FLANAGAN CONSULTING GROUP
Trusted Advisor to Northern Australia

Ports North

CAIRNS SHIPPING DEVELOPMENT PROJECT

Revised Draft Environmental Impact Statement

Supplementary Report

Appendix J: Ports North Proposed Stated Conditions

Proposed Stated Conditions – Cairns Shipping Development Project

Environmental Authority

This Schedule includes the Coordinator-General's stated conditions for an environmental authority for Environmentally Relevant Activity 16(1)(d) (dredging) under the *Environmental Protection Act 1994*, stated under section 47C of the *State Development and Public Works Organisation Act 1971*.

This schedule applies to the extent that the environmental authority application seeks to undertake (all or part of) the activities described in this report.

General conditions

G1. **Activities** conducted under the environmental authority must be conducted in accordance with the following limitations:

a) **dredging** is limited to **capital dredging** for the purposes of the expansion of the Port of Cairns through dredging of the Shipping Channel, Swing Basins and Wharf Berths;

b) **dredging** may only occur to the extent practically achievable and necessary to achieve the increased channel widths and depths shown in Figure A3-2 'Proposed Upgraded Channel and Swing Basins' and concept design specifications as set out in Table A3-1 'Comparison of Existing an Concept Design Specifications' *(Note: The coordinates of the channel, swing basin and berths are to be provided to the* ***administering authority*** *prior to an environmental authority application);*

c) a total maximum of 1 000 000 m^3 of **dredge material** consisting of up to 900 000m^3 of soft clays to be removed by a Trailer Suction Hopper Dredge (TSHD) and up to 100 000m^3 of stiff clays to be removed by a Back–Hoe Dredge (BHD) may be removed.

d) **dredging** by the TSHD may only be undertaken between the first day of March and the last day of September of any given year;

e) all **dredged material** must be placed at the following DMPA locations:

i. Placement of soft clay dredge material at the Barron Delta **DMPA** located on Lot 2 on RP712954 and Lot 5 on SP245573

ii. Placement of stiff clay dredge material at the Tingira St **DMPA** established on Port Land (Lot 27 on SP 218291) located at Tingira St, Portsmith

f) Soft clay dredge material must be transported to the Barron Delta DMPA via the mooring and pipeline corridor shown in Figure A3-3 'Barron Delta DMPA Dredge Material Delivery and Tailwater Discharge Pipeline Location Plan'.

G2. All reasonable and practicable **measures** must be taken to minimise the likelihood of environmental harm being caused.

G3. Any breach of a condition of this environmental authority must be reported to the **administering authority** as soon as practicable within 24 hours of **you** becoming aware of the breach. **Records** must be kept including full details of the breach and any subsequent actions undertaken.

G4. Other than as permitted by this environmental authority, the **release of a contaminant into the environment** must not occur.

G5. Environmental monitoring results must be kept until surrender of this environmental authority. All other information and **records** that are required by the conditions of this environmental authority must be kept for a minimum of five (5) years. All information and **records** required by the conditions of this environmental authority must be provided to the **administering authority,** or **nominated delegate** upon request, within the required timeframe and in the specified format.

G6. An **appropriately qualified person(s)** must monitor, record and interpret all indicators that are required to be monitored by this environmental authority and in the manner specified by this environmental authority and the **Dredge Management Plan**.

G7. All analyses required under this environmental authority must be carried out by a laboratory that has **NATA** certification, or an equivalent certification, for such analyses. Exceptions to this condition are *in situ* monitoring and any analyses for which such certification is not available.

G8. When required by the **administering authority**, monitoring must be undertaken in the manner prescribed by the **administering authority**, to investigate a report of **environmental nuisance** arising from the **activity**. The monitoring results must be provided to the **administering authority**, or **nominated delegate**, within the required timeframe and in the specified format upon request.

G9. The **dredging** and **dredged material** placement **activity** must be undertaken in accordance with written procedures that:

a) identify potential risks to the environment from the **activity** during routine operations, closure and an emergency;

b) establish and maintain control **measures** that minimise the potential for environmental harm;

c) ensure plant, equipment and **measures** are maintained in a proper and effective condition;

d) ensure plant, equipment and **measures** are operated in a proper and effective manner;

e) ensure that staff are trained and aware of their obligations under the *Environmental Protection Act 1994*;

f) ensure that reviews of environmental **performance** are undertaken at least annually.

G10. The **dredging activity** must not commence unless the disposal or placement of the **dredged material** has been fully authorised under all relevant authorities, licences or other permits issued by the Commonwealth and Queensland governments.

G11. Authorised **dredged material** placement must only take place within the locations and for the purposes set out in **Table G1 – Placement location and purpose of dredged material**.

Table G1. Placement location and purpose of dredged material

Location	**Purpose**
Placement of soft clay dredge material at the Barron Delta DMPA located on Lot 2 on RP712954 and Lot 5 on SP245573	Disposal of the material
Placement of stiff clay dredge material at the Tingira St DMPA established on Port Land (Lot 27 on SP 218291) located at Tingira St, Portsmith	Fill for future industrial and commercial use of the land

G12. Any containment structures at locations specified in condition **G11** must be certified by an **appropriately qualified person(s)** and maintained to the certified design.

G13. Prior to the commencement of works, submit[1] RPEQ certified plans prepared by a registered engineer for the following structures to palm@ehp.qld.gov.au or mail to:

Department of Environment and Heritage
Protection Permit and License Management
Implementation and Support
Unit GPO Box 2454
Brisbane QLD 4001

The relevant structures are those whose purpose includes:

- the containment of **dredge material**
- settlement and discharge of saline tail water

G14. Within two (2) months of completion of the placement **activity**, submit "as constructed drawings" for the relevant structures mentioned in **G13** to the administering authority to the address listed in **G13.**

G15. Dredged material must not be disposed of in **tidal water**.

