



27 March 2019

Tim Rudge
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Our ref: 3135653-22607
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Dear Tim

Yumbah Aquaculture Planning & Works Approval Nyamat Odour Assessment Methodology

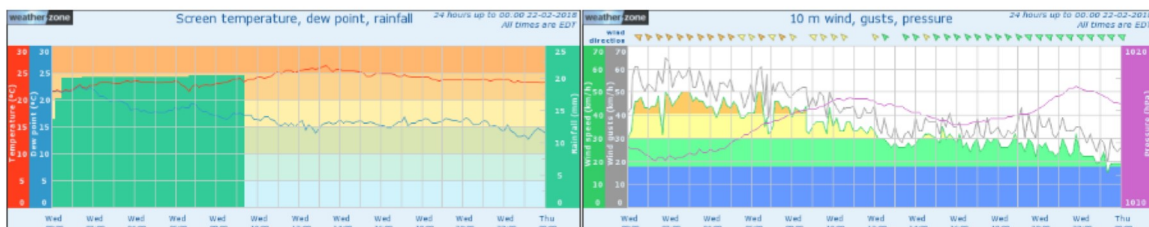
The following provides a short summary of the odour assessment methodology undertaken as part of the GHD Report entitled “Yumbah Aquaculture Ltd, Yumbah Aquaculture Planning & Works Approval, Odour & Noise Impact Assessment for Proposed Nyamat Abalone Aquaculture Facility”, dated October 2018.

As agreed with EPA at a meeting held on 09 November 2017, GHD undertook a qualitative assessment of odour generation associated with the proposed development. GHD recommended this approach based on past experience at other (existing) abalone farms within Victoria including the Narrawong site operated by Yumbah and the Indented Head farm near Geelong.

As part of the qualitative assessment GHD undertook an inspection and general odour survey of the Narrawong site. During the inspection, GHD undertook to understand the process at the site from hatchery through nursery and grow out; the state of water channels; site management practices; the site layout; water flow through the site; food storage; vermin and seabird control; and mortalities disposal practices.

The site visit was undertaken by GHD’s National Service Line Leader for Air & Noise, [REDACTED], who has over 11 years’ experience undertaking various industrial odour assessments and has had his nose tested using the nasal calibration gas *n*-butanol and found to be mid-range along the spectrum (i.e. neither hyper nor hyposensitive). [REDACTED] also has a post graduate diploma in Marine Science from the Otago University, New Zealand and several years’ research within the field of aquaculture and marine physiology.

As supported by the figures below, the site visit was undertaken on a day when weather conditions were fine and sunny with a low to light breeze of 3-5 m/s from the east occurring at the site and a temperature of 23 degrees Celsius.



Source: Weather Zone for Portland Vic

The odour survey method involved walking the site perimeter and within the site and through the various facility areas in order to detect any odorous sources onsite. In general very little odour was detected at the site. Two locations where odour was more evident during the inspection were the mortalities bin and the water retention ponds. The mortalities bin consisted of a metal skip with flip lids in which mortalities were deposited and then covered with sand in an attempt to control odours and vectors. The water retention ponds are often frequented by seabirds which defecate on or around the water. Past experience at other sites has shown the nursery area can also contain weak odours, especially within the nursery building and within 1-2 m from the nursery bays. No odours were detected from this source at the Narrawong facility during the inspection.

In the assessor's opinion, and based on his experience at other abalone farms, the Nyamat site is not expected to be a major source of odour and offensive odours are unlikely to be detected at the boundary of the site providing the following measures are implemented:

- Mortalities are quickly removed from the process and are placed in freezer storage well away from sensitive receiver locations
- Water retention areas are suitably managed to minimise seabird usage, such as the use of nets or covers
- Water flow across the site is appropriately managed to enable adequate flow to clear any detritus from channels and prevent any areas of stagnation
- The site is kept clean and is well maintained

Yours sincerely

