Rio Tinto Alcan

Section 13

National Heritage Place

13 National Heritage Place

13.1 Introduction

This section addresses the National Heritage place aspects of the Tailored EIS Guidelines. The Great Barrier Reef National Heritage place (GBRNHP) was identified as one of the controlling provisions for the Project (refer **Section 4.5.2**).

It is noted that DSEWPaC's *Matters of National Environmental Significance: Significant Impact Guidelines 1.1* (DEWHA 2009c) states that, where appropriate precautions have been taken against translocating potential pest species, routine ship transits would not normally be expected to have a significant impact on a matter of NES. However, an assessment of Project-related shipping activities on the GBRNHP has been made in accordance with the Tailored EIS Guidelines.

The GBR was included on the National Heritage List on 21 May 2007. The determination states that, as a property on the World Heritage List, the GBR should also be included in the National Heritage List for those heritage values identified by the World Heritage Committee. Each National Heritage value has one or more corresponding World Heritage values.

The boundary of the GBRNHP is the same as the GBRWHA (refer **Figure 13-1**).

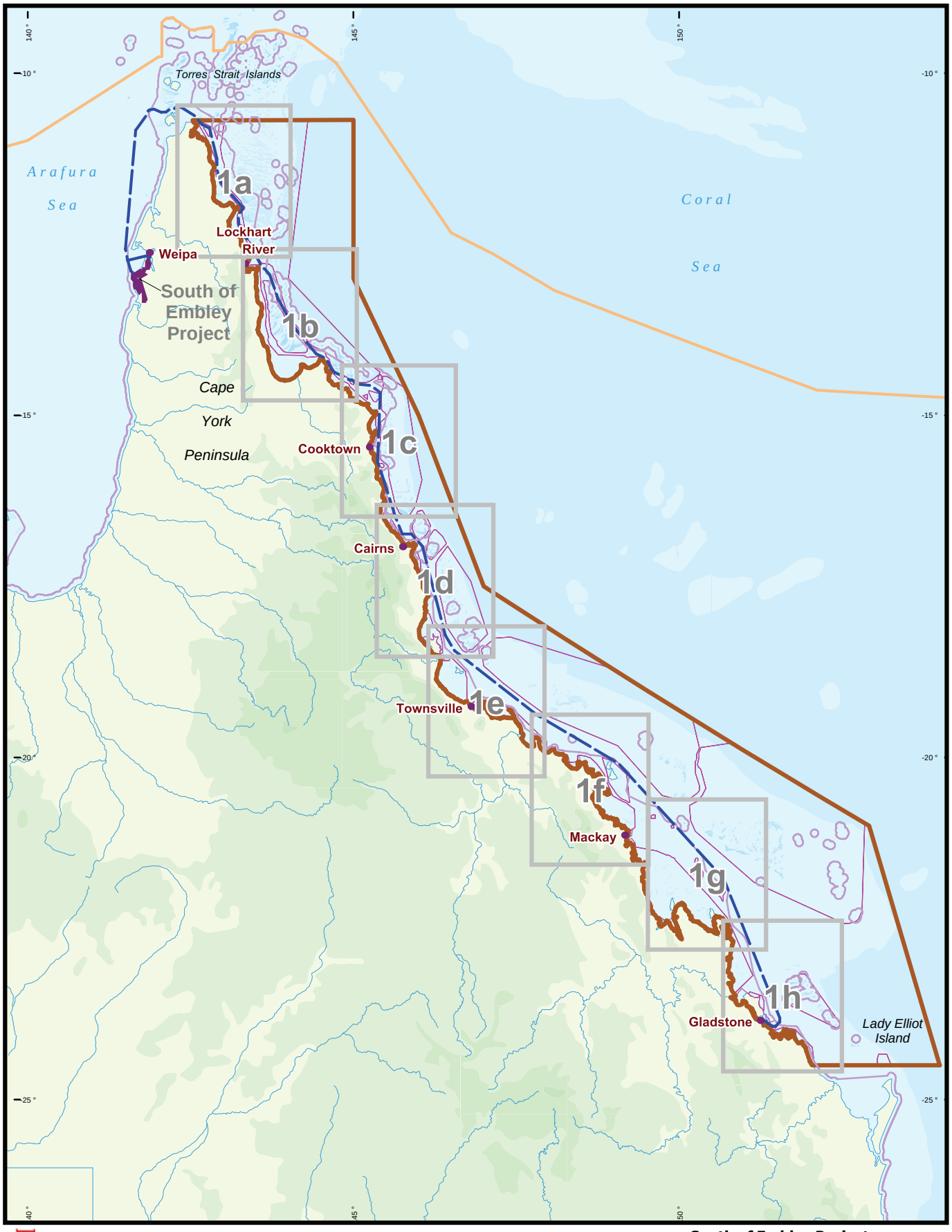
13.1.1 General Structure of the Section

The Tailored EIS Guidelines require the following to be addressed for the GBRNHP:

- a description of the National Heritage place;
- identification of those aspects of the National Heritage place likely to be impacted by the proposal:
- description and assessment of the nature and extent of the likely impacts;
- proposed avoidance and mitigation measures; and,
- assessment of residual impacts.

This section is structured to address these requirements as follows:

- **Section 13.2** provides an overview of the values of the GBRNHP;
- **Section 13.3** describes the construction and operational aspects of the proposed action that are relevant to the GBRNHP;
- **Section 13.4** assesses the potential impacts of the proposal on the values of the GBRNHP; and,
- **Section 13.5** provides a summary of any residual impacts and draws conclusions from the assessment.



Project Area
City / Town
River
Great Barrier Reef National Heritage Place
Coastal Waters (3 nautical mile limit)
Exclusive Economic Zone (200 nautical mile limit)
Designated Shipping Area
Bauxite Shipping Route
1a MapSheet Index

Rio Tinto Alcan

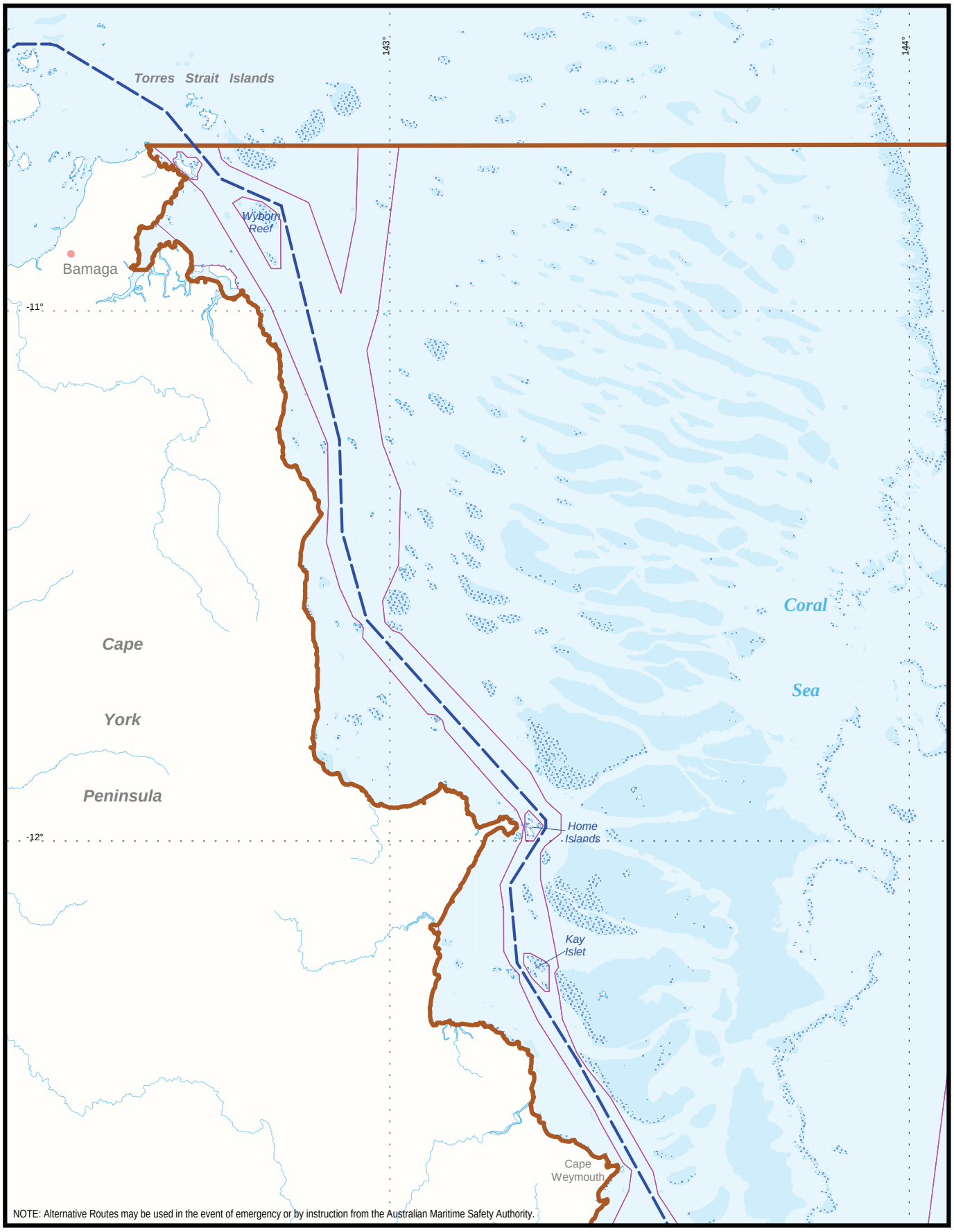
South of Embley Project

Fig. 13-1: Shipping in Great Barrier Reef National Heritage Place

N

100 0 100 200km

Datum/Projection: GDA94, Lat/Long Date: 29/08/2012



Rio Tinto Alcan

- City / Town
- River
- Reef Flat
- Indicative Reef Boundary
- Great Barrier Reef National Heritage Place
- Designated Shipping Area
- Bauxite Shipping Route