G16. Dredged material must not be rehandled in tidal water, unless within the widths and depths of the **dredging G1(a & b)** and consistent with **G1 (d)**,

G17. Pump out operations by the TSHD must not occur outside of the indicative mooring area shown in Figure A3-3 'Barron Delta DMPA Dredge Material Delivery and Tailwater Discharge Pipeline Location Plan', and in the event of any spillage of **dredge material** during transfer, it is to be retained within the area shown in Figure A3-3, and removed by practicable means at cessation of the **activity.**

G18. Prior to the commencement of the **dredging activity**, a **Dredge Management Plan**[1] for the **activity** must be developed and implemented in consultation with the **Expert Advisory Panel** (refer the proposed Terms of Reference for the EAP)

G19. The **Expert Advisory Panel** membership must include independent experts in the fields of:

a) seagrass biology;

b) coral reef biology;

c) marine megafauna biology (turtles, dugongs and cetaceans);

d) coastal hydrodynamics and sediment transport;

e) water quality

G20. The **Expert Advisory Panel** membership must be submitted to the **administering authority** a minimum of 20 business days prior to its first meeting and, if necessary membership be amended in accordance with any comments made by the **administering authority**.

G21. The **Dredge Management Plan**[1] must meet or exceed the following content:

1. Clearly stated aims and objectives.
2. Description of all dredging operations including:
    a) type of equipment to be used in **dredging**;
    b) volume of material to be removed, and duration and timing of the **dredging** campaign;
    c) methods to be utilised for transporting **dredged material**;
    d) **dredged material** placement and disposal methods;
    e) **dredged material** placement and disposal location;
    f) standard operating procedures including impact-reduction procedures;
    g) management of noise generated by the **dredging**.
3. Maps or plans showing:
    a) legend, north arrow and scale;
    b) boundaries of dredging operation;
    c) estimated or modelled risk-based zones of influence and zones of impact of sediment plumes;
    d) location of the designated disposal site;
    e) location of sensitive receptors;
    f) all monitoring locations.
4. A detailed description of the **sediment plume-associated monitoring (SPAM)** program for both dredge types including:
    a) sampling regime and methods;
    b) sediment plume model validation;
    c) monitoring sites;

[1] Note: The **Dredge Management Plan** (based on the Appendix of the RD-EIS) is to be subject to review and amendment as required by changing regulations, monitoring results, commencement of a **new dredging activity**, or **Expert Advisory Panel** recommendations.

d) the assessment methodology for the monitoring data;

e) the assessment methodology used to develop **trigger values** that will define **alert levels** to achieve compliance with the limits and triggers in this authority**.**

5. Data handling and evaluation procedures that demonstrate how monitoring data will be tested against **alert levels**.
6. A detailed description of the **receiving environmental monitoring program (REMP)** for surface and ground water quality (in accordance with condition WT1), and sensitive receptor indicators including:
   a) the location of **concern sites** and **control sites** for monitoring purposes;
   b) sampling regime and methods;
   c) data handling and analytical procedures;
   d) the assessment methodology for the monitoring data that will include evaluation of:
      i. background water quality and **sensitive receptor** indicators at **control sites** and **concern sites**;
      ii. the results of monitoring at **concern sites** compared against limits and background indicators;
      iii. the suitability of limits and triggers in this authority and the management and mitigation measures within the **Dredge Management Plan** to protect **environmental values**
      iv. water quality monitoring for the tailwater receiving environment based on risk identified in Condition **WT3**.
7. Management actions to be initiated if alert levels are exceeded.
8. Details of the **Expert Advisory Panel** members and their respective roles.
9. Details of Review and Auditing to evaluate effectiveness of the **Dredge Management Plan** implementation.
10. Details of Reporting on the effectiveness of the **Dredge Management Plan** implementation.

G22. A copy of the **Dredge Management Plan** must be submitted to the **administering authority** at least 40 business days prior to the commencement of the **activity** and, if necessary, amended in accordance with any comments made by the **administering authority** within 10 business days of the comments being received.

G23. The **Dredge Management Plan** must not be implemented or amended in a way that contravenes or is inconsistent with any condition of this authority.

G24. Written notification of the commencement date must be provided to the **administering authority** at least five (5) business days prior to establishing a **new dredging activity.**

G25. Hydrographic surveys must be prepared by a registered surveyor of the dredge area and the immediate adjacent area likely to be affected by the dredging, prior to commencement of works, and within two (2) months of the completion of the hydrographic survey following the works being undertaken, and submitted to palm@ehp.qld.gov.au or mail to:

Department of Environment and Heritage Protection

Permit and License Management

Implementation and Support Unit

GPO Box 2454

Brisbane QLD 4001

G26. A report validating the hydrodynamic modelling of the dredge plume detailed in the report Cairns Shipping Development Project Revised Draft Environmental Impact Statement, Appendix AG – Hydrodynamic Modelling Report prepared by FCG and BMT WBM, dated June

2017, reference R.B22074.012.00.Modelling_Report.docx, must be submitted to the **Expert Advisory Panel** and the **administering authority**:

a) within two (2) months of the commencement of mechanical BHD **dredging**;

b) within two (2) months of the commencement of TSHD **dredging**.

Receiving Environmental Monitoring Program (REMP)

WT1. A receiving environment monitoring program (REMP) as set out in the **Dredge Management Plan** must be developed in consultation with the **Expert Advisory Panel** and be implemented by an **appropriately qualified person(s)**, to monitor the effects of the **activity** on surface water **environmental values** of Trinity Bay and Trinity Inlet during dredging, and surface water and groundwater **environmental values** of Barron River and associated tributaries (Richters and Thomatis Creeks) during and following placement of the dredge material at the Barron Delta DMPA.

WT2. A copy of the REMP must be submitted to the **administering authority** at least 20 business days prior to the commencement of the **activity** and, if necessary, amended in accordance with any comments made by the **administering authority.**

Surface Water – Dredging

WT3. Where the zone of influence of a sediment plume generated by the activity encroaches upon a sensitive receptor, slightly disturbed or high ecological value waters, **sediment plume-associated monitoring** (**SPAM**) is to be undertaken. The **SPAM** requirement is to be conducted at **concern sites** (i.e. sensitive receptor sites) and **control sites** during dredging.

WT4. The REMP specified in **WT1** must include monitoring at marine **sensitive receptor** locations and reference sites in Trinity Bay and Trinity Inlet accordance with **Table WT1– Sensitive receptor monitoring requirements** and associated monitoring requirements.

