

WOODSIDE

BROWSE BASIN

Cyclone Moorings, Site Selection and Engineering Study

ICON Engineering, in collaboration with Beagle Bay Marine Pty Ltd, carried out a study for Woodside Energy Limited (WEL) to investigate suitable locations and mooring designs for the cyclone moorings required to accommodate a range of vessels likely to be utilised for civil works at James Price Point, a significant component of the planned Browse LNG Project.

The study scope of work also investigated options for cyclone refuges near to selected cyclone mooring locations, to facilitate and prepare a risk assessment covering the design, installation, connection/release and personnel evacuation from the cyclone moorings and to determine Govt. department jurisdiction relating to approvals for Cyclone moorings.

Preliminary Location Screening

The location of cyclone moorings were assessed under 8 criteria including distance from James Price Point, degree of shelter, extent of existing infrastructure, road access, existing or potential helicopter facilities and potential impact on nearby Indigenous communities.

The three locations considered in detail were Powerful Island, Beagle Bay and Boonook Bay. The screening exercise was based on the analysis of maritime charts, fisheries charts, Google Earth images, road maps and local knowledge.

The findings of the study ranked Beagle Bay as the best site for the cyclone moorings.

Load Assessments and Mooring Types

A representative vessel was selected to model the mooring forces in the various potential mooring locations. Metocean data and statistics were used to determine an approximate cyclone induced 100 year ARTI metocean condition at each of the mooring locations. An indicative mooring design was selected, and then later modified to implement a more elastic mooring design.

It was then determined whether the mooring could withstand the calculated mooring loads in each location. It was found that Beagle Bay fared worst in mooring force comparison.

However, as long as appropriately designed moorings are still viable in Beagle Bay, the much closer proximity to James Price Point still placed Beagle Bay as the best option for a cyclone mooring anchorage.

Personnel Cyclone Refuge and Risk Assessment

The various options for personnel cyclone refuges accessible from the three potential mooring locations were examined. A comprehensive risk assessment was conducted covering such things as contingency procedures, vessel routes, cyclone tracking and intensity, mooring types and personnel evacuation.

Several severe risks were identified during the study which were then explored further during a HAZID workshop. Importantly the severe risk of vessels ferrying rocks and material between Dampier and James Price Point in the event of a cyclone was identified which led later to the concept of using Dampier as a rock and material supply port to be abandoned.

Approvals

ICON investigated the procedural aspects of obtaining the rights to use a cyclone mooring in the region and investigated which government departments and authorities have jurisdiction over the issuing of mooring licences.

The study found that the Department of Transport (DOT) has full jurisdiction over the installation or use of any moorings, including water where Native Title had been determined, which was in fact contrary to one of DOT's current policies.

Contradicting Government Policies

Significantly, the study highlighted several potential issues with current procedure including contradictions between the policies of Government agencies, disregard shown for the rights of the pearling lease holder where potential mooring sites fall within their leases and DOT policy not allowing a cyclone mooring to be used by more than one specified vessel.

It was concluded that the Department of State Development would have to address these issues as several Government departments are involved.



Three proposed mooring locations