South of Embley Project

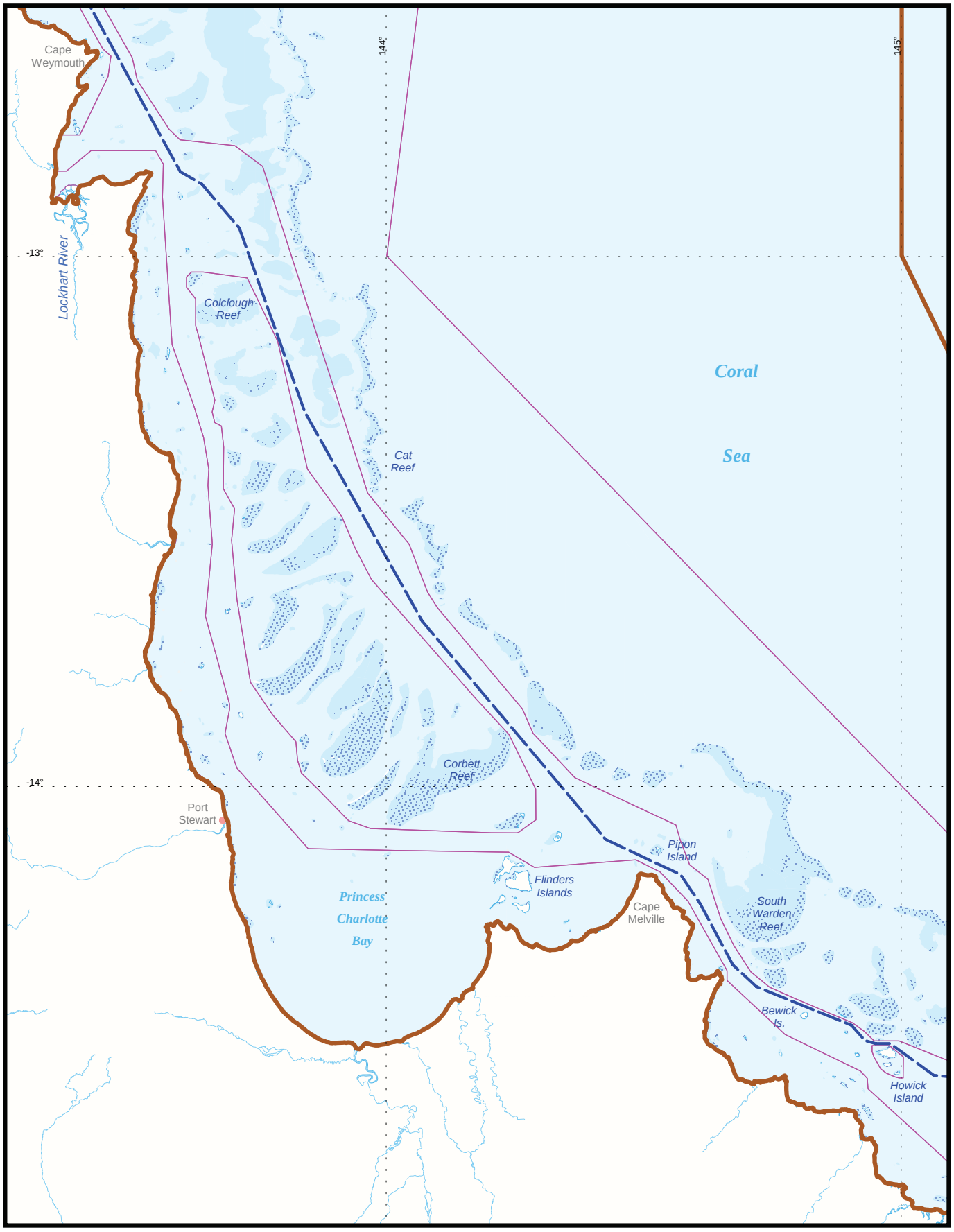
Fig. 13-1a: Shipping in Great Barrier Reef National Heritage Place (Cape York)

N

20 0 20 Km

Datum/Projection: GDA94, Lat/Long

Date: 29/08/2012



RioTintoAlcan

- City / Town
- River
- Reef Flat
- Indicative Reef Boundary
- Great Barrier Reef National Heritage Place
- Designated Shipping Area
- Bauxite Shipping Route

South of Embley Project

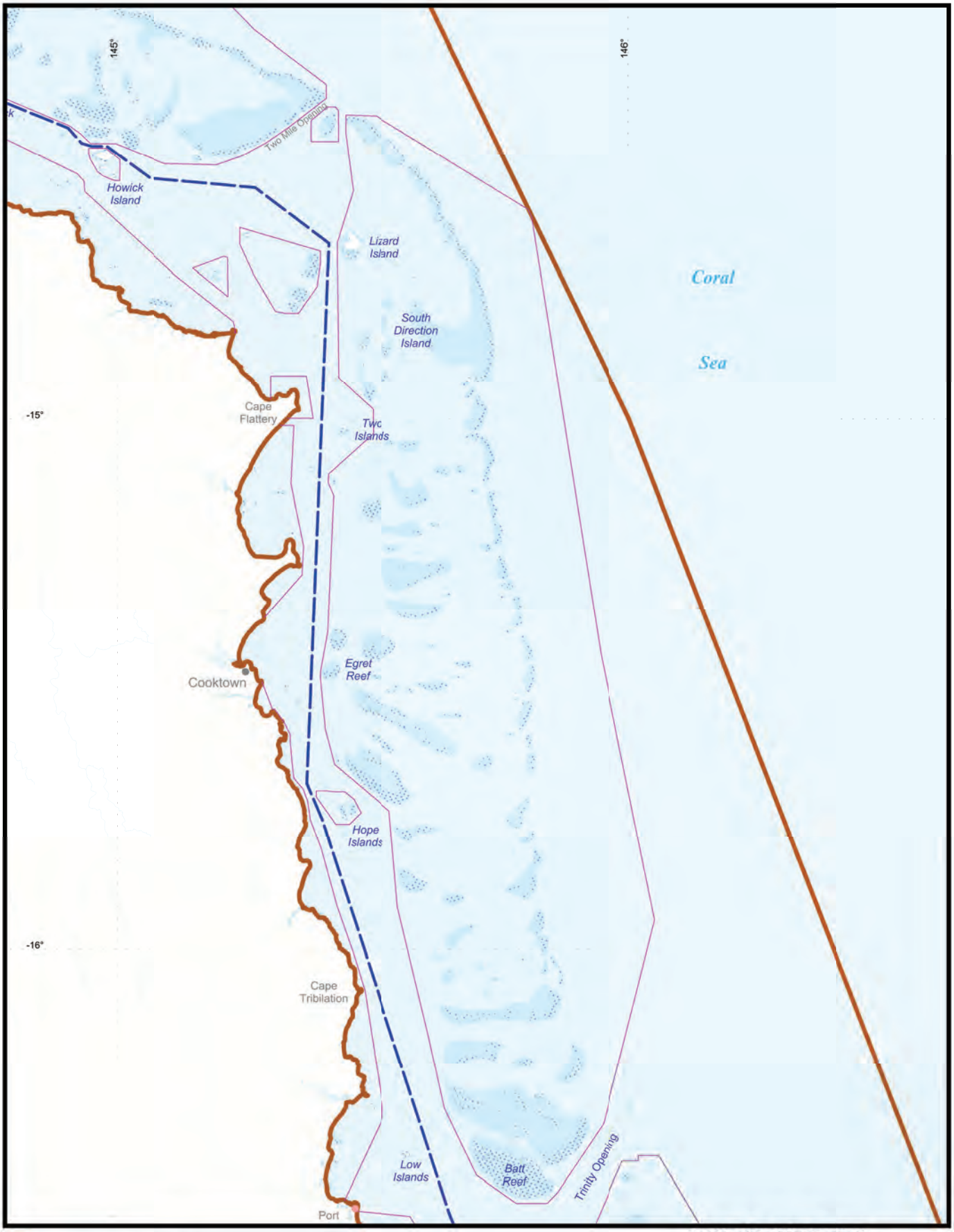
Fig. 13-1b: Shipping in Great Barrier Reef National Heritage Place (Lockhart River)

N

20 0 20 Km

Datum/Projection: GDA94, Lat/Long

Date: 29/08/2012



City / Town
River
Reef Flat
Indicative Reef Boundary
Great Barrier Reef National Heritage Place
Designated Shipping Area
Bauxite Shipping Route

NOTE: Alternative Routes may be used in the event of emergency or by instruction from the Australian Maritime Safety Authority.