Table WT1 – Sensitive receptor and reference site monitoring requirements

Monitoring Location name	**Monitoring Point(s) Description** (GDA94 decimal degrees)*		**Quality characteristic**	**Timing**	**Minimum Monitoring Frequency**
	Latitude	**Longitude**			
Palm Cove (Double Island)	-16.7408	145.6970	Turbidity	During **dredging**	Continuous data logging (every 10 minutes)
Yorkeys Knob	-16.8033	145.7447			
Trinity Bay	-16.8910	145.7945			
Upper Trinity Inlet	-16.9615	145.7965			
Lower Trinity Inlet	-16.9469	145.7875			
False Cape	-16.8619	145.8411			
Cape Grafton	-16.8662	145.9013			
Seagrass meadow 1 (S1)	TBA	TBA		During **dredging**	Continuous data

Seagrass meadow 2 (S2)	TBA	TBA	Photosynthetically Active Radiation (PAR)		logging (every 10 minutes)
Seagrass meadow 3 (S3)	TBA	TBA			
Seagrass meadow 4 (S4)	TBA	TBA			

**Decimal degrees to be provided to a minimum of 4 decimal places.*

Associated monitoring requirements

a) monitoring must be in accordance with the methods prescribed in the current edition of the **administering authority's** *Monitoring and Sampling Manual*.;
b) all determinations must employ analytical practical quantification limits of sufficient sensitivity to enable comparisons to be made against the limits relevant to the particular water quality characteristic;
c) PAR measurements will be taken at less than 1.5 metres above the seabed;
d) and all monitoring devices must be calibrated and maintained according to the manufacturer's instruction manual.

WT5. Limits at sensitive receptor locations must be derived using the methodology in **Table WT2.**

Table WT2 - Process for setting sensitive receptor water quality limits - turbidity

Monitoring location	15 day rolling average – turbidity (NTU)	6 day rolling average – turbidity (NTU)
Palm Cove (Double Island)	50%ile Baseline + ZLMI (16 NTU)	80%ile Baseline + ZLMI (29 NTU)
Yorkeys Knob	50%ile Baseline + ZLMI (13 NTU)	80%ile Baseline + ZLMI (25 NTU)
Trinity Bay	50%ile Baseline + ZLMI (22 NTU)	80%ile Baseline + ZLMI (61 NTU)
Upper Trinity Inlet	50%ile Baseline + ZLMI (5 NTU)	80%ile Baseline + ZLMI (18 NTU)
Lower Trinity Inlet	50%ile Baseline + ZLMI (5 NTU)	80%ile Baseline + ZLMI (22 NTU)
False Cape	50%ile Baseline + ZLMI (25 NTU)	80%ile Baseline + ZLMI (133 NTU)
Cape Grafton	50%ile Baseline + ZLMI (41 NTU)	80%ile Baseline + ZLMI (109 NTU)

Notes:

1. ZLMI = impact assessment trigger for Zone of Low to Moderate Impact from Chapter B5 (Marine Water Quality) of EIS
2. 50%ile and 80%ile Baseline = 50th percentile and 80th percentile values calculated from at least 12 months of baseline data

WT6. Dredging must be managed to not exceed the limits in **Table WT3** and **WT4** – Sensitive receptor water quality limits and associated monitoring requirements. The limits in **Table WT3** are derived using the methodology in **Table WT2.**

Table WT3 – Sensitive receptor water quality limits - turbidity

Monitoring location	Turbidity (NTU)	
	15 day rolling average	6 day rolling average
Palm Cove (Double Island)	38	87
Yorkeys Knob	34	83
Trinity Bay	45	113
Upper Trinity Inlet	15	41
Lower Trinity Inlet	21	59
False Cape	77	258
Cape Grafton	85	290

Table WT4 – Sensitive receptor water quality limits - PAR

Monitoring location	Photosynthetically Active Radiation (PAR)
Seagrass meadow 1 (S1)	TBA
Seagrass meadow 2 (S2)	

WT7. Should the limits set out in **Tables WT3** and **WT4** be exceeded, it is not a contravention of condition WT6 when it can be demonstrated to the administering authority that elevated turbidity is due to external factors, including weather conditions or erroneous or invalid data.

Surface Water - Tailwater

WT8. The only contaminants to be released to surface waters from the placement and management of **dredge material** are tailwater releases from the **Barron River DMPA** in accordance with **Table WT5 – Tailwater release limits** and the associated monitoring requirements.

Table WT5—Tailwater release limits

Monitoring Location name	Release Point(s) Description (GDA94 decimal degrees)*		Quality characteristic (units)	Limit	Limit Type	Minimum Monitoring Frequency
	Latitude	Longitude				
Weir gate within the dredge placement ponds and/or tailwater pond(s) within the DMPA	TBA	TBA	pH	6.5–8.5	Range (minimum to maximum)	Daily during releases
			Dissolved oxygen	60–105% saturation	Range (minimum to maximum)	Daily during releases
			Turbidity	50 NTU	Maximum	Daily during releases
			Total Suspended Solids	Monitor only	N/A	Monthly during releases

**Decimal degrees to be provided to a minimum of 4 decimal places.*

Surface water release limits associated monitoring requirements:

a) monitoring must be in accordance with the methods prescribed in the current edition of the **administering authority's** *Monitoring and Sampling Manual.;*
b) all determinations must employ analytical practical quantification limits of sufficient sensitivity to enable comparisons to be made against the limits relevant to the particular water or sediment quality characteristic;
c) monitoring must be undertaken during a release and at the frequency stated;
d) suspended solids samples must be collected so as to allow a correlation with turbidity levels;
e) and all monitoring devices must be calibrated and maintained according to the manufacturer's instruction manual.

Surface Water – Tailwater Receiving Waters

WT9. The **REMP** specified in **WT1** must include monitoring outlined in **Table WT6** – Surface Water Monitoring - Placement and associated monitoring requirements and include determination of surface water quality for at least the following locations:

1. at the tailwater pipeline discharge point into the Barron River
2. at one location upstream and one location downstream of the discharge point in the receiving environment in the Barron River and Richters / Thomatis Creek systems.

Table WT6 Surface Water Monitoring – Tailwater discharge

Monitoring Location name	Monitoring Point(s) Description (GDA94 decimal degrees)*		Quality characteristic	Timing	Minimum Monitoring Frequency
	Latitude	Longitude			
Tailwater discharge location in Barron River	TBA	TBA	• Turbidity (NTU) • pH • Salinity (ppt)	During placement and three months[a] following placement	Continuous data logging (every 10 minutes)
One location upstream of discharge point in Barron River	TBA	TBA			

One location downstream of discharge point in Barron River	TBA	TBA			
One location in Thomatis/Richters Creek	TBA	TBA			

Associated monitoring requirements:

a) Monitoring is required for at least three months and, if necessary, a longer time until monitoring demonstrates potential for environmental harm are minimised from prospective turbidity, acidity and salinity impacts.
b) Monitoring must be in accordance with methods prescribed in the latest edition of the **administering authority's** *Monitoring and Sampling Manual*.

