destroying small, drifting marine life that underpin the ecosystem, such as plankton, fish eggs and larvae.
  - b. Discharge up to 450 million litres per day of chlorinated water that is seven degrees below ambient temperature into Western Port.
  - c. Emit continuous noise and vibration into the marine environment.

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<sup>1</sup> Based on shipping numbers reported in the trade summary of the Port of Hastings Authority 2017/18 annual report.

## 2. Impacts on Western Port Ramsar wetland

The proposal is likely to have a significant impact on the ecological character of the Western Port Ramsar wetland by resulting in:

1. Areas of the wetland being destroyed or substantially modified.
2. The habitat or lifecycle of native species dependent upon the wetland being seriously affected.
3. A substantial and measurable change in the water quality of the wetland that may adversely impact on biodiversity, ecological integrity, social amenity and human health.
4. Invasive species that are harmful to the ecological character being established in the wetland.

These impacts are described below.

### 2.1 Impacts of marine pest introductions

The Western Port Ramsar wetland is relatively pest-free, and the introduction of invasive marine species is recognised as a high priority threat to the ecological character of the wetland.<sup>2</sup> Guidelines state that routine ship transits would not normally be expected to have a significant impact where appropriate precautions have been taken to avoid translocating pests.<sup>3</sup> However, the gas import proposal will increase ship transits by up to 42 percent, increasing the risk of pest translocation. The referral is superficial in its discussion of the potential impacts of invasive marine species and how this risk will be managed.

### 2.2 Impacts of accidents and spills

A substantial increase in shipping increases the risk of pollution through accidents and spills, including collisions with other vessels containing oil. Modelling has shown that even a moderate spill is likely to cause rapid, extensive, and long-term damage to the Western Port Ramsar wetland.<sup>4</sup> Aquatic birds would be heavily impacted. The referral contains a superficial statement that spills are unlikely. No risk assessment for the FSRU and associated shipping operations has been completed.

### 2.3 Impacts of vessel wash

A substantial increase in shipping will increase vessel-generated waves on either side of the channel, eroding shorelines and causing sustained increases in turbidity in near-shore areas, which will reduce the productivity of seagrass beds.<sup>5</sup> Areas of concern include Crib Point, western French Island and the western entrance channel on Phillip Island.<sup>6</sup> Any reduction in the productivity or extent of seagrass beds is likely to have an impact on the foraging resources of aquatic birds in Western Port,

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<sup>2</sup> Department of Environment, Land, Water and Planning (2017). *Western Port Ramsar Site management plan summary*. State of Victoria, East Melbourne Vic.

<sup>3</sup> Department of Environment (2013). *Matters of national environmental significance: Significant impact guidelines 1.1 EPBC Act 1999*. Commonwealth of Australia, Canberra ACT.

<sup>4</sup> Langtry, S. (2013). *Quantitative assessment of exposure risks due to oil spills from shipping in Western Port Bay*. Report to Victorian National Parks Association by Asia-Pacific Applied Science Associates, East Perth WA.

<sup>5</sup> Lau, J. (2014). *Impact of proposed Port of Hastings expansion on the birdlife of Western Port*. Report to Victorian National Parks Association by BirdLife Australia, Carlton Vic.

<sup>6</sup> Ibid.

including swans, ducks, fishers and shorebirds.<sup>7</sup> Any loss of, or damage to, high-tide roost sites would have a disproportionate, negative impact on shorebirds using Western Port.<sup>8</sup> The referral does not discuss these impacts.

#### 2.4 Impacts of entrainment

The referral states that the FSRU will entrain and destroy small, drifting marine life such as plankton, fish eggs and larvae, with uncertain long-term impacts on the Western Port ecosystem. The entrainment rate may be up to 10 percent of populations for sites on the western edge of the channel, including the adjacent mudflats, within approximately 750 metres of Crib Point, which is equivalent to 30 percent for a six-day tidal flushing period.<sup>9</sup> The following studies are needed to provide confidence:<sup>10</sup>

1. More specific particle entrainment modelling to provide entrainment proportion contours, since current hydrological models conflict.
2. A twelve-month plankton and larval sampling program to provide baseline information on spatial and temporal variations in plankton populations, which are currently undocumented.
3. A review of available information on the effects of entrainment on semi-enclosed marine ecosystems.

AGL is planning a final investment decision as early as May 2019, which would pre-empt the results of these studies. We contend that a 12-month assessment of the potential environmental impacts on the Western Port ecosystem should be completed prior to any approval to proceed.

