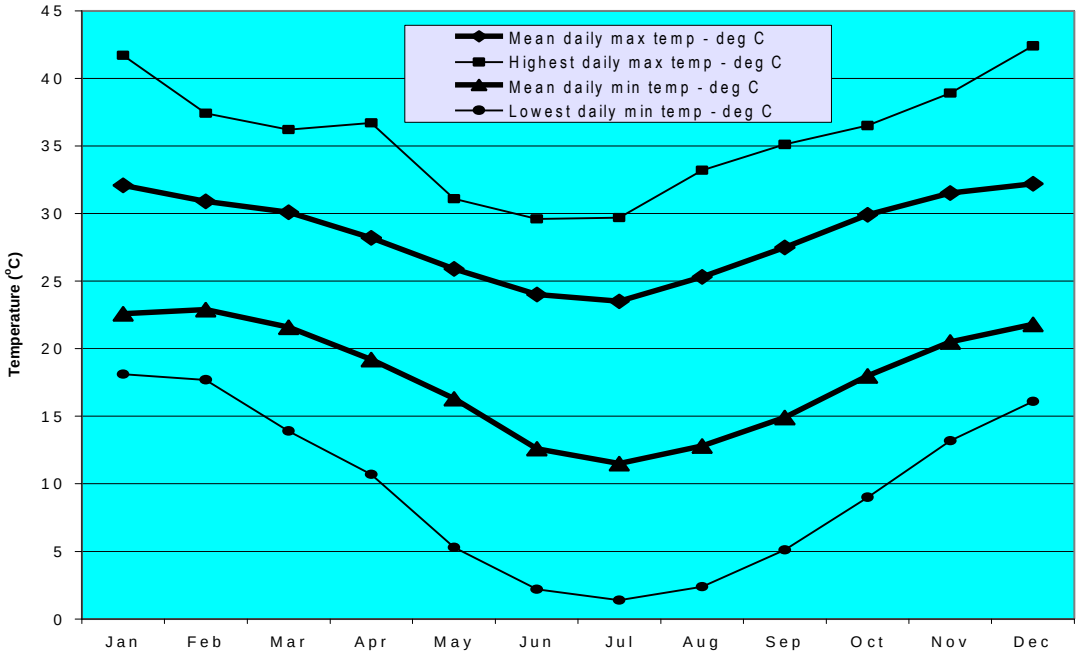
10. Air Quality

10.1 Existing Conditions

10.1.1 Climate and Meteorology

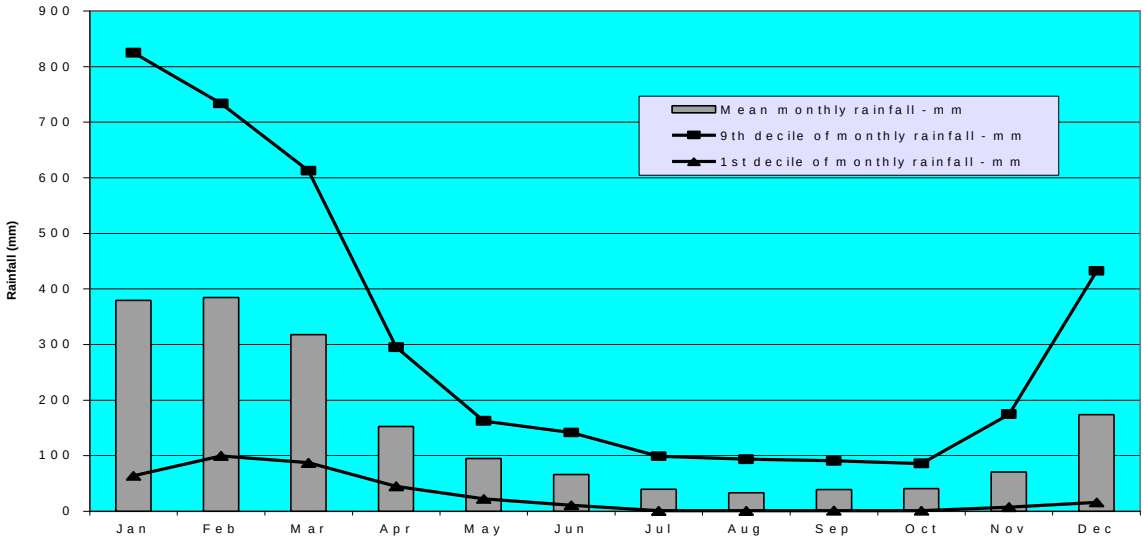
Airlie Beach enjoys a tropical climate with warm, wet summers and moderate, dry winters. Annual average rainfall is 1792.4 mm at Proserpine, 1803.2 mm at Hamilton Island and 1384.4 at Hayman Island. Temperature and climate monthly averages for Proserpine are presented in **Figure 10-1** and **Figure 10-2** respectively. The proposed marina site is approximately 30 km east of the Proserpine Airport climate station.