WT10. Limits at receiving water locations must be derived using the methodology in **Table WT7.**

Table WT7 - Process for setting receiving water quality limits

Monitoring location	15 day rolling average – turbidity (NTU)	6 day rolling average – turbidity (NTU)	pH	Salinity (ppt)
Barron River	50%ile Baseline + ZLMI (15 NTU)	80%ile Baseline + ZLMI (55 NTU)	20th and 80th percentile of baseline data	80th percentile of baseline data
Thomatis/Richters Creek	50%ile Baseline + ZLMI (11 NTU)	80%ile Baseline + ZLMI (45 NTU)		

Notes:

1. ZLMI = impact assessment trigger for Zone of Low to Moderate Impact from Chapter B5 (Marine Water Quality) of EIS
2. 20%ile, 50%ile and 80%ile Baseline = 20th, 50th and 80th percentile values calculated from at least 12 months of baseline data

WT11. Surface water must be managed to achieve the surface water quality limits in **Table WT8** —Surface Water Quality Limits.

Table WT8 – Surface Water Quality Limits

Monitoring location	Turbidity (NTU)		pH - lower	pH - upper	Salinity (ppt)
Limit Type	15 day rolling average	6 day rolling average	Daily average	Daily average	Daily average
Barron River	36	112	7.5	8.2	25.5
Thomatis/Richters Creek	30	75	7.6	7.8	31.7

WT12. Should the limits set out in **Table WT8** be exceeded, it is not a contravention of condition **WT10** when it can be demonstrated to the administering authority that elevated water quality is due to external factors, including weather conditions or erroneous or invalid data.

Water Quality at Offshore Pump-Out Site

WT13. Unloading of dredge material by the TSHD at the pump out site offshore from Cairns Northern Beaches, must not cause:

a) any release to **waters** of petroleum products, hydraulic fluids nor any other contaminants capable of causing environmental harm; and

b) any erosion or damage to the banks of **waters**, riparian vegetation growing thereon, lawfully authorised structures within any **waters**, nor cause any unauthorised interference to the flow of any **watercourse**.

Associated requirements:

- Visual monitoring of the extent of any turbid plumes during pump out operations must be undertaken daily during unloading of dredge material.

Stormwater

S1. Prior to the commencement of any **dredging** or construction, develop and implement erosion and sediment controls at each of the **DMPA** sites in accordance with the *Best Practice Erosion and Sediment Control (BPESC) guidelines for Australia* (International Erosion Control Association) and maintain sediment control devices to achieve best practice design objectives.

S2. Storage areas for hazardous contaminants must be located above the 1% Annual Exceedance Probability flood level.

S3. The facilities for the **activity** must include a storage area for hazardous contaminants with secondary containment systems to prevent any **release of contaminants** from the system, or containers within the system, to land, groundwater, or surface waters.

Groundwater

GW1. As part of the **REMP** specified in **WT1**, an **appropriately qualified person(s)** must design a ground water monitoring program (GWMP) and supervise installation and implementation of a ground water monitoring system to establish background ground water quality, elevations and potential impacts of activities on the ground water system and ground water dependent ecosystems.

The GWMP must include, but not be limited to, the installation and monitoring of sufficient bores surveyed to Australian height datum in locations to effectively monitor changes in groundwater quality and elevation.

GW2. A copy of the GWMP (as part of the REMP) must be submitted to the **administering authority** at least 20 business days prior to the commencement of the **activity** and, if necessary, amended in accordance with any comments made by the **administering authority**. The GWMP must include background ground water quality data and calculated ground water limits in accordance with conditions **GW4** of this approval.

GW3. The GWMP specified in **GW1** must include, but not be limited to, the monitoring of the parameters as outlined in **Table GW2**—Ground Water Monitoring Requirements and Associated Monitoring Requirements.

Table GW2 Ground Water Monitoring Requirements

Indicator	Minimum Frequency during placement	Minimum Frequency following placement
Ground Water Elevation m AHD	Hourly	Hourly
pH	Hourly	Hourly
Electrical conductivity µS/cm	Hourly	Hourly
Field physicochemical parameters (EC, pH, DO, Redox, Temp	Weekly	Monthly

Total Dissolved Solids mg/L	Weekly	Monthly
Dissolved Iron µg/L	Weekly	Monthly*
Dissolved Aluminium µg/L	Weekly	Monthly*
Total titratable acidity Mg/L	Weekly	Monthly
Total titratable alkalinity Mg/L	Weekly	Monthly
Chloride: Sulfate Ratio	Weekly	Monthly
Major anions and cations mg/L	Weekly	Monthly*

* Need for ongoing monthly testing of these parameters to be assessed based on background concentrations and exceedances observed during filling. Should pH values show a decrease to below 6, them testing for these parameters would be triggered.

Associated monitoring requirements

(a) Monitoring of potential seepage impacts from dredge material placement is required for at least two years and, if necessary, a later time until monitoring demonstrates potential for environmental harm from these sources is minimised,
(b) Note that monitoring of ground water elevation will be required on an ongoing basis for bores monitoring maintenance of predevelopment ground water elevation.
(c) Construction of all bores must be logged, records of logs kept and bore top casings surveyed to 0.01 m Australian Height Datum.
(d) Monitoring bores must be installed in compliance with relevant Australian standards.
(e) Monitoring must be in accordance with methods prescribed in the latest edition of the **administering authority's** *Monitoring and Sampling Manual*.

GW4. Ground water and saline seepage must be managed to achieve the ground water quality and elevation limits in **Table GW 3**—Ground Water Quality and Elevation Limits. Where limits are based on background condition, they must be derived in accordance with the *Queensland Water Quality Guidelines (2009)* and at least 12 months of monitoring data.

Table GW3 Groundwater Quality and Elevation Limits

Values to be advised (TBA)

Monitoring Location name	**Monitoring Point(s) Description** (GDA94 decimal degrees)		**Quality characteristic** (units)	**Limit**	**Limit Type**
	Latitude	**Longitude**			
TBA	TBA	TBA	TBA	TBA	TBA

Land

L1. Dredge material placed into the **Barron Delta DMPA** must be preferentially placed such that the dredge material that is net acid producing (PASS) is placed prior to and overlain by dredge material that has self-neutralizing potential (SNP).

