

# ENVIRONMENTAL DYNAMICS

6 Gourlay Street, West Hobart, Tasmania 7000. Tel (03) 6231 0500

ABN 78 680 886 343

7 April 2017

Tassal Group Limited  
GPO Box 1645  
Hobart, TAS 7001

Attn: **Matt Barrenger**  
**Senior Manager – Environment**

Dear Matt,

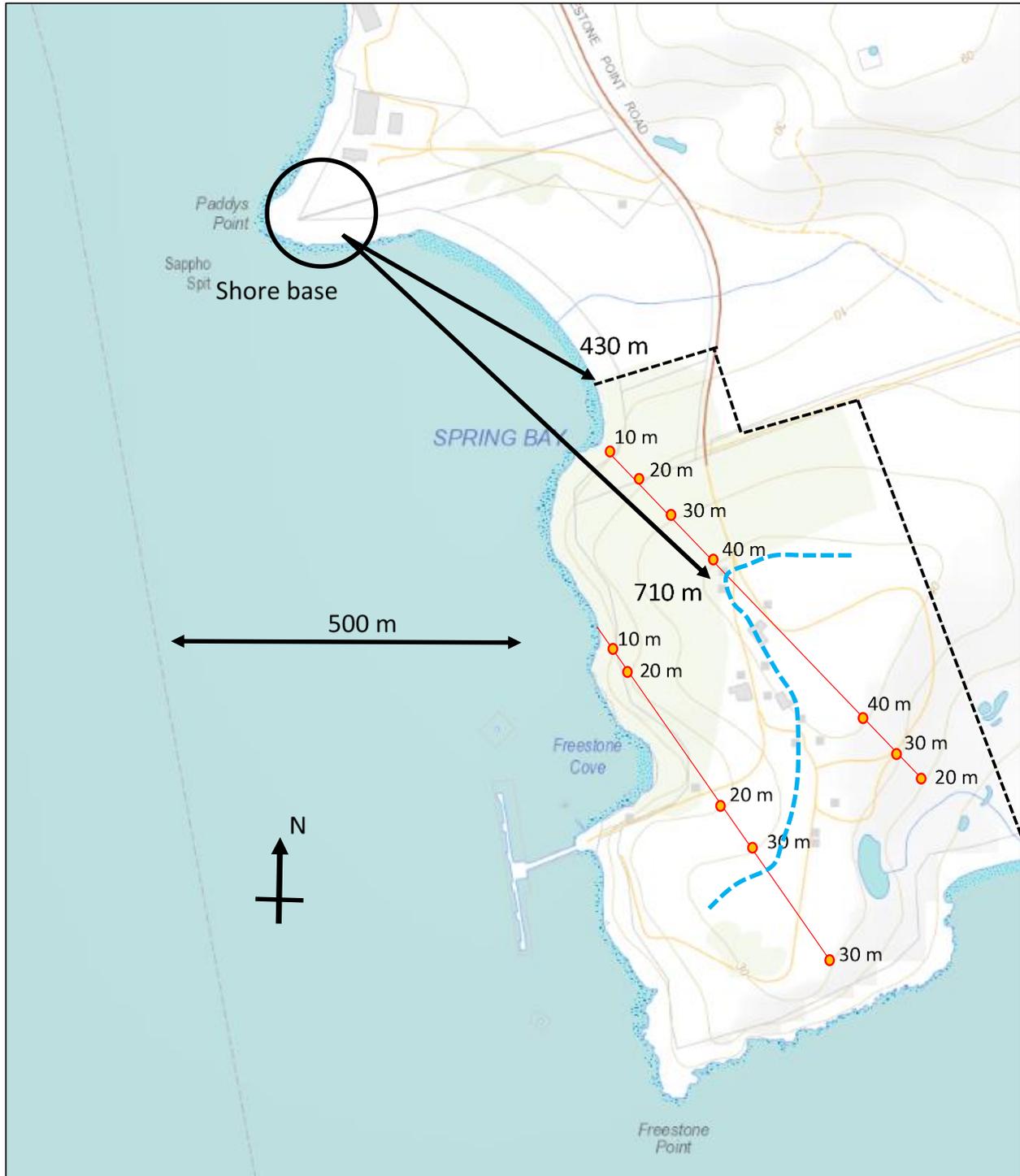
**Re: Triabunna shore base noise impact assessment**

I write to report my updated noise impact assessment of Tassal's proposed shore base at Triabunna, including consideration of revisions to the planned shore base layout, and consideration of the potential for land use conflict between the proposed shore base and the permissible uses under the Planning Scheme that could occur at the (former) Mill site that is located SE of the shore base.