RioTintoAlcan

South of Embley Project

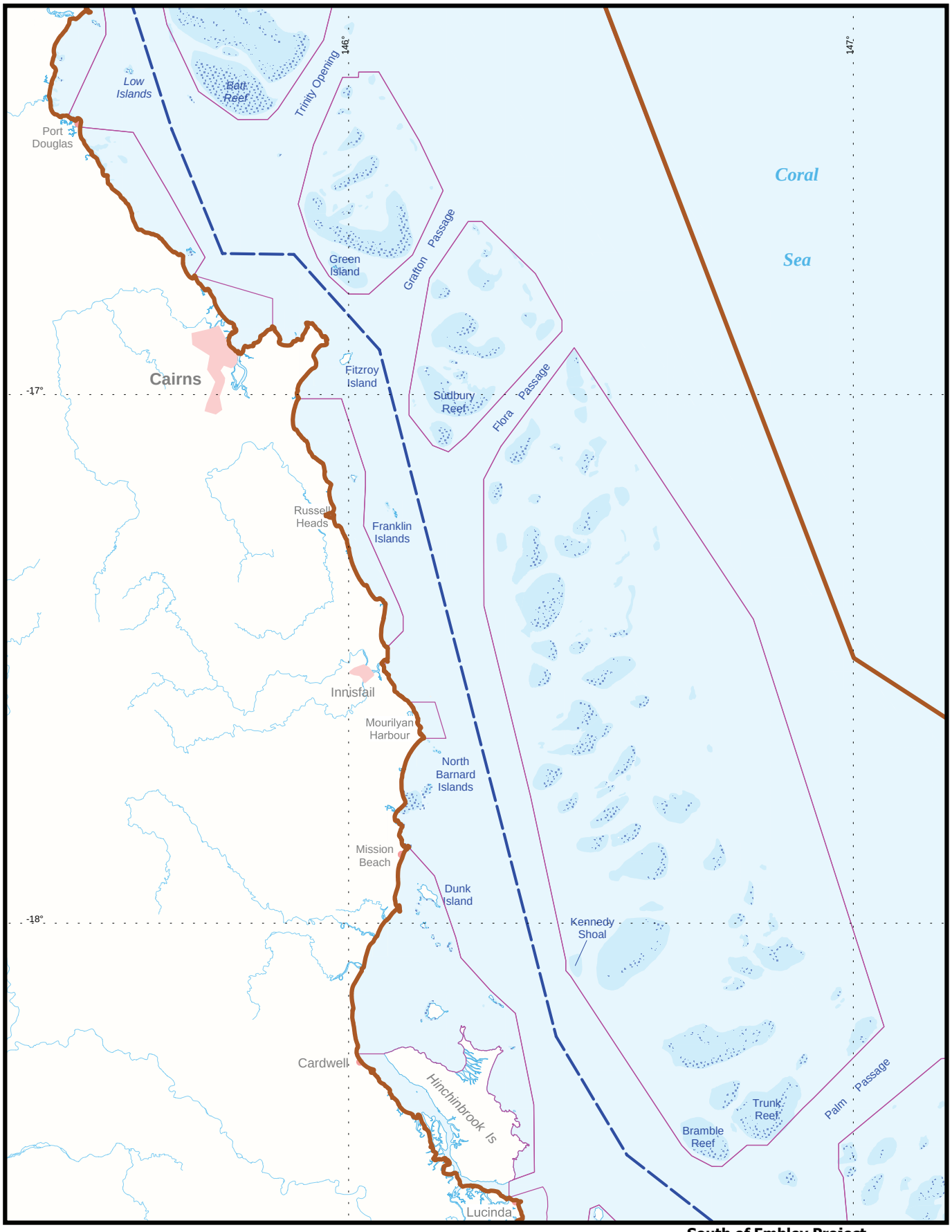
Fig. 13-1c: Shipping in Great Barrier Reef National Heritage Place (Cooktown)

N

20 0 20 Km

Datum/Projection: GDA94, Lat/Long

Date: 31/10/2012



City / Town
River
Reef Flat
Indicative Reef Boundary
Great Barrier Reef National Heritage Place
Designated Shipping Area
Bauxite Shipping Route

NOTE: Alternative Routes may be used in the event of emergency or by instruction from the Australian Maritime Safety Authority.

Rio Tinto Alcan

South of Embley Project

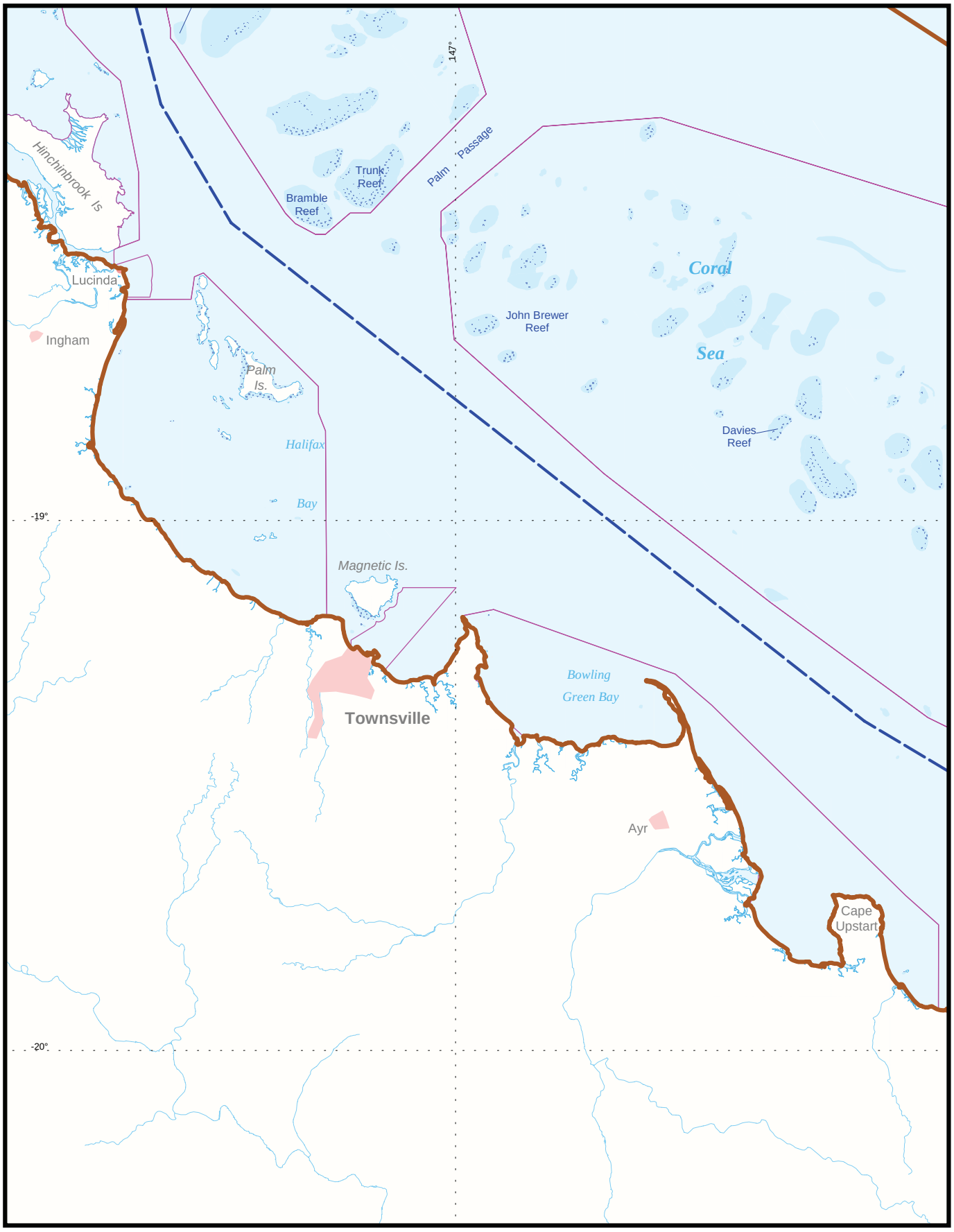
Fig. 13-1d: Shipping in Great Barrier Reef National Heritage Place (Cairns)

N

20 0 20 Km

Datum/Projection: GDA94, Lat/Long

Date: 29/08/2012



City / Town
River
Reef Flat
Indicative Reef Boundary
Great Barrier Reef National Heritage Place
Designated Shipping Area
Bauxite Shipping Route

Rio Tinto Alcan

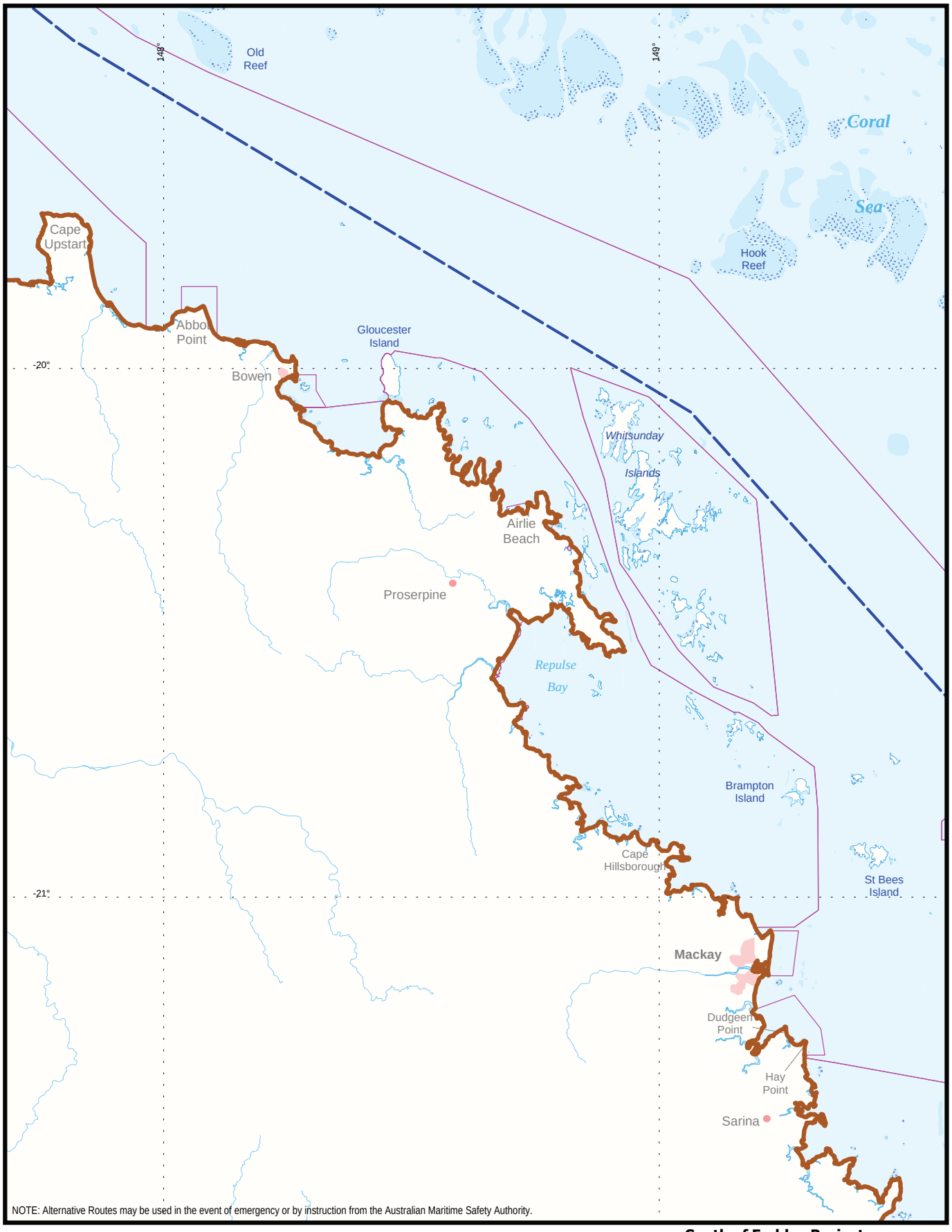
South of Embley Project

Fig. 13-1e: Shipping in Great Barrier Reef National Heritage Place (Townsville)

