Port Adelaide Resident's Environment Protection Group

e: parepg@parepg.org.au

Dr. Simon Nelder
Team Leader, Crown and Major Developments,
Planning and Land Use Services
Attorney General's Department,
e: spcreps@sa.gov.au

Dear Dr Nelder,

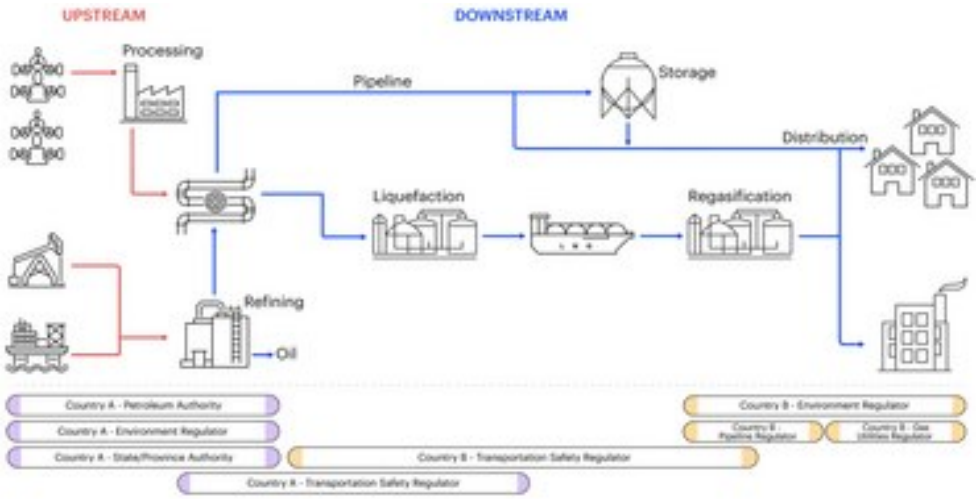
Re: Construction of a two-berth wharf facility (LNG carrier and moored floating storage and re-gasification unit), supporting infrastructure and dredging and deposition of spoil offshore (Development Application: 040/V136/20)

The use of of Floating Storage Regasification Units (FSRU) is a relatively new process. A quick internet search reveals the first was built in 2007, and the proponent's application that 25 are operating world wide. FSRU essentially replaces land based LNG terminals, but have lower capital requirements and can be moved to other locations on demand.

We would like to raise the points below in response to this application:

LNG as a greenhouse gas contributor

Methane, a major LNG component, is well documented greenhouse gas component. LNG facilities are specifically recognised by the International Energy Agency, as shown in the image below. [1]



Minister Spiers on announcing the state's participation in a joint net zero policy forum with NSW and the ACT spoke of the need for state governments to "help create the low carbon jobs and industries of the future while making sure we leave a better planet to our children and grandchildren".[2]

We could not find any consideration of likely methane fugitive emissions, or monitoring proposals in the application.

The application argues:

> "The Project will bring cheaper and more reliable supplies of gas into the State, improving the State's energy independence and enabling lower prices for all users"

Normally lower prices are welcome, but in this instance lower prices imply:

- If price vs demand economics are to be believed, burning of an increased volume of fossil fuels hence contributing to an increase in carbon dioxide as scope 3 emissions.
- A reduced incentive to move away from fossil fuel use.

Both off these effects run counter to the state's planned goals.

<u>At the very least the panel should require the applicant to provide:</u>

1. <u>Quantitative estimates of the proposal's contribution to greenhouse gas emissions</u>
2. <u>A monitoring program to detect methane emissions</u>

Dredging

Spoil reuse

Our group are constantly amazed the regulators and planning authorities continue to encourage dredge spoil dumping in the gulf. Leaving aside the effect on the marine environment which is of course "minimised", the metropolitan area has an acknowledged shortage of fill.

Waste hierarchy - from the application

Yet whenever a project of this nature occurs we are told that the spoil is unsuitable for engineering reasons, even though this very project, and the state's container port is built on dredge spoil.

The whole eastern bank of the Le Fevre peninsula which is already starting to erode in places will need to be raised to accommodate sea level rise. Planning authorities have zoned much of the Gilman area for industrial use, although we argued the site could be regenerated by allowing controlled sea water ingress to promote samphire use, a natural asset and a stormwater buffer.

Almost a decade on the site remains a salinised eyesore. If the authorities are genuine in their intentions, utilising fill from a sources such as this is likely to prove more economic than paying competing prices at some time in the future.

We can only bring this matter to the attention of the authorities again.

Impacts

1.8 million m^3 will be dredged, comparable to the 2 million m^3 Flinders Port's dredging campaign. The fundamental difference is the spoil will be removed entirely within he estuary with much less area to disperse. The application notes

> "that several thousand razor clams may be lost during dredging for the Project. However this extrapolation should be interpreted with caution due to the small sample area and the known patchy distribution of the species"

Razor clams or *Pinna Versicolour* beds are thought to have formed the basis of oyster reefs but in our experience are now comparatively rare locally. The reefs themselves were destroyed by early colonists[3].

The image below shows the predicted dredge plume impact.

The spot marked SB is the entrance to what is known as the Section Banks, an area of seagrass (predominately *Zostera sp)* and a previously rich cockle bed fished commercially, and now extinct. In recent years *Zostera* has expanded and now extends down the western bank of Torrens Island.