#### 2.5 Impacts of cold, chlorinated discharge

The referral does not provide confidence that residual chlorine will reach acceptable concentrations for marine ecosystem protection around the FSRU.

The referral relies on outdated guidelines for water quality.<sup>11</sup> The acceptable levels of toxicants necessary to protect the “largely unmodified” ecosystem of the “Entrances and North Arm segment” of Western Port are set out in schedule 3 of Victoria’s *State Environment Protection Policy (Waters)* or “SEPP (Waters)”, which was gazetted on 19 October 2018, and the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* or “Water Quality Guidelines”, which in 2018 replaced the ANZECC 2000 guidelines cited in the referral.

Referral modelling<sup>12</sup> indicates that the concentration of residual chlorine will decrease from 0.1 mg/L at the discharge outlet to 5 µg/L at the seabed within 20 seconds, and to 3 µg/L after six hours of further mixing with seawater at 12°C (a degree above the seasonal low at Crib Point). In warmer water (16 to 18°C), the concentration would drop to 1 µg/L after six hours of mixing. This discharge

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<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

<sup>9</sup> Referral 2018/8298 Attachment 8: *Modelling and assessment of biological entrainment into seawater heat exchange system*.

<sup>10</sup> Ibid.

<sup>11</sup> Referral 2018/8298 Attachment 9: *Chlorine in seawater heat exchange process at Crib Point*.

<sup>12</sup> Ibid.

footprint will cover an area of 4.8 hectares around the FSRU (200 metres north and south and 60 metres east and west of the discharge points).

This is not a safe level for the North Arm ecosystem. SEPP (Waters) schedule 3 requires toxicant levels that provide 99% ecosystem protection for the North Arm, as set out in the Water Quality Guidelines. The Water Quality Guidelines 99% protection default guideline value for chlorine in fresh water is 0.4 µg/L. No marine value is provided. The guideline value for 95% protection in fresh water is 3 µg/L, with the following caveat: "To account for the bioaccumulating nature of this toxicant, it is recommended that the 95% species protection level DGV is used for slightly to moderately disturbed ecosystems."

The referral inadequately addresses the potential impacts of chlorine on the marine ecosystem. The only ecotoxicity testing performed was based on a single species of sea urchin that was "closely related" to another species found at Crib Point.<sup>13</sup> The referral does not discuss the bioaccumulating nature of chlorine-related toxicants within ecosystems.

The referral notes that the water temperature differential caused by the discharge should be minimal at the seabed (0.3°C) relative to natural short-term variations in temperature, but baseline monitoring of natural variations is necessary for 12 months to properly assess the significance of potential temperature differential and chlorine concentration impacts of the discharge on the marine ecosystem.

The referral also states that the invertebrate communities within the North Arm, including the area of the discharge footprint, have not been documented for more than 40 years, so a new baseline sampling program is required to be able to properly assess the impacts of the discharge.<sup>14</sup> It states that a ghost-shrimp study is also necessary, since the area may include the FFG-listed ghost shrimp species *Calliax tooradin* and *Michelea microphylla*, a species known only from Crib Point. The high diversity of ghost shrimp species is an important part of the ecological character of Western Port.<sup>15</sup>

Again, we contend that a 12-month assessment of the potential environmental impacts on the Western Port ecosystem should be completed prior to any approval to proceed with the gas import proposal. In addition to the studies proposed in the referral (regarding entrainment, seawater variation, benthic fauna and ghost shrimps), the assessment should consider the cumulative impact of entrainment, temperature differential, and chlorine toxicity, including bioaccumulation, on the ecosystem.

### **3. Impacts on listed threatened and migratory species**

#### **3.1 Whales**

The proposal is likely to have a significant impact on Southern Right and Humpback whales by decreasing the availability and quality of habitat and interfering with the recovery of these species.

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<sup>13</sup> Ibid.

<sup>14</sup> Referral 2018/8298 Attachment 8: *Assessment of effects of cold-water discharge on marine ecosystem*.

<sup>15</sup> Hale, J. (2016). *Ecological character description addendum: Western Port Ramsar site*. Department of Environment, Land, Water and Planning, State of Victoria, East Melbourne Vic.

Whale sightings, including endangered Southern Right and vulnerable Humpback whales, have increased with each season in the Western Port region in recent years.<sup>16</sup> A formal, verified record of sightings exists via the Two Bays Whale Project, which aims to provide accurate information on whale movements and habitat use within the region. This season, the Victorian Department of Environment, Land, Water and Planning included a Phillip Island workshop in its South East Australian Southern Right Whale Photo-identification Project, demonstrating its recognition of the area as potentially important habitat.