■ **Figure 10-1 Monthly Temperatures –Proserpine**

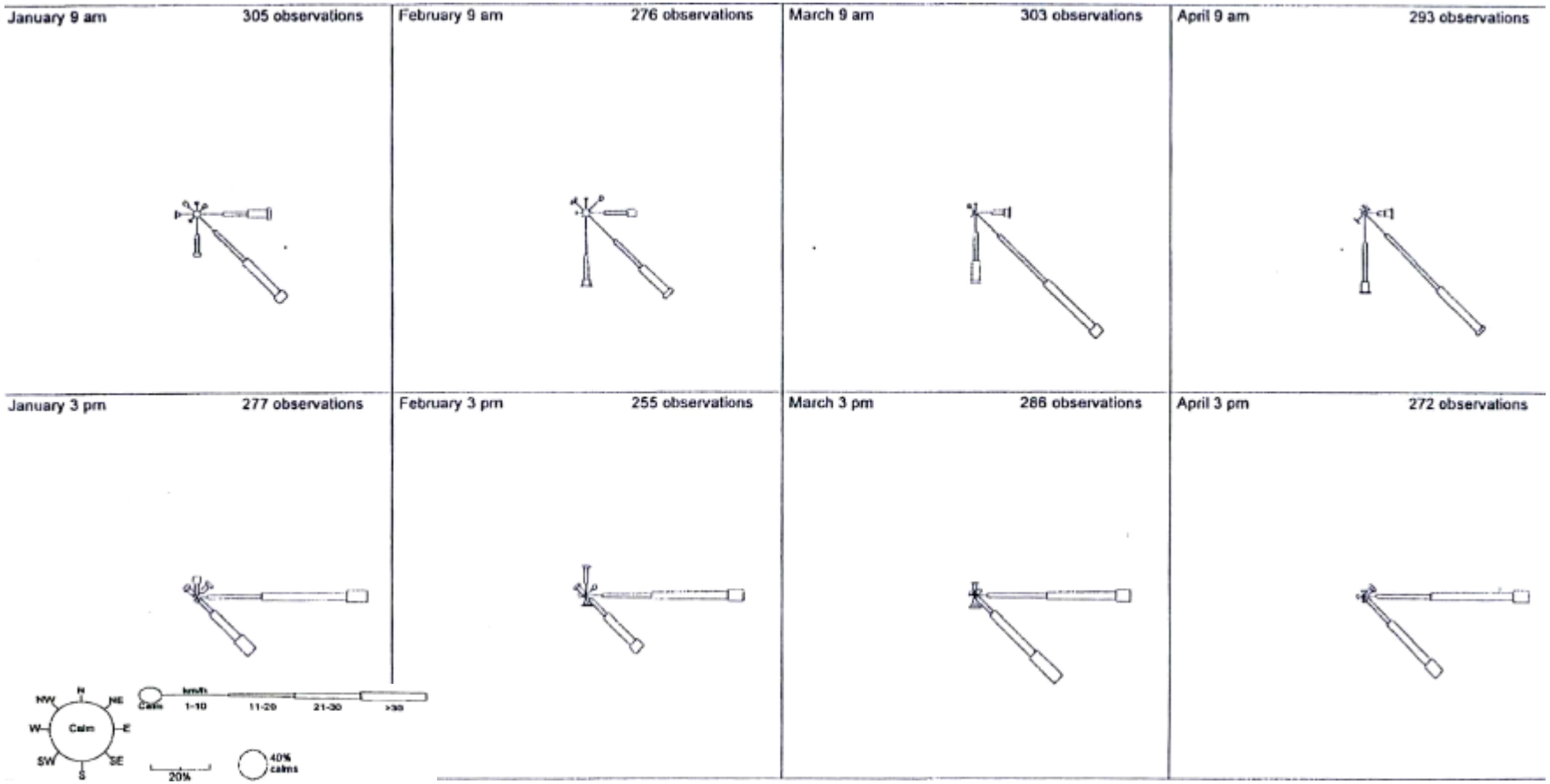
The data show that during summer, temperatures can exceed 35°C (recorded maximum 42.4°C), but are typically in the range 30-35°C. These conditions are typical of humid tropical air masses during the season of high solar heating. On very rare occasions, drier, hot continental air results in much higher temperatures. The data shows that the lowest recorded temperature at the Proserpine Airport climate station is 1.4°C. Typically, frosts begin to occur at an air temperature of 2°C and so the Proserpine Airport climate station is usually frost-free.