N

20 0 20 Km

Datum/Projection: GDA94, Lat/Long Date: 29/08/2012



Rio Tinto Alcan

- City / Town
- River
- Reef Flat
- Indicative Reef Boundary
- Great Barrier Reef National Heritage Place
- Designated Shipping Area
- Bauxite Shipping Route

South of Embley Project

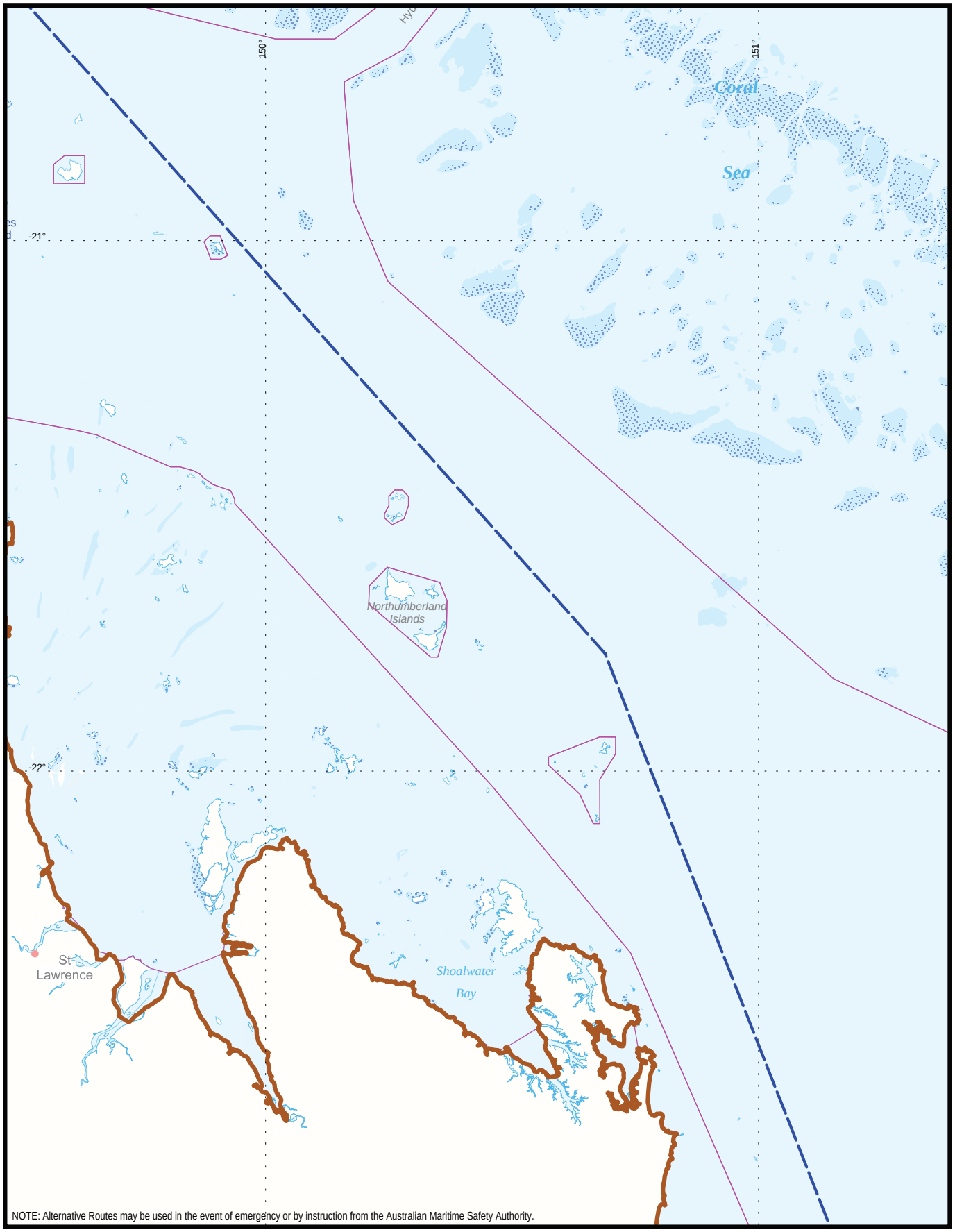
Fig. 13-1f: Shipping in Great Barrier Reef National Heritage Place (Mackay)

N

20 0 20 Km

Datum/Projection: GDA94, Lat/Long

Date: 29/08/2012



Rio Tinto Alcan

- City / Town
- River
- Reef Flat
- Indicative Reef Boundary
- Great Barrier Reef National Heritage Place
- Designated Shipping Area
- Bauxite Shipping Route

South of Embley Project

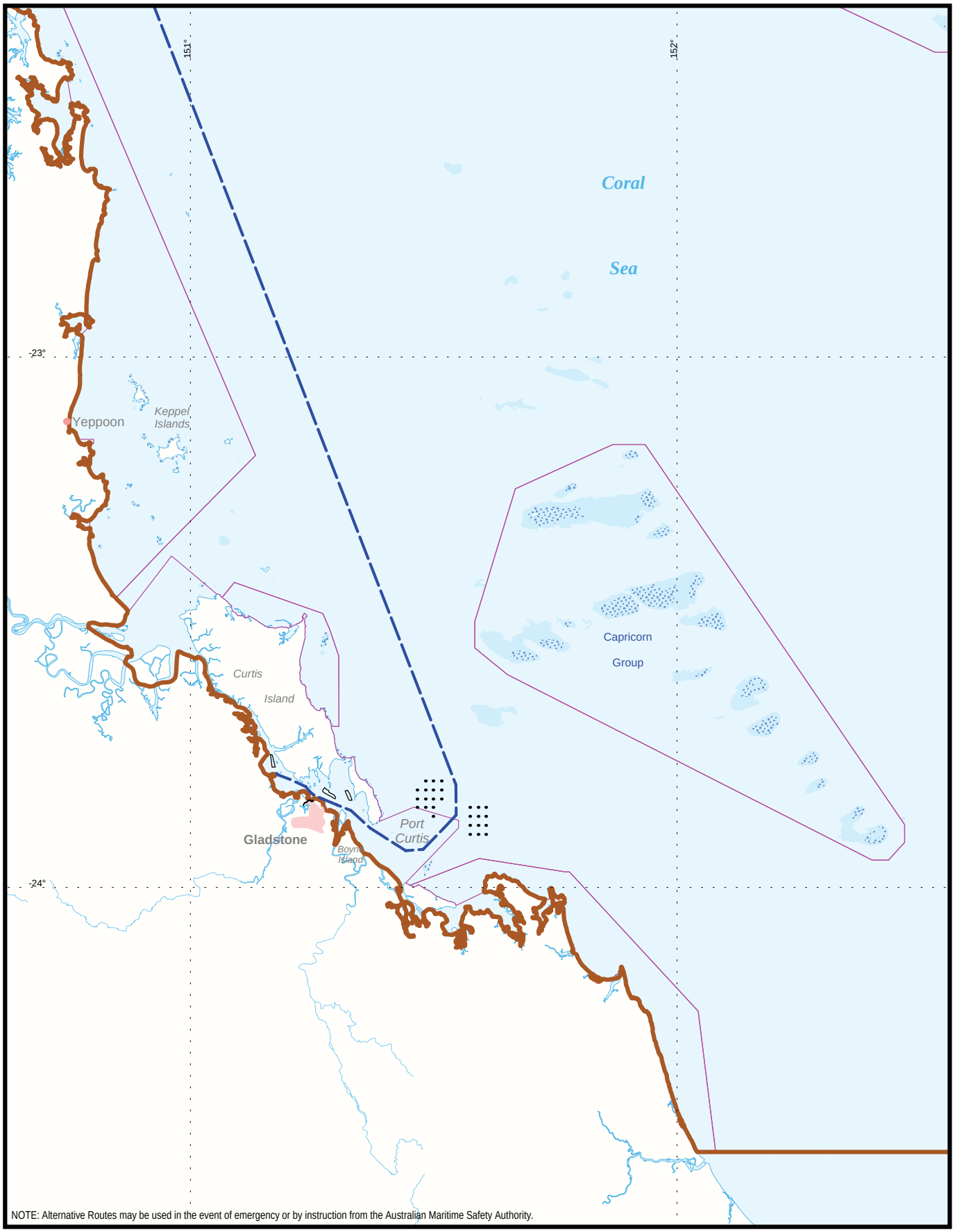
Fig. 13-1g: Shipping in Great Barrier Reef National Heritage Place (Shoalwater Bay)

N

20 0 20 Km

Datum/Projection: GDA94, Lat/Long

Date: 29/08/2012



Rio Tinto Alcan

City / Town
River
Reef Flat
Indicative Reef Boundary
Great Barrier Reef National Heritage Place
Designated Shipping Area
Bauxite Shipping Route
Large Vessel Anchorage
Small Vessel Anchorage

South of Embley Project

Fig. 13-1h: Shipping in Great Barrier Reef National Heritage Place (Gladstone)

N

20 0 20 Km

Datum/Projection: GDA94, Lat/Long

Date: 29/08/2012

13.1.2 General Approach to Impact Assessment

The mine, Port and associated infrastructure areas are located approximately 370km from the GBRNHP (by line of shipping route). Due to this distance the only potential impacts on the GBRNHP from the Project are considered to be those associated with domestic shipping activities. Therefore the assessment of potential impacts on the values of the GBRNHP (as outlined in **Section 13.2**) is based on the Project's domestic shipping activities. A description of Project-related shipping activities associated with the GBRNHP is provided in **Section 13.3**.