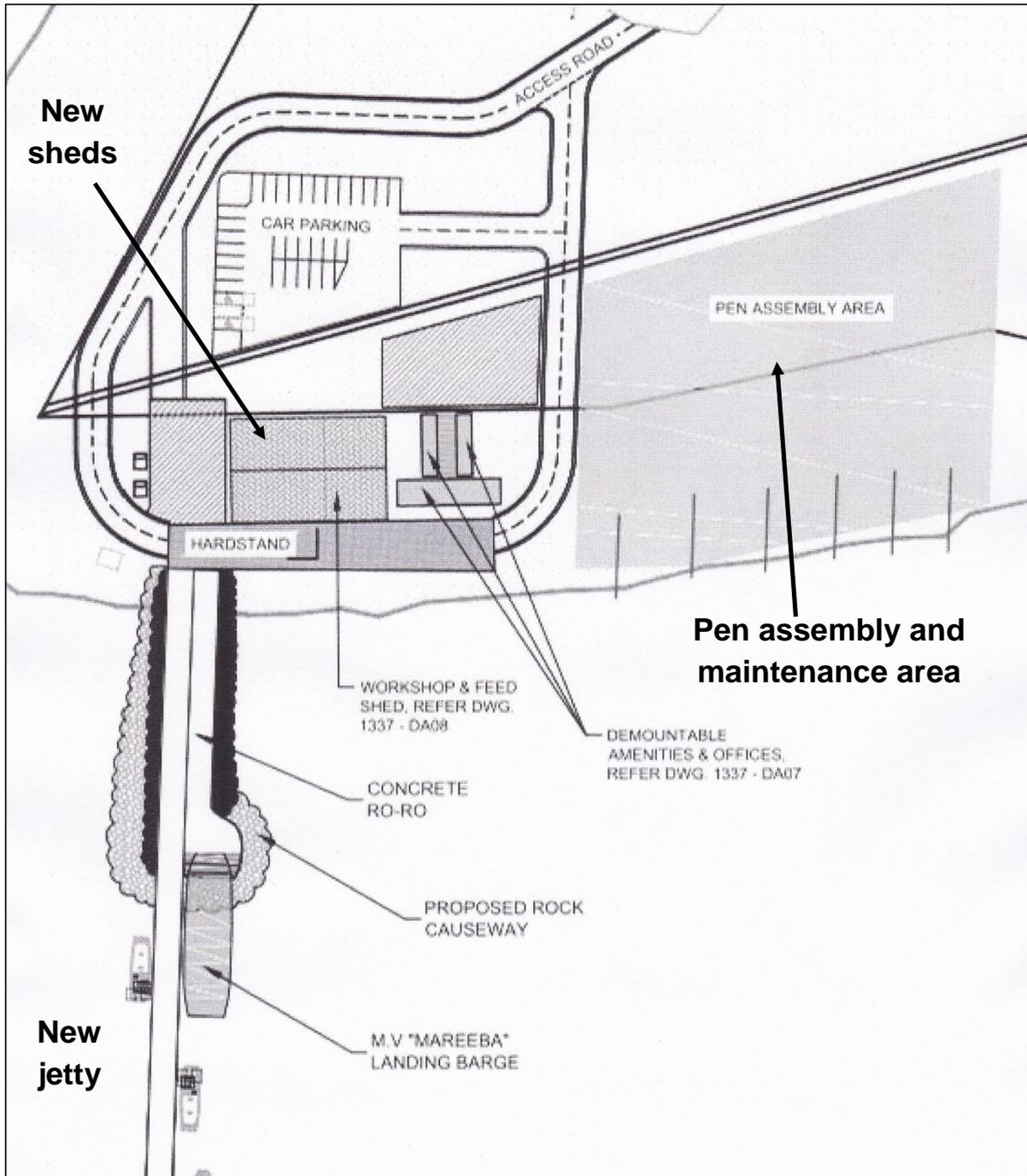
I visited the site on 12 May 2016. Figures 1 and 2 show maps of the area. Figure 3 shows the planned layout of the shore base, 2 km south of the town, accessed by Freestone Point Road on the east shore of Spring Bay.