The area experiences a humid climate and is prone to convective storms and cyclonic events, which can affect the area during the summer wet season months. Rainfall patterns reflect the dominant wet/dry season climatic regime typical of the sub-tropical zones of coastal Queensland. The distribution of mean monthly rainfall for Gladstone with its high summer rainfall (December to March) and lower rainfall in the winter months is shown in **Figure 10-2**. The highest recorded daily rainfall is 461.5 mm. Climatic extremes and coastal processes are discussed in **Section 5**.

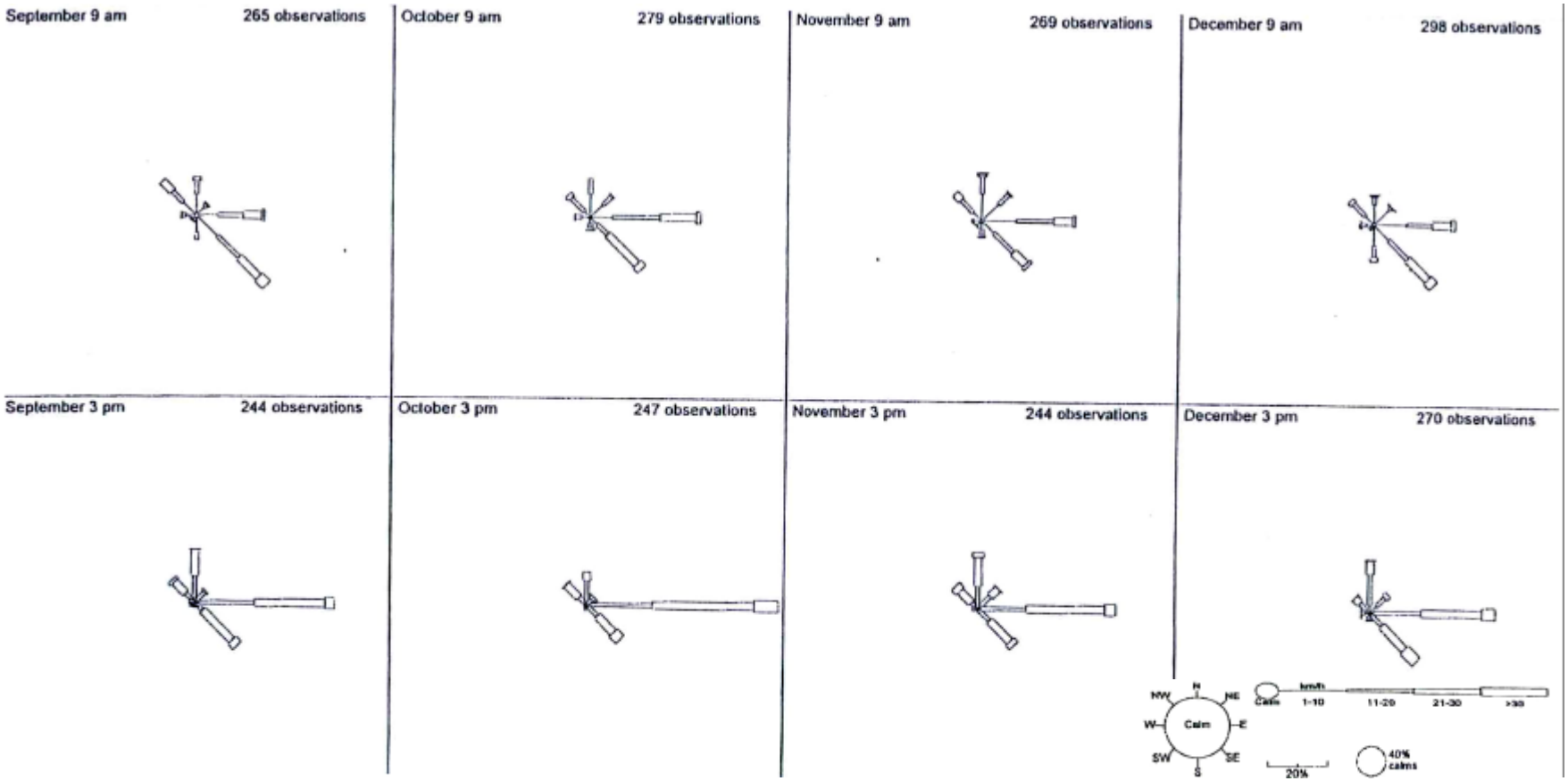


■ **Figure 10-2 Monthly Rainfall - Proserpine**

Windrose data from 1988 to 1998 taken from the Proserpine Airport (Birchill 1998) indicate that throughout most of the year, wind direction is predominantly southeast to east (see **Figure 10-3** and **Figure 10-4**). Seasonal variations from this pattern are minimal, and on average remains constant morning through afternoon.



■ **Figure 10-3 Seasonal Windroses January to April (1988-98) at the Proserpine Airport**



■ **Figure 10-4 Seasonal Windroses September to December (1988-98) at the Proserpine Airport**

10.1.2 Existing Air Quality

Sources of air pollutants in the vicinity of Airlie Beach are generally limited to vehicle emissions and low levels of dust from unsealed/unvegetated areas. The steep Conway Range forms a barrier for particulate emissions associated with cane burning further inland.

Air quality monitoring data for Airlie Beach and surrounds is limited. Ambient dust monitoring was carried out in July 1998 by WBM (in Burchill 1998) and results are presented in **Section 8**. Results indicated low levels of dust pollution, with the only location where levels were elevated being the Proserpine / Whitsunday Council Quarry.

Overall, it can be expected that ambient air quality in the vicinity of Airlie Beach is very good.

10.2 Potential Impacts

10.2.1 Sensitive Air Receptors

Receptors in the vicinity of the proposed marina likely to be sensitive to emissions from construction and operation of marina are likely to include:

- Residences to the west and south of the proposed marina site. The nearest residences are site are located along Shute Harbour Road, as seen on **Figure 11-1**. The majority of these receivers have an easterly aspect on land which rises up from the intertidal flats, overlooking the proposed worksite.
- Tourists and locals using foreshore reserves and facilities.
- Commercial operations on Shute Harbour Road and the Whitsunday Sailing Club
- Vehicle traffic on Shute Harbour Road
- During operation, users of the marina and associated facilities.