L2. Any dredge material that settles above -1 m below the permanent groundwater level

within the **Barron Delta DMPA** must be characterised/verified as self-neutralising or be treated to provide suitable neutralising capacity.

L6. An **appropriately qualified person(s)** must design and be responsible for the implementation of the ASSMP.

L7. A copy of the ASSMP must be submitted to the **administering authority** at least 40 business days prior to the commencement of works and, if necessary, amended in accordance with any comments made by the **administering authority.**

L8. **Land** that has been reclaimed or otherwise raised through filling under this environmental authority must be maintained in a manner such that:

a) erosion is prevented;

b) the quality of water released from the site, including seepage, does not cause environmental harm;

c) public safety is protected.

Waste

WS1. All waste generated in carrying out the **activity** must be reused, recycled or removed to a facility or designated onsite location that can lawfully accept the waste.

Noise

N1. Noise generated by the **activity** must not cause **environmental nuisance** to any **sensitive place** or **commercial place**.

N2. Noise from the **activity** must not exceed the levels identified in Table N1—Noise limits when measured in accordance with the associated monitoring requirements

Table N1. Noise limits

Noise level measured in dB(A)	**7am-6pm**	**6pm-10pm**	**10pm-7am**
Noise measured at a **sensitive place**			
$L_{Aeq\ adj,\ 15\ mins}$	**TBA**	**TBA**	**TBA**
Noise measured at a **commercial place**			
$L_{Aeq\ adj,\ 15\ mins}$	**TBA**	**TBA**	**TBA**

N3 When requested by the **administering authority**, noise monitoring must be undertaken within a reasonable and practicable timeframe nominated by the **administering authority** at any **sensitive place** or **commercial place**, and the results must be notified within 14 days to the **administering authority** following completion of monitoring.

N4 Noise monitoring and recording must include the following descriptor characteristics and matters:

a) $L_{AN,T}$ (where N equals the statistical levels of 1, 10 and 90 and T = 15 mins);
b) **background noise** LA_{90};
c) the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels;
d) atmospheric conditions including temperature, relative humidity and wind speed and directions;
e) effects due to any extraneous factors such as traffic noise;
f) location, date and time of monitoring;
g) if the complaint concerns low frequency noise, $Max_{LpLIN,T}$ and one third octave band measurements in $dB_{(LIN)}$ for centre frequencies in the 10 – 200 Hz range.

N5 If monitoring indicates exceedance of the limits in Table N1 Noise limits, then the **holder** must:

a) address the complaint including the use of appropriate dispute resolution if required; or

b) immediately implement noise abatement measure as set out in the **Dredge Management Plan** so that emissions of noise from the **activity** do not result in further **environmental nuisance.**

N6 The method of measurement and reporting of noise level must comply with the latest edition of the **administering authorities** *Noise Measurement Manual*.

Air

A1. Odours or airborne contaminants which are **noxious** or **offensive** or otherwise unreasonably disruptive to public amenity or safety must not cause nuisance to any **sensitive place** or **commercial place**.

A2. When requested by the **administering authority**, dust and particulate monitoring must be undertaken, and the results notified within 14 days to the **administering authority** following completion of monitoring. Monitoring must be carried out at a place(s) relevant to the potentially affected **sensitive place** or **commercial place** and must include:

a) for a complaint alleging dust nuisance, total suspended particulate matter (TSP) and dust deposition;
b) for a complaint alleging adverse health effects caused by dust, the concentration per cubic metre of particulate matter with an aerodynamic diameter of less than 10 micrometre (PM10) suspended in the atmosphere over a 24 hour averaging time.

Definitions

Note that where a term is not defined, the definition in the Environmental Protection Act 1994, its regulations or environmental protection policies must be used. If a word remains undefined, it has its ordinary meaning.

24 hour storm event with an average recurrence interval (ARI) of 1 in 5 years means the maximum rainfall depth from a 24 hour duration precipitation event with an average recurrence interval of once in 5 years. For example, an Intensity-Frequency-Duration table for a 24 hour duration event with an average recurrence interval of 1 in 5 years, identifies a rainfall intensity of 7.09mm/hour. The rainfall depth for this event is therefore 24 hour x 7.09mm/hour = 170.16mm.

Activity means the environmentally relevant **activities** to which the environmental authority relates.

Administering authority means the Department of Environment and Heritage Protection or its successor or predecessors.

Alert level represent tiers in a hierarchy of increasing environmental risk and are defined by **trigger values**. Three alert levels (low, moderate, and high) are typically used in a management action framework to indicate adverse conditions and guide management responses that aim to prevent and minimise environmental harm.

Appropriately qualified person(s) means a person or persons who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis to performance relative to the subject matter using the relevant protocols, standards, methods or literature.

Background noise means noise, measured in the absence of the noise under investigation, as $L_{A90,\,adj,\,T}$ being the A-weighted sound pressure level exceeded for 90 per cent of the time period of not less than 15 minutes, using Fast response.

Capital dredging:

a) means **dredging** carried out for the purpose of:
    i. creating or enlarging a channel, basin, port, berth or other similar thing; or
    ii. removing material that is unsuitable as a foundation for a **port facility**; or
    iii. creating a trench for a pipe, cable or tube; or
    iv. an **activity** incidental to an **activity** mentioned in subparagraph (i) to (iii); but
b) does not include **dredging** carried out for the purpose of:

i. maintaining a channel, basin, port, berth or other similar thing for its intended use; or
ii. protecting human life or property.

Certification means assessment and approval must be undertaken by a suitably qualified and experienced person in relation to any assessment or documentation required by this Manual, including design plans, 'as constructed' drawings and specifications, construction, operation or an annual report regarding regulated structures, undertaken in accordance with the Board of Professional Engineers of Queensland Policy Certification by RPEQs (ID: 1.4 (2A)).

Certifying, certify or certified have a corresponding meaning as 'certification'.

Commercial place means a place used as a workplace, an office or for business or commercial purposes and includes a place within the curtilage of such a place reasonably used by persons at that place.

Concern site means a site where a **sensitive receptor** occurs within the **zone of influence** of a sediment plume.

Certification means assessment and approval must be undertaken by a suitably qualified and experienced person in relation to any assessment or documentation required by this Manual, including design plans, 'as constructed' drawings and specifications, construction, operation or an annual report regarding regulated structures, undertaken in accordance with the Board of Professional Engineers of Queensland Policy Certification by RPEQs (ID: 1.4 (2A)).