The referral includes a map of Western Port whale sightings from 2014 to 2017 from the Two Bays Whale Project.<sup>17</sup> However, it does not address knowledge gaps or emerging knowledge of whale movements and habitat use. It inaccurately states: “The project site is remote from whale aggregation areas and plausible migration pathways. However, individuals or pairs stray into the area from time to time.”

The referral inadequately addresses the potentially significant impacts of the gas import proposal on whales:

1. *Operational noise and vibration.* The referral states: “Noise and vibration from the FSRU and visiting LNG carriers will contribute to an existing background of shipping and recreational vessels already operating in Western Port and the impacts are not considered significant for these species.” However, the referral gives no estimate of the existing levels of background noise and vibration or the levels that will be created by the significant increase in shipping and continuous operation of the FSRU.
2. *Potential risk of collisions with ships.* The referral states: “The number of LNG carriers that may visit Western Port for this project (between 12 to 40 LNG carriers per year) represents approximately 1 percent of the 3,200 ships that pass Western Port on transit...and an even smaller proportion of shipping traffic over the geographic range of individuals that may visit Western Port. Hence the increase risk of ship strike to individual whales that might visit Western Port is insignificant.” This ignores that the proposal represents a significant increase (up to 42 percent) in shipping in the very confined area of the Western Port channel. It also ignores that this shipping will be heaviest during the peak winter gas demand period, which coincides with the whale season in Western Port.

Further information relevant to each whale species is discussed below.

### **3.1.1 Southern Right Whale (endangered, migratory)**

The Southern Right Whale is thought to have been the target of whaling in Western Port by John Griffiths in the early 1800s.<sup>18</sup> We contend that its historical presence and recent return to Western Port, including verified sightings near Crib Point, suggest that the area is important habitat to support the recovery of the species.

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<sup>16</sup> Donnelly, D., Mason, S. & Peters, M. (2017). *Two Bays Whale Project annual summary*. Dolphin Research Institute, Hastings Vic.

<sup>17</sup> Referral 2018/8298 Attachment 5: *Marine protected matters assessment*, figure 13.

<sup>18</sup> Bass Coast Post, *Whaling in the south seas*, from Illustrated Australian News, 1 July, 1890. <https://www.basscoastpost.com/local-history-2015.html>

The Southern Right Whale conservation management plan<sup>19</sup> contains statements that support our concerns:

1. Southern right whales appear to be the primary whale species involved in vessel collisions in the southern hemisphere.
2. It is likely that this risk will increase as shipping traffic grows and the impact on an individual, especially in south-east Australia, is likely to have a significant, potentially population-scale effect, if further evidence confirms this as a small, demographically discrete population.
3. Noise may deter whales from establishing aggregations in otherwise suitable but currently unused habitat and disrupt migratory movements, thereby preventing individuals from using preferred habitats.
4. The cumulative impacts of all sources of noise interference need to be considered, particularly in or near current and emerging aggregation areas and migration routes.
5. New forms of industry have the potential to create underwater noise and further work on the underwater noise levels produced from these developments is needed.
6. Chronic noise exposure is primarily due to increased shipping activity, including the use of tender vessels.
7. Shipping movements in south-eastern Australia are highest in areas that the animals will need to expand into if the south-east population is to recover.

Victorian Department of Environment, Land, Water and Planning officer Mandy Watson confirmed that there is evidence that whales are increasingly using the Victorian coastal region as a migratory corridor.<sup>20</sup> “Southern Right Whales frequent sheltered bays for resting, socialising and breeding whilst using the migratory corridor and Westernport Bay is certainly an area that is used by this species.” Ms Watson advised that a precautionary approach is warranted in relation to the Crib Point gas import proposal, since vessel strike, noise interference and habitat modification are listed as threats under the Southern Right Whale conservation management plan.

### **3.1.2 Humpback Whale (vulnerable, migratory)**

We contend that the increasing number of Humpback Whale sightings in Western Port, including verified sightings at Crib Point, suggests that the area is important habitat to support the recovery of the species.

Contrary to advice in the referral, Western Port is not remote from Humpback migration pathways. The Two Bays Whale Project has identified a previously unknown migratory corridor through western and northern Bass Strait.<sup>21</sup> Project curator, David Donnelly said: “Very little is known about this region as a migratory path and it is important that we understand this better, particularly with

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<sup>19</sup> Department of Sustainability, Environment, Water, Population and Communities (2012). *Conservation management plan for the Southern Right Whale: A recovery plan under the EPBC Act 1999, 2011-2021*. Commonwealth of Australia, Canberra ACT.