10.2.2 Impacts on Air Quality

Construction

During construction, the main potential source of air emissions will be dust from earthmoving activities and stockpiles as a result of vehicle movements across unsealed surfaces and areas cleared of vegetation.

The magnitude of the impact on sensitive receptors will depend on prevailing weather conditions including wind direction and speed and rainfall. With winds predominantly from the east and south east there is potential for residences and others to the west of the site to be affected.

Dust from construction projects can be well controlled and provided that appropriate control measures are implemented, impact on sensitive receptors can be avoided. Dust control measures are discussed in **Section 10.3.2**.

Exhaust emissions from trucks and other construction equipment will also lead to minor levels of localised air pollution. Dispersion at this coastal location is expected to be good and impacts on sensitive receptors outside the site are not expected.

Operation

During operation, there will be no significant sources of air pollution from the marina. Minor sources of air pollutants may include:

- Exhaust from boats using the marina (the majority of boats using the marina are expected to be sail boats with small engines used for manoeuvring into and out of the marina berths)
- Exhaust from vehicles accessing the marina
- Volatile hydrocarbons from fuel storage and refuelling activities.
- Emissions from boat repair facilities such as sandblasting and spray painting

Exhaust from boats and vehicles is not expected to have a significant impact on local air quality. Provided that fuel storage and refuelling activities are managed appropriately, these are also not expected to have any significant impact on local air quality. All such facilities will be required to comply with appropriate standards including AS1940: Storage and Handling of Flammable and Combustible Liquids.

Emissions from boat repair facilities may potentially have significant effects on air quality in the immediate vicinity of the activity, although more widespread effects are unlikely due to the extent of dispersion that is likely to occur. Potential The boat repair activities that will occur on site will be as follows, anti fouling grinding, and spray activities, all of which can occur behind spray curtains to minimise dispersion if necessary. In any case, any industries with significant emissions to the air will be required to obtain an Environmental Authority and/or Development Approval prior to commencement of operations. The impact of emissions and appropriate control measures will be addressed when these approvals are granted.

Low levels of odour may also be associated with:

- Fuel storage and refuelling activities
- Exhaust vents from commercial kitchens
- Food wastes from commercial kitchens
- Sewage pump out facilities.

Effects from these odour sources are likely to be very localised and can be avoided by appropriate management methods including storage and handling of fuels and waste management.

10.3 Impact Management

10.3.1 Design

The following requirements are relevant to design of the marina facilities:

- Design of kitchens and commercial areas should include appropriate waste management facilities
- All fuel storage and handling facilities should be designed in accordance with AS 1940 and other appropriate standards
- Sewage pump out systems should be appropriately designed and sealed so as to prevent the emission of odours.

10.3.2 Construction

Earthmoving and related activities during construction should be managed as follows:

- Minimise exposed dirt areas by retaining vegetation cover or other stabilising cover as long as possible and progressively stabilise exposed areas as soon as practicable after disturbance
- Use water sprays to control dust emissions from exposed dirt areas and access roads s required
- Plan earthmoving activities to minimise height and volume of stockpiles
- Cover stockpiles or use water sprays to control dust emissions
- Cover soils and fill on haul trucks entering and leaving the site
- Clean wheels of trucks leaving the site so that dirt is not deposited on roads outside the site
- Avoid use of chemical dust suppressants.

10.3.3 Operation

During operation, the following matters should be addressed to minimise air and odour emissions:

- Operate all fuel storage and handling activities in accordance with AS1940 and other relevant standards
- Ensure proper storage of kitchen wastes in airtight containers
- Ensure prompt removal of kitchen wastes
- Ensure regular cleaning of grease traps and other similar devices, drains and other locations where odorous materials may accumulate
- Operate sewage pump out facilities such that release of odour is minimised
- Direct boats to shut down engines as soon as possible and avoid prolonged idling.

Boat repair facilities locating in the marina which are required to hold Environmental Authorities/Development Applications will be responsible for undertaking independent environmental assessment as part of the Environmental Authority/Development Application process.

This page intentionally left blank.