Figure 1. Location of the proposed shore base, and the nearest residences to the west.



**Figure 2.** Location of the proposed shore base, and the former mill site to the SE. The mill site property boundary is approximately given by the black dash line. Contour levels are given for two transects through the site, and the curved blue dash line approximately divides locations with line of sight to the shore base (ignoring vegetation), from locations that do not have line of sight.



**Figure 3. Layout of the proposed shore base.**

Figure 1 shows that the nearest existing residences are on the west shore of Spring Bay, about 800 m from the proposed shore base. The East Coaster resort is located just south of the nearest residences. There is a single residence a short distance east of the proposed shore base, but it is owned by Spring Bay Mussels and used as temporary accommodation for employees, so it can be excluded from this noise impact assessment. There are no other existing residences near the proposed shore base on the east side of Spring Bay. The neighbouring usages to the north are the Spring Bay Mussels and Seafish facilities.

Figure 2 shows the location of the former woodchip mill property that is SE of the proposed shore base. The nearest property boundary is just over 400 m from the shore base, and the nearest existing structures / buildings on the property are just over 700 m from the shore base. Figure 2 also shows the approximate location of the line beyond which there is no line of sight to the shore base.

Figure 3 shows that the shore base will consist of several sheds, a pen assembly area, and a new jetty.

### **Construction noise level limits**

I recommend that Tassal requires that noise emissions from shore base construction work comply with the *Interim Construction Noise Guidelines* (NSW Department of Environment & Climate Change, 2009). These guidelines are widely used, and are recognised both by the Environment Protection Authority (EPA), and by the Resource Management and Planning Appeals Tribunal (RMPAT).

The guidelines recommend construction work hours: Mon to Fri 7 am to 6 pm; and Sat 8 am to 1 pm. They set a project-specific noise management level using Rating Background Levels (RBLs), calculated from noise logger data. For the Spring Bay area, I recommend using an RBL of 50 dBA for the above standard construction work hours, which equates to a noise management level of  $L_{eq}(15 \text{ min}) = 60 \text{ dBA}$ .

This noise management level means construction work noise should be less than 90 dBA at a distance of 50 m from the work, and would not expect compliance with this target to be difficult. If some construction work activity is expected to be noisier than this, Tassal should seek advice on noise mitigation measures and/or community consultation work before proceeding with the activity.

### **Jetty construction marine noise**

If jetty construction work involves piling, I recommend that Tassal requires the work to comply with the *Underwater Piling Noise Guidelines* (S.A. Department of Planning, Transport and Infrastructure, Nov. 2012). These guidelines aim to ensure the high underwater noise levels associated with pile driving do not injure marine species such as whales, dolphins, seals, and fairy penguins. In most cases, a simple heads-up approach to the piling work is sufficient to achieve this goal, for example checking that there are no sightings of whales etc. in the surrounding waters before commencing pile driving work (once the noise has started, animals will stay away from the area); defining a distance at which the presence of whales etc. triggers a stop-work order; and not driving piles near the dawn/dusk times when fairy penguins are leaving or returning to their rookeries, if there are any rookeries near the site.

### **Shore base noise level limits**

The Interim 2015 Planning Scheme for the Spring Bay – Glamorgan municipality includes Clause 24.3.2, which aims to ensure that noise emissions from a facility do not cause environmental harm, and do not have unreasonable impact on nearby residences.

To these ends, Clause 24.3.2 (A1) requires  $L_{eq}$  noise levels at residences i) not to exceed 55 dBA between 7 am and 7 pm; ii) not to exceed 40 dBA between 7 pm and 7 am, or 5 dBA above the background noise level ( $L_{90}$ ), whichever is the lower; and iii) the  $L_{max}$  noise level must not exceed 65 dBA at any time.

These criteria are a little confusing, and not quite in accordance with the approach taken by the Environment Protection Authority in setting noise level limits for new facilities in a rural area.