A detailed discussion of the potential impacts associated with Project-related shipping activities is provided in **Section 4.5.3**. Potential cumulative and consequential impacts on the GBRNHP are discussed in **Section 18.4**.

For the purposes of this assessment, the magnitude of potential impacts on the values of the GBRNHP is rated as either:

- None/negligible – unlikely to affect the values of the GBRNHP.
- Minor impact – an isolated aspect or area of the values of the GBRNHP may be affected directly or indirectly at a local scale.
- Moderate impact – a number of aspects or areas of the values of the GBRNHP may be affected directly or indirectly at a regional scale.
- High impact – the impact would threaten or permanently effect the values of the GBRNHP at a reef-wide scale.

High and moderate residual impacts are considered to be significant, and none/negligible and minor residual impacts are not considered to be significant.

13.2 Values

13.2.1 National Heritage Criteria

The GBRNHP is recognised for five of the National Heritage List criteria (DSEWPaC 2012d). These criteria are:

a) Processes - the place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history;
b) Rarity - the place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history;
c) Research - the place has outstanding heritage value to the nation because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history;
d) Principal characteristics of a class of place - the place has outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of:
    i. a class of Australia's natural or cultural places; or,
    ii. a class of Australia's natural or cultural environments; and,
e) Aesthetic characteristics - the place has outstanding heritage value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group.

These five National Heritage criteria each correspond to one or more of the four World Heritage List criteria associated with the GBR. These four World Heritage criteria include (DSEWPaC 2012d):

1. World Heritage Criteria VII - Contain unique, rare and superlative natural phenomena, formations and features and areas of exceptional natural beauty.
2. World Heritage Criteria VIII - Outstanding example representing the major stage of the earth's evolutionary history.
3. World Heritage Criteria IX - Outstanding example representing significant ongoing geological processes, biological evolution and man's interaction with his natural environment.
4. World Heritage Criteria X - Provide habitats where populations of rare or endangered species of plants and animals still survive.

The five National Heritage List criteria have been cross-referenced with the corresponding World Heritage criteria in **Table 13-1**.

Table 13-1 National Heritage Criteria and Corresponding World Heritage Criteria

National Heritage Criteria	Corresponding World Heritage Criteria
A – Processes	VII, VIII, IX, X
B – Rarity	X
C – Research	VIII, IX, X
D – Principal characteristics of a class of places	VIII, IX, X
E – Aesthetic characteristics	VII

13.2.2 Assessable Criteria

The *Matters of National Environmental Significance, Significant Impact Guidelines 1.1* (DEWHA 2009c) outlines the following criteria to assess whether an action is likely to have a significant impact on the World Heritage values of a declared National Heritage place if there is a real chance or possibility that the action would result in:

- one or more of the National Heritage values to be lost;
- one or more of the National Heritage values to be degraded or damaged; or,
- one or more of the National Heritage values to be notably altered, modified, obscured, or diminished.

These criteria are a useful reference point for the assessment of "relevant impacts" of the Project activities on the GBRNHP. For the purposes of this assessment, the values for the GBRNHP are those outlined in **Section 13.2.1**.

13.3 Project-related Shipping Activities in the GBRNHP

The only potential impacts on the GBRNHP from the Project are considered to be those associated with domestic shipping activities, given the large distance from the Project area as described in **Section 13.1.2**. Export shipping activities would not enter the GBRNHP and therefore are not further assessed. A detailed description of all Project-related shipping activities is provided in **Section 3.9**.

The potential impacts from Project-related shipping on the GBRNHP would be the same as those assessed for the GBRWHA in **Section 12.4**. For completeness **Section 13.3.1** and **Section 13.3.2** provide details on Project-related bauxite and cargo shipping respectively as they relate to the GBRNHP.

13.3.1 Bauxite Shipping

Bauxite has been transported by bulk carrier from the Port of Weipa along the same shipping route to the Port of Gladstone for over 40 years. In 2015, prior to the commencement of shipments from the proposed Port, it is predicted that there would be approximately 430 bauxite shipments per annum from the Port of Weipa depending on international market demand and vessel size. Of these, on average 270 shipments per annum would be sailing from the Port of Weipa to the Port of Gladstone (i.e. 540 bauxite ship movements through the GBRNHP per annum), with the remaining shipments likely to be to international ports (refer **Section 3.9.2.2**).

Bulk carriers from the Port of Weipa currently traverse the GBRNHP from Cape York in the north to the Port of Gladstone in the south and follow the inner GBR Designated Shipping Area as illustrated in **Figure 13-1**. Alternative routes may be used in the event of emergency or by instruction from AMSA.

All bulk carriers travelling between the Port of Weipa and the Port of Gladstone are Panamax or DPPV, as larger ships cannot navigate the Torres Strait. The Port of Gladstone is managed by the Gladstone Ports Corporation and provides for supervision of ships within the port limits, including scheduling, anchorage, pilotage and towage services as well as bunkering and sewage waste disposal.

Bauxite is unloaded within the Port of Gladstone using existing ship unloading infrastructure at Fisherman's Landing, servicing the Rio Tinto Alcan Yarwun alumina refinery, and South Trees Wharf, servicing the Queensland Alumina Limited alumina refinery.

Under the maximum production scenario (50Mdptpa), up to 700 ships per annum are predicted to be loaded at the proposed Port and approximately 400 of these would be bound for export markets, not passing through the GBRNHP. The remaining balance of a predicted average of 300 shipments per year (600 ship movements) is required to supply bauxite to the above-mentioned existing alumina refineries in Gladstone. The shipments through the GBRNHP following commencement of Project bauxite production would continue to be the shipments required to meet the needs of the existing Gladstone refineries and would use the same inner GBR Designated Shipping Area as is used at present. The maximum production scenario (50Mdptpa) would require a potential increase of 30 shipments per annum on average through the GBRNHP (60 bauxite ship movements per annum), which includes possible fluctuations in the future of shipment numbers due to variation in bauxite grade quality and in alumina production at the Gladstone refineries, within the scope of the existing approvals for the refineries.

All bauxite shipping is regarded as ships under the GBRMP Regulations (refer **Section 11.2.1**).

13.3.2 Cargo Shipping

13.3.2.1 Construction Phase

Construction shipping requirements are outlined in **Section 3.9.1.1**. It is currently estimated that 1,000,000 Revenue Tons of cargo would be required for construction. Of this, approximately 580,000 Revenue Tons of cargo would originate from domestic ports (most likely the Port of Cairns) to the port of Weipa, with the remaining volume originating from international ports (predominantly in Asia). Construction shipping would be provided to the proponent by third parties.

Cargo deliveries required for construction would result in an annual average of 43 additional barge deliveries between Cairns and the Port of Weipa per year during the 30-36 month construction period. The Cairns to Weipa barge service traverses the GBRNHP from the Port of Cairns in the south to Cape York in the north and follows the inner GBR Designated Shipping Area. The barge is owned and operated by a third party.

An estimated 30 international chartered ship voyages (on average 11 per annum) are currently planned to offload at the Port of Weipa or direct to the Boyd Port area during the construction period. These would originate from the Asia Pacific region, and would not transit the GBR area. The balance of international freight would be shipped as containers and/or break bulk to major domestic ports utilising the existing services, and have not been treated as additional ocean traffic. There are no Project chartered shipments planned to arrive at the Port of Cairns at this stage.

The Cairns to Weipa barges are typically greater than 50m and are therefore regulated under the GBRMP Regulations. For the purposes of this assessment, it is assumed that all construction related cargo movements required for the Project would be greater than 50m and regarded as ships under the GBRMP Regulations.

Fuel supplies are likely to continue from the Port of Darwin and would not travel through the GBR; however, the source may change in future to another port depending upon arrangements managed by the supplier. The Port of Cairns is located at 16º55.5'S latitude and 145º47'E and operated by the CPA. Sea transport out of the Port of Cairns is used to provide vital supplies to the coastal communities north of Cairns as well as the Torres Strait Islands and the Gulf of Carpentaria, particularly during the wet season. The CPA provides services such as bunkering and sewage waste disposal.

13.3.2.2 Operations

Section 3.9.1.2 and **Table 3-10** provides a summary of the deliveries of fuel, cargo and equipment that is estimated to be required during operations. Up to 26 cargo barge shipments per annum are estimated to be required at maximum production plus an estimated additional 20 shipments a year to provide for the predicted associated population increase, in addition to the approximately 52 barge cargo shipments per annum of existing deliveries.

The Cairns to Weipa barges are typically greater than 50m and are therefore regulated under the GBRMP Regulations. For the purposes of this assessment, it is assumed that all operational related cargo movements required for the Project would be greater than 50m and regarded as ships under the GBRMP Regulations.

The cargo barge movements are all conservatively assumed to originate from the Port of Cairns and would traverse the same route as the Cairns to Weipa barge service described in **Section 13.3.2.1**.