Certifying, certify or certified have a corresponding meaning as 'certification'.

Continuous data logging means to record instrument-derived data in a memory storage device (a data logger). The frequency of data logging may be, for instance, every 10 minutes, but where a logger device is used *in situ*, the frequency may be dependent on the memory storage capacity of the logger and the time between logger retrieval events. Alternatively, **continuous data logging** may be performed via telemetry, with the data being broadcast to an *ex situ* computer or data logger.

Control site refers to a monitoring site located beyond the anticipated **zone of influence** of sediment plumes and has **site pairing** with one or more **test sites** or **sentinel sites**. In monitoring programs, **control sites** serve the same role as do **reference sites** but only for a defined subset of indicators.

Design plan is a document setting out how all identified consequence scenarios are addressed in the planned design and operation of a regulated structure.

Disturbed areas include areas:

a) that are susceptible to erosion;
b) that are contaminated by the **activity**; and/or
c) upon which stockpiles of soil or other materials are located.

DMPA – means a land based dredge material placement area under this Authority and includes the Barron River DMPA and Tingira Street DMPAs associated with the project

Dredge Management Plan is an environmental management plan for the **dredging activity**. It defines and describes the:

a) scope, timing and duration of the **dredging** operation;
b) **sediment plume-associated monitoring programs**;
c) assessment of data, **trigger values** and **alert levels**,
d) management actions that may be required in response to adverse monitoring results.

The **Dredge Management Plan** includes an aim to prevent and minimise environmental harm to **sensitive receptors** as a result of the **dredging activity**.

Dredged material means material that has been removed from under surface water, including spoil, other than a mineral within the meaning of any Act relating to mining. Material includes, for example, stone, gravel, sand, rock, clay, mud, silt and soil.

Dredge footprint is the area being dredged including batters.

Dredging includes extraction of mud, sand, coral, ballast, shingle, gravel, clay, earth and other material from the bed of Queensland tidal and non-tidal waters. **Dredging** does not include the banks of a waterway.

Dredging activity includes dredging by a Trailing Suction Hopper Dredge (TSHD) or mechanical Backhoe Dredge (BHD) associated with the project.

Environmental nuisance as defined in Chapter 1 of the *Environmental Protection Act 1994*.

Environmental value is:

a) a quality or physical characteristic of the environment that is conducive to ecological health or public amenity or safety; or
b) another quality of the environment identified and declared to be an **environmental value** under an environmental protection policy or regulation.

Existing structure means a structure that was in existence prior to the adoption of this schedule of conditions under the authority.

Expert Advisory Panel means an assembly of **appropriately-qualified persons** representing experts in various scientific fields, formed to be capable of assessing **sediment plume-associated monitoring** data and presenting advice relevant to conducting the **dredging** campaign and protecting **sensitive receptors** as directed under this authority and the **Dredge Management Plan**.

$L_{Aeq, adj, T}$ means the adjusted A weighted equivalent continuous sound pressure level **measures** on fast response, adjusted for tonality and impulsiveness, during the time period T, where T is measured for a period no less than 15 minutes when the **activity** is causing a steady state noise, and no shorter than one hour when the approved **activity** is causing an intermittent noise.

Land means any **land**, whether above or below the ordinary high-water mark at spring tides (i.e. includes **tidal land**).

Measures has the broadest interpretation and includes:

a) procedural **measures** such as standard operating procedures for **dredging** operations, environmental risk assessment, management actions, departmental direction and competency expectations under relevant guidelines;
b) physical **measures** such as plant, equipment, physical objects (such as bunding, containment systems etc.), ecosystem monitoring and bathymetric surveys.

NATA means National Association of Testing Authorities.

New dredging activity means the commencement of use of equipment described in G1(c), being a Trailer Suction Hopper Dredge (TSHD) or a Backhoe Dredge (BHD) in each of the dredge areas (Channel, Swing Basins, Wharf Berths).

Nominated delegate means another government agency that provides services to the **administering authority**.

Noxious means harmful or injurious to health or physical well-being.

Offensive means causing offence or displeasure; is unreasonably disagreeable to the sense; disgusting, nauseous or repulsive.

Port facility means a facility or **land** used in the operation or strategic management of a port authority's port. **Port facility** does not include a small-scale **port facility** to be used for a tourism or recreation purpose. Examples of a small-scale **port facility**—boat ramp, boat harbour, marina.

Receiving waters means the waters into which this environmental authority authorises tailwater releases from the reclamation area

Records include breach notifications, written procedures, analysis results, monitoring reports and monitoring programs required under a condition of this authority.

Reference site refers to a monitoring site located not only beyond the anticipated **zone of influence** of a sediment plume, but also beyond other sources of environmental impacts, and has **site pairing** with one or

more **test sites** or **sentinel sites**. In monitoring programs, **reference sites** serve the same role as do **control sites** but can generally be suitable for a broader set of indicators.

Rehandled means handling or relocation of **dredged material**.

Release of a contaminant into the environment means to:

a) deposit, discharge, emit or disturb the contaminant;
b) cause or allow the contaminant to be deposited, discharged, emitted or disturbed;
c) fail to prevent the contaminant from being deposited, discharged emitted or disturbed;
d) allow the contaminant to escape;
e) fail to prevent the contaminant from escaping.

Sediment plume-associated monitoring (SPAM) means environmental monitoring associated with risk management of **sediment plume-associated impacts** and may include data collection through continuous data logging or equivalent methods to achieve sufficient time series data for a range of parameters to enable such risks to be evaluated**.**

Sediment plume-associated impacts are impacts associated with sediment plumes including turbidity and suspended solids concentrations, light attenuation or sedimentation rates elevated above either **control site** or **reference site** readings or baseline conditions for an equivalent time of year. Where **dredged material** possesses acid sulfate soil-related properties, **sediment plume-associated impacts** may also include pH, dissolved oxygen and metal and metalloid-related toxicity impacts.

Sensitive place includes the following and includes a place within the curtilage of such a place reasonably used by persons at that place:

a) a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises;
a) a motel, hotel or hostel;
b) a kindergarten, school, university or other educational institution;
c) a medical centre or hospital;
d) a public park or garden;
e) for noise, a place defined as a **sensitive receptor** for the purposes of the Environmental Protection (Noise) Policy 2008.

Sensitive receptor includes biological sensitive receptors together with other **environmental values** sensitive to the effects of dredge-generated **sediment plume-associated impacts**.