- It is not clear whether the  $L_{eq}$  noise level limits refer to total noise, or only to noise from the new facility. The standard approach in Tasmania is to set noise level limits that refer only to noise from the new facility, but if that is the case then the specified limits are higher than usual.
- Clause (ii) as written says a facility must comply with a night time noise level limit of 40 dBA when it is blowing a gale and the background noise levels are much higher than 40 dBA; and the clause will likely require the facility not to operate on calm nights when background noise levels decrease to, say, 25 dBA which would give a noise level limit of 30 dBA. I don't think that's the intent of the clause, and the variable nature of background noise levels makes it difficult to assess compliance with a clause like this.
- Tasmania EPA does not usually set  $L_{max}$  noise level limits in an industry's permit conditions, although some other authorities do set such limits. Where  $L_{max}$  limits are set, they are usually specified only for the night time period (e.g. South Australia EPA takes this approach). For the day time, there needs to be community tolerance of occasional noisy events that are of short duration, and the *NSW Industrial Noise Policy (2000)* provides a good example of how this can be regulated (see Tables 4.1 and 4.2 of the policy).

Given Clause 24.3.2 (A1) of the Interim Planning Scheme is (in my opinion) a little problematic, I have based my assessment on the standard approach taken by the EPA, which in my opinion will result in compliance with Clause 24.3.2 (A1), or at least with its intent (P1). EPA usually expects existing facilities to comply with the *NSW Industrial Noise Policy (2000)*, which recommends the noise level limits set out in Table 1 for industries operating in rural areas. More stringent noise level limits are usually set for a new facility in a rural area, also shown in Table 1, and these limits were specified by EPA for Tassal's fish by-product processing plant north of Triabunna.

Period	NEW	----- EXISTING -----	
	Maximum	Acceptable	Maximum
Night (10 pm to 7 am)	35 dBA	40 dBA	45 dBA
Evening (6 pm to 10 pm)	40 dBA	45 dBA	50 dBA
Day (7 am to 6 pm)	45 dBA	50 dBA	55 dBA

**Table 1. Industrial  $L_{eq}$  noise level limits at a rural residence.**

These noise level limits refer only to noise from the facility, not total noise. A penalty adjustment may be necessary if the noise contains any intrusive characteristics (see Table 4.1 of the policy).

### **Shore base noise emissions**

The shore base will be used to:

- i) Assemble and maintain fish pens in an area just east of the shore base buildings (see Figure 3). This will require a vehicle such as a tractor, and perhaps a heavy lift vehicle, such as a front end loader. The work will likely require occasional power tool usage. Tassal has advised that work will be carried out in this area only during day time hours (7 am to 6 pm).
- ii) Transport employees to and from the marine lease. Marine lease workers will likely leave the shore base a little before 7 am, but there will be no noise emissions apart from those due to vessels.
- iii) Transport feed and equipment to the integrated aquaculture marine lease. This will require at least one forklift, together with truck deliveries. Tassal has advised that all such shore base activity will take place during day time hours.

The recommended day/evening/night time noise level limits of 45/40/35 dBA apply at the nearest residences, visitor accommodation, and any other noise sensitive usages.

Figure 1 shows there is significant residential development on the west side of Spring Bay, roughly opposite the proposed shore base, at a distance of about 800 m. Background noise levels in calm conditions will sometimes decrease to less than 30 dBA, and in my opinion the day/evening/night time noise level limits of 45/40/35 dBA that were specified by EPA for the plant north of Triabunna are also appropriate for the proposed shore base facility. Given the east side of Shore Bay has a light industrial nature, there might be some justification for relaxing these noise level limits by 5 dB, but the 800 m distance to the nearest residences means a new facility should be able to comply with the more stringent limits.

Figure 2 shows that any noise sensitive usages that are established on the former mill site to the SE of the shore base that have line of sight to it will be closer to the shore base than the residential area to the west. The nearest mill site property boundary is just over 400 m from the shore base, but locations further from the shore base are elevated, so it is harder for a solid fence around the shore base to block line of sight and mitigate noise.

### **Noise impact assessment**

At present it is not possible to accurately estimate the day/evening/night time noise levels that will be produced by the proposed shore base, but in my opinion the shore base should be able to comply with the 45/40/35 dBA noise level limits at the nearest noise sensitive usages, and mitigation measures are possible if need be.