A recent report on the resilience of Zostera in Port Philip Bay noted:

> Zostera provides crucial ecosystem services such as stabilising sediments and improving water quality, reducing coastal erosion, and increasing biological productivity for the marine food chain as well as providing nursery habitats for key recreational and commercial fish species.[4]

Seagrass extending into the channel leading to the Section Banks immediately adjacent the dredge site

The role in stabilising sediments is critically important locally. Further upstream sediment loss adjacent to Mutton Cove has resulted in the breach of the protective levy in 2016, and now critical power and road infrastructure is exposed to tidal inundation.

The applicant asserts the commonly held view that *Zostera* resilience is high, but the same report on Port Philip Bay found that resilience varied strongly.

> At a broad scale, seagrasses responded to small-scale disturbances, including loss of leaves, loss of leaves and below-ground parts, in a broadly consistent way. Leaf regrowth was rapid, as was the extension of rhizomes from neighbouring areas into the disturbed area. When regrowth was prevented, recovery slowed dramatically, as we saw few signs of successful colonisation by seeds or drifting fragments. While we saw this general pattern everywhere, there were big differences between individual sites in the speed of this recovery, suggesting that some areas are less resilient than others.[4]

Recovery after the Flinders Ports dredging seems to have been assessed in terms of the recovery of plants of a particular species. But using such a single index doesn't necessarily mean the recovery of the ecological system of which they are just a component.

Undoubtedly the best approach is to minimise damage in the first place. Standard dredging practice relies on downstream monitoring, but monitoring at points has it's limitations. The recent Flinders Ports campaign also used MODIS satellite data to monitor turbidity spread. The advantage was that the progress and extent of the whole operation was transparent. However MODIS pixels are 250m at the smallest, compared to a estuary with of ~ 300m. Aerial hyper spectral imaging is becoming more common and more affordable, and could yield the same turbidity results at a much higher resolution.

Our recommendation are:

1. Dredging only occurs on an outgoing tide to maximise turbidity clearance from the channel.
2. Monitoring include a method of transparently visualising the extent of the dredge plume
3. Monitoring be supplemented by independent visual inspections of the Section Banks entrance

Operational reliability

The water curtain used to protect the FSRU and the LNG tanker during transfer raises issue of corrosion, maintenance and reliability of supply.

Plate 2-5: Water curtain use during LNG transfer
(Source: Ian Lawson and Nicholas Ratinaud)

How often in the 25 proposed period is the FSRU required to leave the state for maintenance, and what effect will this have on gas market dynamics in it's absence?

Continual discharge effects

The FSRU will continually discharge a continuous stream of:

- water at a relatively low temperature due to the need to heat the LNG from a liquid to gaseous phase.
- anti bio-foulants and/or their breakdown products used to keep the FSRU pipework clear of growth

The proponent argues that the environmental effect will be localised and minimal.

Our recommendation is that as a condition of any approval the proponent be required to perform an annual biological survey to determine the extent of the environmental effects

Risk

The proponent maintains:

> Formal safety studies and hazard assessments for the Project components have commenced and will be ongoing through the design process. A Quantitative Risk Assessment for operation of the Project has been undertaken, which indicates that the Project will meet generally accepted risk criteria. Risk criteria for residential areas are met approximately 1 km closer to the FSRU than the nearest residence.
>
> This means the Project would not present an unacceptable or disproportionate risk to any of the adjacent land uses.

The level of acceptable risk is very much an individual and varying value, and as far as we know not specified by any legal framework. We note that the project site is:

- Adjacent to the state's only container port
- 1km from a fuel storage facility on Pelican Point Rd
- 1.9 km from a proposed nuclear submarine construction facility

While the risk may be acceptable to the proponent and arguably low, the effects on either the State's infrastructure or defence facilities may not be so. In addition it is not the actual risk, but the risk perceived by future stakeholders which may well be a factor in investment decisions in the critical defence area

The level of acceptable risk in this case is arguably not a decision for SCAP, nor an individual minister, but by the government as a whole.

We would like to appear before the panel to respond to any comments the proponent may make on the issues raised.

Tony Bazeley
Secretary
Port Adelaide Resident's Environment Protection Group

11 November 2021

References

[1] ‘The case for regulating downstream methane emissions from oil and gas – Analysis’, *IEA*. https://www.iea.org/commentaries/the-case-for-regulating-downstream-methane-emissions-from-oil-and-gas (accessed Nov. 09, 2021).
[2] L. Cox and D. Hurst, ‘Three Australian state governments to collaborate on reaching net zero emissions’, *The Guardian*, Nov. 07, 2021. Accessed: Nov. 08, 2021. [Online]. Available: https://www.theguardian.com/australia-news/2021/nov/08/three-australian-state-governments-to-collaborate-on-reaching-net-zero-emissions
[3] H. K. Alleway and S. D. Connell, ‘Loss of an ecological baseline through the eradication of oyster reefs from coastal ecosystems and human memory: Loss of Oyster Reefs to History’, *Conservation Biology*, vol. 29, no. 3, pp. 795–804, Jun. 2015, doi: 10.1111/cobi.12452.
[4] G. Jenkins and M. Keough, ‘Seagrass Resilience in Port Phillip Bay’, p. 46.