Sentinel site is a **test site** that is situated between the disturbance source and the **sensitive receptor** and serves to provide earlier warning of developing adverse conditions than does a **test site.**

Site pairing refers to monitoring sites that have a functional control-impact relationship, for example, **Control site** A is referenced to assess monitoring data collected from **Concern Sites** AA and AB, thus, **Concern Sites** AA and AB share **site pairing** with **Control Site** A.

Suitably qualified and experienced person in relation to structures means a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the Professional Engineers Act 2002, and has demonstrated competency and relevant experience.

Test site is a **concern site** that functions as a test point for compliance, is a monitoring site situated within the area where a **sensitive receptor** occurs and where environmental monitoring-related assessment criteria (e.g. **trigger values**) apply.

Tidal land means land lying below the high-water mark (HWM), which is referenced as the level of the mean high water at spring tide (MHWS) or mean highest high water (MHH) within the sea or the waters of any harbour, including any navigable river and any tidal waterway.

Trigger values are physicochemical, indicator-specific measurement values used to indicate a condition where an **environmental value** or **sensitive receptor** may be at low, moderate or high risk, or some other risk-related indicator.

Watercourse has the meaning in Schedule 4 of the Environmental Protection Act 1994 and means a river, creek or stream in which water flows permanently or intermittently—

(a) in a natural channel, whether artificially improved or not; or

(b) in an artificial channel that has changed the course of the watercourse.

Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.

Waters includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water, natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater and any part thereof.

You means the holder of the environmental authority.

Zone of influence of a sediment plume is, in its broadest application, defined by the **dredge footprint** and the area beyond the **dredge footprint** where at least some level of **sediment plume-associated impacts** are expected to occur. The overall zone of influence may be broken down into more risk-relevant **Zone of impact** sub-categories, such as the *Zone of Unavoidable Loss* (the **dredge footprint** and immediately adjacent areas), the *Zone of Moderate Impact*, or the *Zone of Low Impact*, with each zone being defined according to its purpose or role in environmental management.

Zone of impact: See **zone of influence** definition.

Development Permit for Material Change of Use for Environmentally Relevant Activity

This Schedule includes the Coordinator-General's stated conditions for a Material Change of Use for an Environmentally Relevant Activity under the *Planning Act 2016*, stated under section 37 of the *State Development and Public Works Organisation Act 1971*.

Condition Number	Condition ID	Condition
1.	SARA model condition V3.0 (AI01)	Development under this approval of ERA 16(1)(d) is authorised as follows - a) dredging is limited to capital dredging for the purposes of the expansion of the Port of Cairns through dredging of the Shipping Channel, Swing Basins and Wharf Berths; b) dredging may only occur to the extent practically achievable and necessary to achieve the increased channel widths and depths shown in Figure A3-2 'Proposed upgraded channel and swing basins' and concept design specifications as set out in Table A3-1 'Comparison of Existing an Concept Design Specifications' (Note: The coordinates of the channel, swing basin and berths are to be provided to the administering authority prior to an environmental authority application); c) a total maximum of 1 000 000 m3 of dredge material consisting of up to 900 000m3 of soft clays to be removed by a Trailer Suction Hopper Dredge (TSHD) and 100 000m3 of stiff clays to be removed by a mechanical Back–Hoe Dredge (BHD) may be removed. d) dredging with the TSHD may only be undertaken between the first day of March and the last day of September of any given year; e) all dredged material must be placed at the following DMPA locations: i. Placement of soft clay dredge material at the Barron Delta DMPA located on Lot 2 on RP712954 and Lot 5 on SP245573 ii. Placement of stiff clay dredge material at the Tingira St DMPA established on Port Land (Lot 27 on SP 218291) located at Tingira St, Portsmith f) Soft clay dredge material must be transported to the Barron Delta DMPA via the pipeline corridor shown in Figure A3-3 'Barron Delta DMPA Mooring and Pipeline Configuration' **Timing: At all times.**

Condition Number	Condition ID	Condition
2.	SARA model condition V3.0 (AD01)	The development must be carried out generally in accordance with the following approved plans: • Figure A3-2 Proposed Upgraded Channel and Swing Basins • Figure A3-3 Barron Delta DMPA Dredge Material Delivery and Tailwater Discharge Pipeline Location Plan (showing mooring area, pipeline alignment and return pipeline options) • Figure A3-5 Barron Delta DMPA Concept Design • Figure A3-6 Tingira Street DMPA Configuration These approved plans may be revised by the proponent in an application for a material change of use for an environmental authority (ERA16) to include detailed designs undertaken for the project. Any revised plans must be generally consistent with the plans presented in the EIS and to the satisfaction of the administering authority. **Timing: At all times.**
3.	SARA model conditions V2.0 (RA02; amended to be project and site specific)	Storage areas for hazardous contaminants must be located above the 100 year average recurrence interval (ARI) flood level or storm tide level, whichever is greater, at the site. **Timing: At all times.**

Preliminary Approval for Operational Work – Tidal works and Operational Works within a coastal management district

This Schedule includes the Coordinator-General's stated conditions for Tidal Works and Works in a Coastal Management District under the *Planning Act 2016*, stated under section 39 of the *State Development and Public Works Organisation Act 1971*.

To remove any doubt, it is intended that this schedule applies to the following aspects of the project –

- All capital dredging works that are tidal works (channel widening and deepening, swing basin and wharf berths)
- Wharf (structural) upgrade works and existing wharf structure demolition
- Any structure in tidal water associated with the TSHD vessel mooring
- The temporary dredge pipeline where it is situated on, in, below or above tidal waters
- The tailwater delivery pipeline and outlet structure to the extent that it occurs at or below tidal water in the Barron River
- Any other works that are defined as tidal works within the meaning of the *Coastal Protection and Management Act 1995*