To put these noise level limits into context, a day time noise level due to the shore base of 45 dBA at a distance of 400 m, the nearest edge of the mill site, equates to a noise level of about 83 dBA at 5 m. Since 85 dBA is the threshold for wearing hearing protection, this would mean that shore base workers would need to go around the shore base wearing ear muffs. In terms of sound power levels, the day time noise level limit of 45 dBA at 400 m roughly equates to a total sound power level of  $L_w = 106$  dBA re 1 pW, which is quite a strong noise source.

To help avoid the need for noise mitigation measures, I make the following recommendations.

- i) Vessels operating outside day time hours (e.g. night watch vessel) should be required to move at half speed while passing the mill site and approaching the jetty. Vessel noise level measurements clearly show that noise from vessels moving slowly is much less than noise from vessels travelling fast.
- ii) Tassal should develop protocols to give effect to the advice provided for this noise impact assessment, to ensure that noisy work is only carried out during the day time (7am to 6pm), and there should be no noise producing activity in the pen assembly and maintenance area outside day time hours.
- iii) Tassal should require that any support vehicles on site, such as forklifts or tractors, have high frequency reversing beepers. Noise from such beepers is strongly attenuated over distances of several hundred meters, so they will be much less audible than standard reversing beepers.

If the only noise producing activity outside day time hours is associated with vessel movement, then evening and night time noise level limits should be met, with the help of recommendation (i) above.

Compliance with the recommended day time noise level limit of 45 dBA at the nearest residences can be assessed after the shore base is commissioned, and I highlight that this is 10 dB less than the 55 dBA set by Clause 24.3.2 (A1) of the interim planning scheme. I am confident noise mitigation measures can be identified and implemented if need be, to address any problems, especially given Tassal's track record of success in noise mitigation. Options would include acoustic enclosures, and construction of solid barriers. The barriers can be designed to either reflect noise away from the direction in which impact needs to be reduced, or lined with high performance outdoor sound absorbing material if reflecting noise is only going to cause a problem elsewhere.

In summary, the mill site SE of the shore base, and the residences west of the shore base, are far enough away that I would not expect shore base activities to cause noise nuisance, although Tassal needs to keep a close eye on noise associated with early morning departures for the marine lease. If a post commissioning noise level survey identifies the need to quieten down some noise source, or shield noise sensitive usages from the shore base area near the jetty, then I am confident mitigation measures can achieve the required noise level reduction.

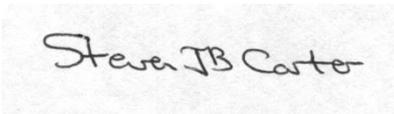
### **Comment on planning scheme issue**

I understand there is a 1,000 m SRAD in place for the facility immediately north of the proposed shore base, which extends to the NW part of the mill property. The purpose of an SRAD is to try and avoid land use conflicts, and my area of expertise is conflict arising between a facility that produces noise and usages that are sensitive to noise nuisance. I offer three comments in this regard.

First, line of sight is a very important factor to consider. The north part of the mill property will have line of sight to the shore base, starting at similar elevations at the mill's NW property boundary (about 400 m from the shore base), and with locations further away having elevated line of sight (40 m at a distance of 700 m, as per Figure 2). Noise sensitive usages in this area will potentially be susceptible to nuisance from the shore base.

Second, the potential for nuisance appears to be limited to the day time (7 am to 6 pm), as per the previous section, which is good news because most noise nuisance complaints relate to evening or night time periods. I am confident that the mill site and the shore base can co-exist from the point of view of noise, but accurately predicting the shore base's noise emissions is difficult, so we won't know until after the shore base is commissioned if some noise mitigation is needed to make that happen.

Third, in my original noise impact assessment (May 2016), only the residences west of the shore base were identified as possibly requiring protection from noise nuisance, so I recommended construction of solid fences on the west side of the shore base (and possibly also the pen assembly area) to provide that protection. But if the mill site to the SE also requires some protection from noise nuisance, then Tassal may need to reduce noise levels at the source (e.g. providing an acoustic enclosure if there's a gen-set at the shore base), and it's hard to say where the fences should go ahead of commissioning the shore base. Also, using barriers to reflect noise isn't an acceptable solution if the reflected noise is then going to cause nuisance elsewhere, so the solid fences may need to be lined with an outdoor absorptive material such as Whisper (which is very effective in absorbing noise, and comes in 2.4 m x 1.2 m panels and can easily be used to line a 2.4 m high fence).



**Dr Steve Carter, FIEAust, CPEng  
Environmental Engineer**