Cargo shipments during operations would be provided to the proponent by third parties.

13.3.3 Existing Shipping Activity

13.3.3.1 Inner GBR Designated Shipping Area

Approximately 9,700 ship movements from major GBR ports were reported to utilise the GBR shipping channels, with some 65-75% of these ship movements utilising the inner GBR Designated Shipping Area as at 2007 (GBRMPA 2009b). This equates to approximately 6,305 to 7,275 existing ship movements per annum in the inner GBR Designated Shipping Area. For the purposes of this assessment, the existing 2007 shipping levels utilising the inner GBR Designated Shipping Area is conservatively assumed at 6,305 movements per annum. The assumption is conservative in that the increment due to the Project is proportionally higher when the lower estimate for existing shipping is adopted.

Based on EPBC Act referral applications to DSEWPaC for the Abbot Point, Hay Point, Gladstone and Townsville ports (Multiple Cargo Facility excluded), the *Ports and Shipping Information Sheet* (GBRMPA 2012b) provides a predicted shipping number of 11,119 shipments from these four ports through the GBR at 2020. For the purposes of this assessment, it is assumed that each of these vessels are regarded as ships under the GBRMP Regulations, each ship visits only one port adjacent to the GBR, each shipment results in two movements and 65% of ship movements utilise the inner GBR Designated Shipping Area (GBRMPA 2009b). Therefore, it is estimated that 14,455 ship movements per annum would utilise the inner GBR Designated Shipping Area at 2020, based on the above-mentioned assumptions.

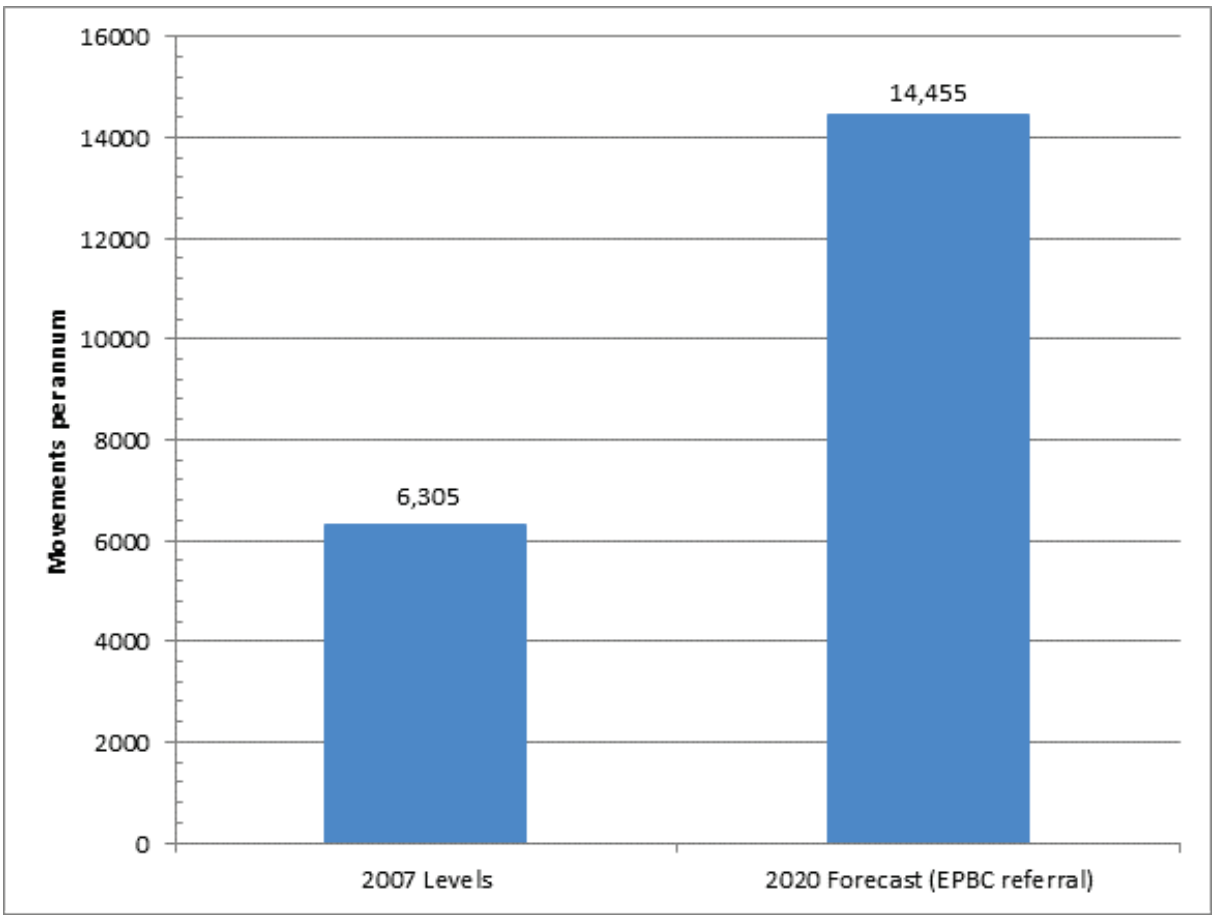
The 2007 and predicted shipping levels through the GBRNHP are illustrated in **Figure 13-2**. Based on this projection, the average annual growth from 2007 to 2020 would be 6.6%. Another recent projection by PGM Environment (2012) for the *Abbot Point Cumulative Impact Assessment* (Eco Logical and Open Lines 2012) estimated a combined annual growth rate of approximately 4.8% between 2012 and 2032 for all vessels calling at GBR ports.

13.3.3.2 Port of Gladstone and Port of Cairns

MSQ reports some 3,000 vessel movements per annum (1,500 round trips per annum) utilising the Port of Gladstone (MSQ 2012).

The CPA reports some 30,000 vessel movements (of unspecified size) per annum in the Port of Cairns (CPA 2012).

Figure 13-2 Inner GBR Designated Shipping Area - Shipping Movements Per Annum



13.3.4 Additional Shipping Activity in the Inner GBR Designated Shipping Area

13.3.4.1 Construction Phase

A summary of the predicted average annual shipping movements through the GBRNHP required during the construction phase of the Project is provided in **Table 13-2**.

Table 13-2 Summary of Project Predicted Average Annual Shipping Movements on East Coast Queensland – Construction Phase

Ship Movements	Other Shipping		Bauxite	Total
	Cargo Barge	Fuel*		
Existing – before Project	208	0	540	748
Additional – Construction Related Shipping	86	0	0	86
Total	294	0	540	834

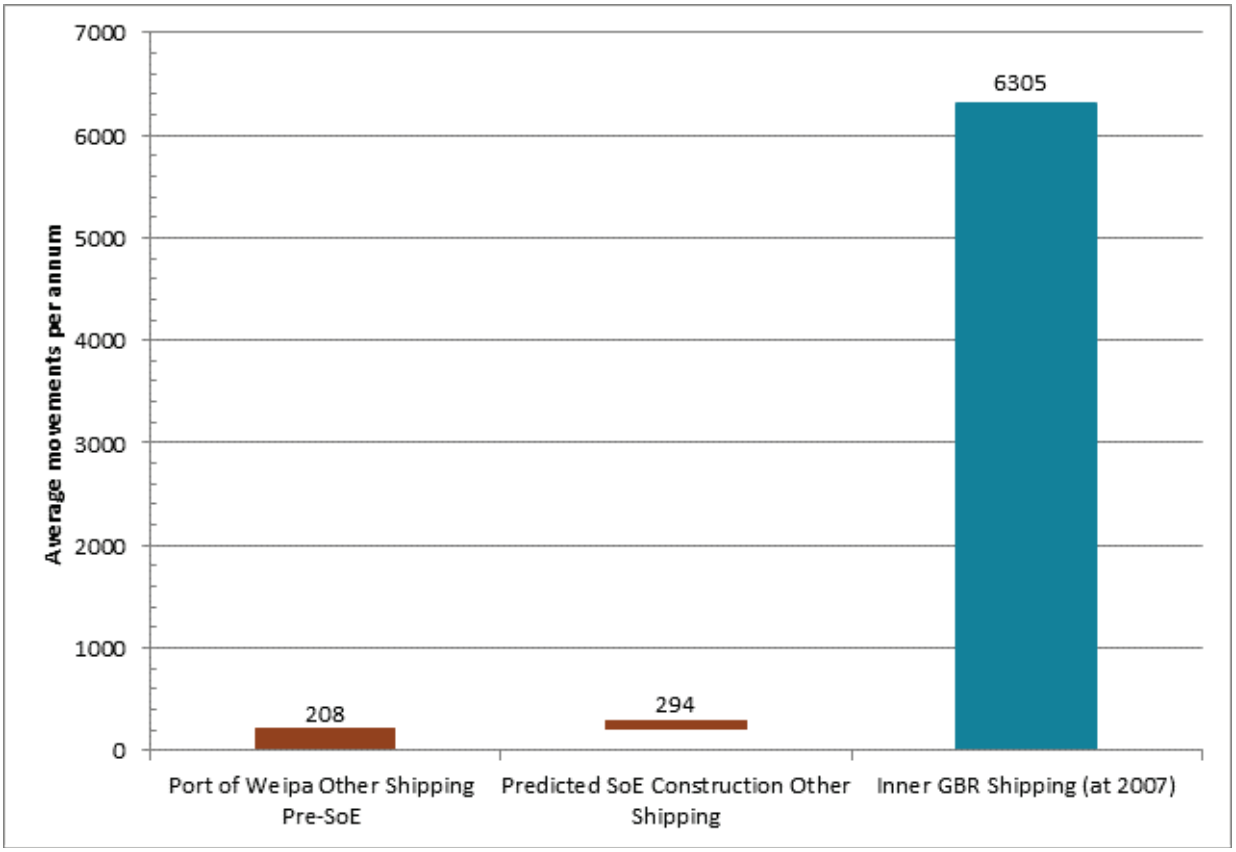
*Existing fuel deliveries are from Darwin and do not travel through the GBR, it is assumed that the contractor continues to source fuel from Darwin.