<sup>20</sup> Mandy Watson, Victorian Department of Environment, Land, Water and Planning, personal communication, 23 October 2018.

<sup>21</sup> Dolphin Research Institute, 23 May 2018, *Humpbacks—why protect them?*  
<https://www.dolphinresearch.org.au/humpbacks-why-protect-them>

the amount of commercial fishing, infrastructure development and large vessel activity that could pose significant threats to whales in the area.” Of population recovery, Mr Donnelly said the new “restored” population will largely be determined by the environment’s carrying capacity.

### **3.2 Birds**

#### **3.2.1 Impacts on Short-tailed Shearwater (migratory)**

Light pollution from the FSRU is likely to have a significant impact on the Short-tailed Shearwater by disrupting breeding and migration. The referral fails to include this species, even though Western Port supports thousands of individuals, including a nearby breeding colony of more than 3000 burrows at Tortoise Head on French Island.<sup>22</sup> Shearwater fledglings are so vulnerable to interference from light pollution when taking off for migration that Phillip Island bridge lighting is turned off to protect them.

#### **3.2.2 Other listed birds**

The Western Port Ramsar wetland regularly supports six threatened bird species and twelve international migratory shorebird species. It regularly supports more than one percent of the population of the vulnerable Australian Fairy Tern (three percent), critically endangered Curlew Sandpiper (two percent), critically endangered Eastern Curlew (three percent), and migratory Red-necked Stint (two percent).<sup>23</sup>

In sections 2.2 and 2.3, we discussed the risks of oil spills and vessel wash associated with a major increase in shipping in Western Port, which would impact significantly on these birds, destroy critical habitat, and disrupt breeding. The referral notes that the Australian Fairy Tern has the potential to nest on the beach adjacent to the proposed gas import facility, but does not consider the potential for impacts from spills or beach erosion.<sup>24</sup>

### **5. Cumulative impacts with related APA gas pipeline referral**

While we have focussed on the likely impacts of the AGL gas import proposal, we are also concerned about the impacts of the associated Crib Point Pakenham Pipeline proposal (referral 2018/8297) by APA, including its indirect effects on the water quality of the Western Port Ramsar wetland. Although referred separately, neither proposal would proceed without the other, and an integrated assessment is important to assess their cumulative impacts.

The Victorian Government requires an environment effects statement for both proposals (referral 2018-R05). Reasons for this decision include potentially significant risks to the ecology of the Western Port Ramsar wetland and the preference for a rigorous, integrated environmental assessment process rather than reliance on separate statutory approval decisions.

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<sup>22</sup> Dann, P., Arnould, J.P.Y., Jessop R. and Healy M. (2003). *Distribution and abundance of seabirds in Western Port, Victoria*. *Emu* 103:307-313.

Parks Victoria (1998). *French Island National Park management plan*. State of Victoria, Kew Vic.

<sup>23</sup> Hale, J. (2016). *Ecological character description addendum: Western Port Ramsar site*. Department of Environment, Land, Water and Planning, State of Victoria, East Melbourne Vic.

<sup>24</sup> Referral 2018/8298 Attachment 4: *Flora and fauna assessment*.



## 6. Conclusion

Western Port is an internationally significant, sensitive ecosystem that is under substantial pressure from existing activities in its catchment. Gaps remain in the knowledge necessary to underpin its management.<sup>25</sup> The AGL gas import proposal is an intense source of additional pressure that will run for 20 years or more, and the likely impacts on the Western Port Ramsar wetland and listed threatened and migratory species are serious. The referral and supporting documents are narrowly focussed desktop studies that inadequately address these impacts. To reduce this uncertainty, scientific field studies that span a full year are necessary prior to approval.

The gas import facility and pipeline proposals have attracted wide public interest, as demonstrated by extensive media coverage, community protests and petitions. For these reasons, we urge you to require the most rigorous, transparent assessment possible under the EPBC Act.

Thank you for the opportunity to comment on this referral. If you require further information regarding this submission, please contact our representatives Jeff Nottle on 0419 158 232 or Jane Jobe on 0409 530 898.

Yours sincerely

Anne Davie

President, Phillip Island Conservation Society

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<sup>25</sup> Department of Environment, Land, Water and Planning (2017). *Western Port Ramsar site management plan*. State of Victoria, East Melbourne Vic.