Note: Actual ship movements would depend on market conditions and size of ships.

Predicted cargo shipping movements associated with the Project during the construction phase compared to 2007 shipping levels in the inner GBR Designated Shipping Area are illustrated in **Figure 13-3**. The predicted additional construction-related shipping (an annual average of 86 additional cargo shipping movements per annum during construction) equates to approximately 1.4% of 2007 shipping levels in the inner GBR Designated Shipping Area.

Conservatively assuming all of the construction-related shipping originated from the Port of Cairns, the predicted additional construction shipping would represent approximately 0.3% of the CPA vessel movement figures in the Port of Cairns as at 2012.

Figure 13-3 Construction Phase Shipping Movements in the Inner GBR Designated Shipping Area Compared to 2007 Levels



13.3.4.2 Operations

A summary of the predicted average annual shipping movements through the GBRNHP required during the operational phase of the Project is provided in **Table 13-3**.

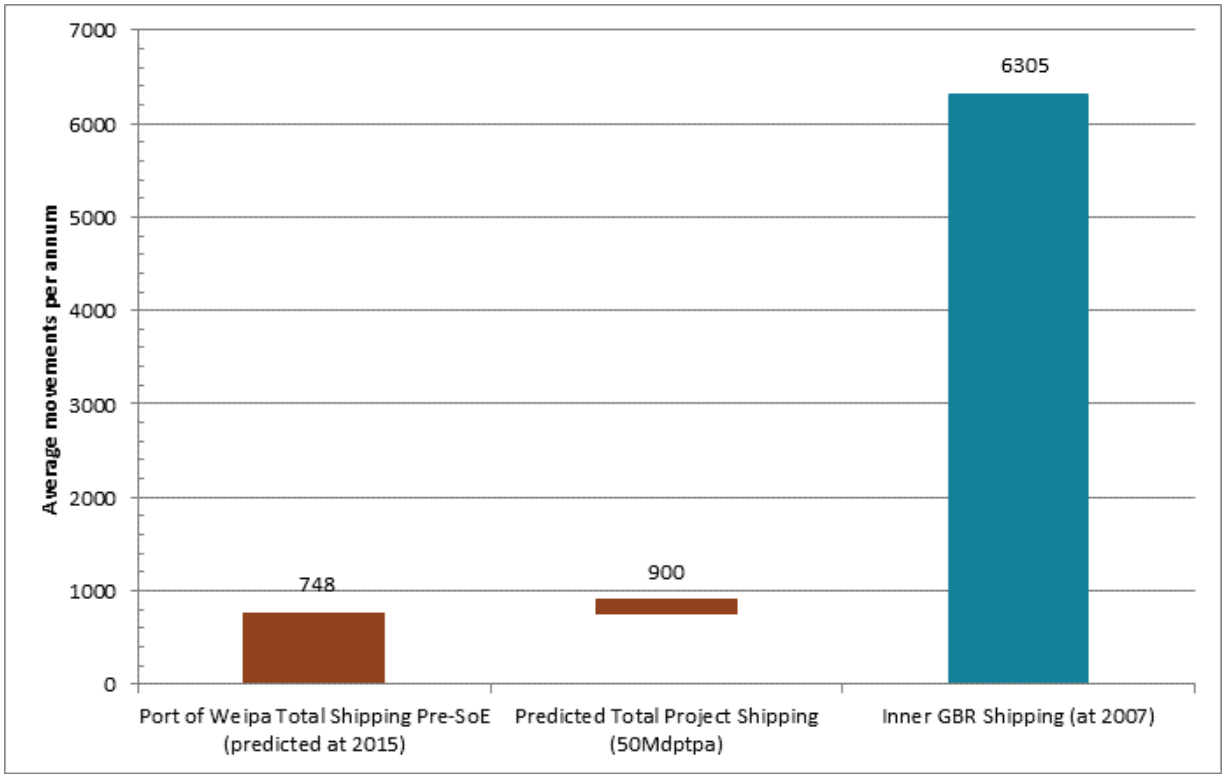
Table 13-3 Summary of Project Predicted Average Annual Shipping Movements on East Coast Queensland – Operations

Ship Movements	Other Shipping		Bauxite	Total
	Cargo Barge	Fuel*		
Existing – before Project	208	0	540	748
Additional – Project Maximum Production	92	0	60	152
Total	300	0	600	900

* Existing fuel deliveries are from Darwin and do not travel through the GBR, it is assumed that the contractor continues to source fuel from Darwin.
Note: Actual ship movements would depend on market conditions and size of ships.

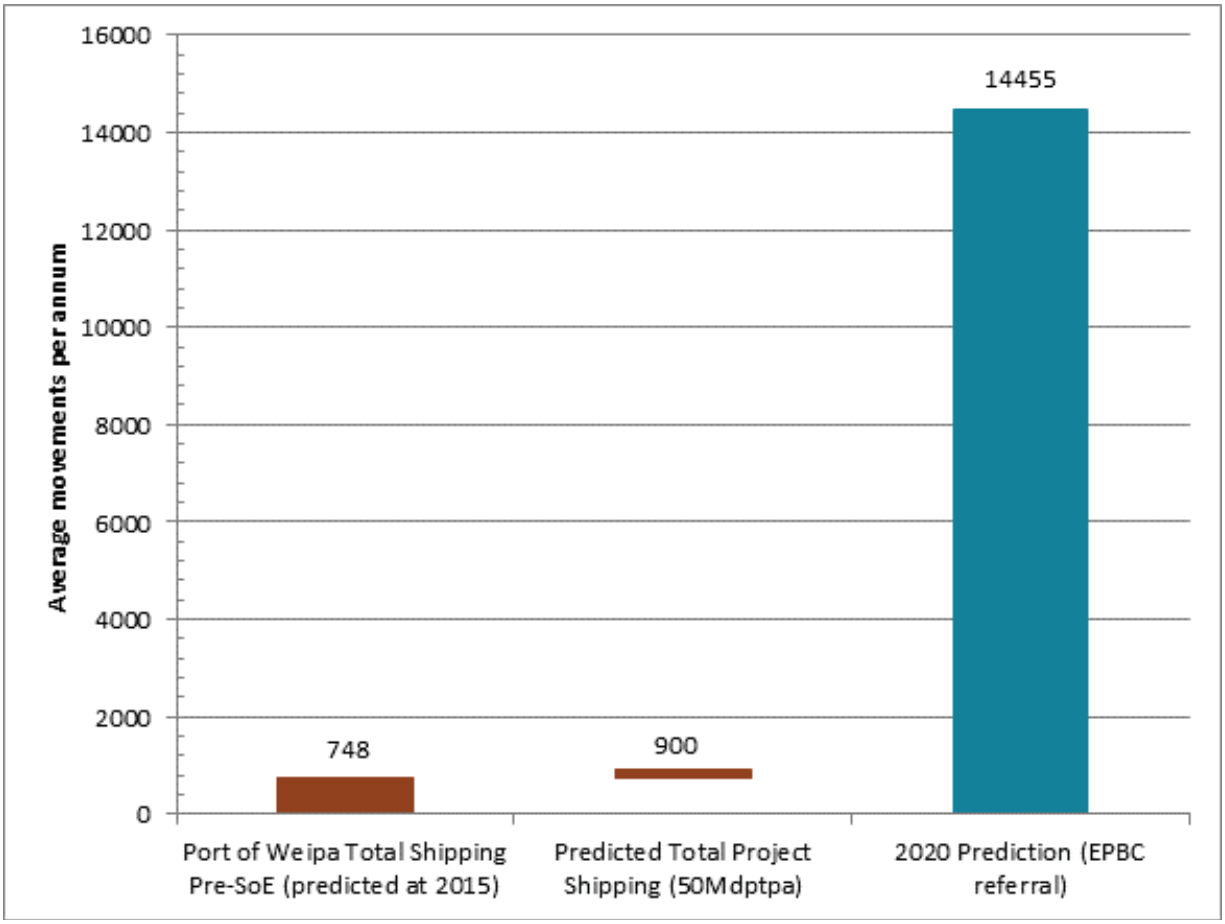
Predicted operational bauxite and cargo shipping movements associated with the Project compared to 2007 shipping levels in the inner GBR Designated Shipping Area are illustrated in **Figure 13-4**. The predicted additional operational shipping (152 movements per annum) equates to approximately 2.4% of 2007 shipping levels in the inner GBR Designated Shipping Area. The predicted additional bauxite shipping (60 movements per annum) equates to approximately 1.0% of 2007 shipping levels in the inner GBR Designated Shipping Area.

Figure 13-4 Total Operational Shipping Movements in the Inner GBR Designated Shipping Compared to 2007 Levels



Predicted operational bauxite and cargo shipping movements associated with the Project compared to predicted shipping numbers at 2020 (GBRMPA 2012b) in the inner GBR Designated Shipping Area are illustrated in **Figure 13-5**. The predicted additional operational bauxite and cargo shipping (152 movements per annum) equates to approximately 1.0% of estimated 14,455 ship movements in the inner GBR Designated Shipping Area. The predicted additional bauxite shipping would represent approximately 0.4% of estimated shipping movements in the inner GBR at 2020. The Project's total predicted ship movements (bauxite and cargo) of 900 would represent 6.2% of the estimated 2020 ship movements through the inner GBR Designated Shipping Area.

Figure 13-5 Total Operational Shipping Movements Compared to Long Term Forecast



Conservatively assuming all of the cargo barges originated from the Port of Cairns (92 movements per annum), the predicted additional operational shipping would represent approximately 0.3% of the CPA vessel movement figures in the Port of Cairns as at 2012.

The predicted additional bauxite ship movements (60 movements per annum) are all destined for the Port of Gladstone. The predicted additional operations shipping would represent approximately 2% of the MSQ vessel movement figures in the Port of Gladstone as at 2012.

13.4 Potential Impacts

The following subsections provide an assessment of the predicted Project-related bauxite ship and cargo barge movements against the values of the GBRNHP identified in **Section 13.2.1**, in order of the values against the GBRNHP's attributes. The *Significant Impact Guidelines* for the GBRNHP (refer **Section 13.2.3**) have been used as a reference point for framing this assessment although the assessment has not been limited to the criteria specified in the Guidelines.

An environmental management plan outline for the GBRMP, GBRWHA and GBRNHP which summarises safeguards, avoidance and measures is provided in **Appendix 11-A**.

13.4.1 National Heritage Criteria A – Process: Natural Phenomena, Formations, Features and Exceptional Beauty

This National Heritage place criteria corresponds with World Heritage criteria VII, VIII, IX and X (refer **Table 13-1**). An assessment of potential impacts from Project-related shipping on World Heritage criteria VII, VIII, IX, X was undertaken in, **Section 12.4.1**, **Section 12.4.2**, **Section 12.4.3** and **Section 12.4.4** respectively. The same assessment would apply to the GBRNHP and concluded that the potential unmitigated impacts associated with the small potential increase in Project-related bauxite ship and cargo barge movements at maximum production on World Heritage criteria VII, VIII, IX and X would be negligible and long term.

Although no specific safeguards, avoidance and mitigation measures are required as the unmitigated impact of Project-related shipping activities has been assessed as negligible, there are a number of measures that are used for existing Weipa bauxite and cargo shipping activities that would continue to be used for Project-related shipping. These include:

- using the existing shipping route which traverses the inner GBR Designated Shipping Area;
- for vessels over 70m in length, using a pilot when transiting through the inner GBR Designated Shipping Area to the north of Cairns and the compulsory pilotage areas of the Torres Strait. All ships would have a minimum of one local pilot on board through the Port of Gladstone, with pilotage commencing at the Fairway Buoy. Compulsory pilotage is estimated to reduce the risk of a shipping incident by a factor of 30.3 (DNV 2011);
- fatigue management guidelines to ensure the crew remains alert (bauxite shipping);
- using a real-time GPS referred to as the AIS for vessels over 50m. The ReefVTS compiles timely and accurate traffic imaging of shipping throughout the region and generates ship encounter predictions, which are disseminated to ships;
- maintaining a modern fleet of bauxite ships in a good state of repair and subject to regular inspections to minimise the risk of a ship being disabled;
- project vessels, including on board machinery and equipment, would be maintained to a high standard and any source of excessive underwater noise would be investigated and remedied;
- the use of two tugs at all times during berthing operations;
- in the unlikely event of an incident that lead to an oil spill, the oil spill would be responded to in accordance with the Australian National Oil Spill Contingency Plan and ReefPlan, including the removal of visible oiling from beaches;
- all bauxite shipping would manage ballast water through a Ballast Water Management Plan which would comply with Australian mandatory requirements (the *Australian Ballast Water Management Requirements* (DAFF 2011a)), and the *International Convention for the Control and Management of Ships Ballast Water and Sediments* (IMO 2004);

- the majority of ships travelling through Torres Strait and the GBRNHP to Gladstone/from Cairns travel would only on domestic routes, and would not be collecting ballast water outside Australia or being exposed to foreign species that may foul the ship hull;
- under amendments to the *Quarantine Act 1908* in 2001, ships are required to release 95% of ballast water outside the Australian territorial sea, as far as possible from land and in water exceeding 200m depth, where possible;
- discharge of ballast water (and sediment in ballast tanks) is prohibited by AQIS where it has been derived from ports or coastal waters outside Australian territorial waters;
- for RTA owned bauxite ships, anti-fouling coating systems would be applied to exposed surfaces, biofouling resistant materials for piping and unpainted components and marine growth prevention systems for sea chests and internal seawater cooling systems;
- for RTA owned bauxite ships, a relatively new shipping fleet would be maintained with hull inspections and surveys, hull cleaning and renewal of antifouling coating systems every 2½ years as part of class requirements (all hull cleaning and dry-docking would be undertaken overseas);
- once a bauxite vessel is at berth it would be loaded/unloaded without delay except for unplanned events ; and,
- the bauxite shipping schedule would be managed as best as possible to minimise queuing and delay at anchor.

13.4.2 National Heritage Criteria B – Rarity: Uncommon, Rare or Endangered Aspects of Australia's Natural or Cultural History

This National Heritage place criteria corresponds with World Heritage Criteria X (refer **Table 13-1**). An assessment of potential impacts from Project-related shipping on World Heritage Criteria X was undertaken in **Section 12.4.4**. The same assessment would apply to the GBRNHP and concluded that the potential unmitigated impacts associated with the small potential increase in Project-related bauxite ship and cargo barge movements at maximum production on World Heritage Criteria X would be negligible and long term.

Although no specific safeguards, avoidance and mitigation measures are required as the unmitigated impact of predicted Project-related bauxite ship and cargo barge movements has been assessed as negligible, there are a number of measures that are used for existing Weipa bauxite and cargo shipping activities that would continue to be used for Project-related bauxite and cargo shipping as outlined in **Section 13.4.1**.

13.4.3 National Heritage Criteria C – Research: Yield Information to Contribute to an Understanding of Australia's Natural or Cultural History

This National Heritage place criteria corresponds with World Heritage Criteria VIII, IX, X (refer **Table 13-1**). An assessment of potential impacts from Project-related shipping on World Heritage Criteria VIII, IX, X was undertaken in **Section 12.4.1**, **Section 12.4.2** and **Section 12.4.4** respectively. The same assessment would apply to the GBRNHP and concluded that the potential unmitigated impacts associated with the small potential increase in Project-related bauxite ship and cargo barge movements at maximum production on World Heritage Criteria VIII, IX, X would be negligible and long term.

Although no specific safeguards, avoidance and mitigation measures are required as the unmitigated impact of predicted Project-related shipping activities has been assessed as negligible, there are a number of measures that are used for existing Weipa bauxite and cargo shipping activities that would continue to be used for Project-related bauxite ship and cargo barge movements as outlined in **Section 13.4.1**.

It should be noted that in June 2012, RTA announced an A$1M project with CSIRO and the Great Barrier Reef Foundation called Future Reef MAP. Future Reef MAP involves the deployment of an ocean sensor system on an existing Rio Tinto vessel that travels between the Port of Weipa and Port of Gladstone. The vessel, the RTM Wakmatha; will regularly collect samples and record data that will assist in understanding the impacts of climate change on the GBR.

The data will be collected from along the entire length of the GBR, which means for the first time detailed information about ocean chemistry will be gathered from widely varying habitats. This will provide Reef authorities and researchers with new insights to assist management of the Reef.

13.4.4 National Heritage Criteria D – Characteristics: Principal Characteristics of Natural or Cultural Places or Environments

This National Heritage place criteria corresponds with World Heritage Criteria VIII, IX, X (refer **Table 13-1**). An assessment of potential impacts from Project-related shipping on World Heritage Criteria VIII, IX, X was undertaken in **Section 12.4.1**, **Section 12.4.2** and **Section 12.4.4** respectively. The same assessment would apply to the GBRNHP and concluded that the potential unmitigated impacts associated with the small potential increase in Project-related bauxite ship and cargo barge movements at maximum production on World Heritage Criteria VIII, IX, X would be negligible and long term.

Although no specific safeguards, avoidance and mitigation measures are required as the unmitigated impact of predicted Project-related shipping activities has been assessed as negligible, there are a number of measures that are used for existing Weipa bauxite and cargo shipping activities that would continue to be used for Project-related bauxite and cargo shipping as outlined in **Section 13.4.1**.

13.4.5 National Heritage Criteria E – Aesthetics: Exhibiting Particular Aesthetics Valued by Community or Cultural Group

This National Heritage place criteria corresponds with World Heritage Criteria VII (refer **Table 13-1**). An assessment of potential impacts from Project-related shipping on World Heritage Criteria VII was undertaken in **Section 12.4.3**. The same assessment would apply to the GBRNHP and concluded that the potential unmitigated impacts associated with the small potential increase in Project-related bauxite ship and cargo barge movements at maximum production on World Heritage Criteria VII would be negligible and long term.

Although no specific safeguards, avoidance and mitigation measures are required as the unmitigated impact of predicted Project-related shipping activities has been assessed as negligible, there are a number of measures that are used for existing Weipa bauxite and cargo shipping activities that would continue to be used for Project-related bauxite and cargo shipping as outlined in **Section 13.4.1**.

13.5 Offset Measures

Under the *EPBC Act Environmental Offsets Policy* (DSEWPaC 2012b), offsets are not required where the residual impact is not likely to be significant (when assessed against the *Matters of National Environmental Significance: Significant Impact Guidelines 1.1* (DEWHA 2009c).

Section 13.4 of this report documents the results of the impact assessment process and concludes that the unmitigated impacts associated with Project-related shipping activities on the GBRNHP would be negligible. The residual impacts with mitigation would remain the same and therefore not significant. As such, offsets relating to the GBRNHP are not required under the Commonwealth offsets policy.

13.6 Conclusion and Summary of Residual Impacts

Project-related shipping would continue to traverse the GBRNHP via the same route through the inner GBR Designated Shipping Area as existing Weipa bauxite and cargo shipping. The small proportion of total Project-related shipping movements, particularly taking into consideration the small potential increase in bauxite ship and cargo barge movements associated with the Project at maximum production, in the GBRNHP relative to existing and forecast levels is assessed as having a negligible impact on the GBRNHP. Given this, short and long term impacts do not require further consideration and no offsets are required. While no safeguards, avoidance or mitigation measures are specifically required, there are a number of control measures used by existing shipping activities that would continue to be used for the Project.