Condition Number	Condition ID	Condition
1.	SARA model condition V3.0 (AD01)	The development must be carried out generally in accordance with the following approved plans contained in Schedule 5: • Figure A3-2 Proposed Upgraded Channel and Swing Basins • Figure A3-3 Barron Delta DMPA Mooring and Pipeline Configuration (showing mooring area, pipeline alignment and return pipeline options) • Figure A3-5 Barron Delta DMPA Configuration • Figure A3-6 Tingira Street DMPA Configuration • Figure A3-8 Wharf Design – Berthing Structures These approved plans may be revised by the proponent in an application for tidal works or operational works in a coastal management district to include detailed designs undertaken for the project. Any revised plans must be generally consistent with the plans presented in the EIS and to the satisfaction of the DEHP. **Timing: For the duration of construction works.**
2.	SARA model condition V3.0 (AD02)	The development must be carried out generally in accordance with the Revised EIS prepared by FCG and BMT WBM dated July 2017, in particular: • Chapter A3 - Project Description • Chapter C1 - Construction EMP • Chapter C2 - Dredge Management Plan However where a requirement or commitment from these documents are inconsistent with a requirement or commitment listed in the CGER (including stated and imposed conditions), the CGER prevails to the extent of the inconsistency **Timing: For the duration of construction works.**

Widening of Sea and Platypus Channels		
3.	New condition specific for this project	Prior to the commencement of works, submit Registered Professional Engineer of Queensland (RPEQ)[1] certified plans prepared by a registered engineer for the following structures to palm@ehp.qld.gov.au or mail to: Department of Environment and Heritage Protection Permit and License Management Implementation and Support Unit GPO Box 2454 Brisbane QLD 4001. The relevant structures and works below high water mark are those whose purpose includes: a) Navigation channels, swing basins and wharf berths b) Settlement and discharge of tailwater from the Barron River DMPA c) Piling and other works associated with the upgrade to Trinity Wharves d) Any part of a containment structure or bund situated at or below high water mark associated with the Barron River or Tingira Street DMPA e) Any marine structure required to moor a dredge vessel while unloading dredge material f) Any temporary dredge pipeline for conveying dredge material as a slurry to the DMPA g) Any temporary water pipeline for conveying tailwater including an outlet structure and scour protection **Timing: 20 business days prior to the commencement of construction works.** [1]*Note: The Department of Environment and Heritage Protection requires that plans submitted as part of an environmental approval or development application be GPS referenced and approved by a suitably qualified and experienced person who is a Registered Professional Engineer of Queensland (RPEQ).*
4.	New condition specific for this project	Submit "as constructed drawings" for the structures mentioned in Condition 3, based on post construction hydrographic surveys of capital dredge areas to palm@ehp.qld.gov.au or mail to: Department of Environment and Heritage Protection Permit and License Management Implementation and Support Unit GPO Box 2454 Brisbane QLD 4001. **Timing: Within three months of the completion of construction works**
Dredge Material Placement Areas		
5.	SARA model condition V3.0 (CP02B)	1. An erosion and sediment control plan must be prepared by an **appropriately qualified person(s),** in accordance with *Best Practice Erosion and Sediment Control (BPESC) guidelines of Australia (International Erosion Control*

		Association) for the **Barron River DMPA** and **Tingira Street DMPA** **Timing: prior to construction works occurring.** 2. Provide the erosion and sediment control plan to the palm@ehp.qld.gov.au or mailed to: Department of Environment and Heritage Protection Permit and License Management Implementation and Support Unit GPO Box 2454 Brisbane QLD 4001. **Timing: prior to construction works occurring.** 3. Undertake the development generally in accordance with the erosion and sediment control plan. **Timing: while construction works are occurring.** 4. Provide written evidence from an **appropriately qualified person(s)** that all elements of this condition have been complied with. **Timing: upon completion of the construction works.**
6.	SARA model condition V3.0 (CP08)	1. In the event that the works cause disturbance or oxidisation of acid sulfate soil, the affected soil must be tested and treated as necessary, and thereafter managed, in accordance with the current *Queensland Acid Sulfate Soil Technical Manual: Soil management guidelines*, prepared by the Department of Science, Information Technology, Innovation and the Arts, 2014. **Timing: upon disturbance or oxidisation until the affected soil has been neutralise or contained.** 2. Certification by an **appropriately qualified person(s)**, confirming that the affected soil has been neutralised or contained, in accordance with (a) above is to be provided to palm@ehp.qld.gov.au or mailed to: Department of Environment and Heritage Protection Permit and License Management Implementation and Support Unit GPO Box 2454 Brisbane QLD 4001. **Timing: On the completion of each relevant stage, if acid sulfate soils are encountered.**
7.	SARA model condition V3.0 (CP21A)	The volume (in cubic metres) of material disposed of within the dredge material placement areas (DMPAs) under this approval must be provided to palm@ehp.qld.gov.au or mailed to: Department of Environment and Heritage Protection

		Permit and License Management Implementation and Support Unit GPO Box 2454 Brisbane QLD 4001. **Timing: Within two months of the completion of construction works.**
8.	MS01	Provide written notice to: Regional Harbour Master – Cairns Department of Transport and Main Roads Maritime Safety Queensland 100-106 Tingira St Cairns Qld 4870 (a) When the development authorised under this approval is scheduled to commence. Each notice must state this application number, the location and name of registered place and the condition number under which the notice is being given. **Timing: At least two (2) weeks prior to the commencement of construction works.** (b) When the development authorised under this approval has been completed. Each notice must state this application number, the location and name of registered place and the condition number under which the notice is being given. **Timing: At least two (2) weeks of the completion of construction works.**
9.		Prior to the commencement of **dredging activity**, the proponent will inform the Regional Harbour Master of expected vessel types and activities. The following plans must be developed in consultation with the Regional Harbour Master, and by a suitably qualified person if deemed necessary by the Regional Harbour Master: • Construction vessel traffic management • Construction ship-sourced pollution prevention Any plans required must be developed to the satisfaction of the Regional Harbour Master. **Timing: Any plans must be in place one month prior to commencement of dredging activity.**
10.	MS06	Any navigational aid that is damaged due to the construction, operation or maintenance of the approved development must be promptly repaired or replaced at the applicant's cost. In the event that any damage is caused to any aid to navigation, the Regional Harbour Master must be immediately contacted.

Schedule 4 – Approved Plans

Approved plans

The following plans may be revised by the proponent in a subsequent application (under relevant legislation) to include detailed designs undertaken for the project. Any revised plans must be generally consistent with the plans presented in the EIS and to the satisfaction of the administering authority/EHP.

List:

- Figure A3-2 'Proposed Upgraded Channel and Swing Basins'
- Figure A3-3 'Barron Delta DMPA Dredge Material Delivery and Tailwater Discharge Pipeline Location Plan'
- Figure A3-5 'Barron Delta DMPA Concept Design'
- Figure A3-6 'Tingira Street DMPA Configuration'
- Figure A3-8 'Wharf Design – Berthing Structures'

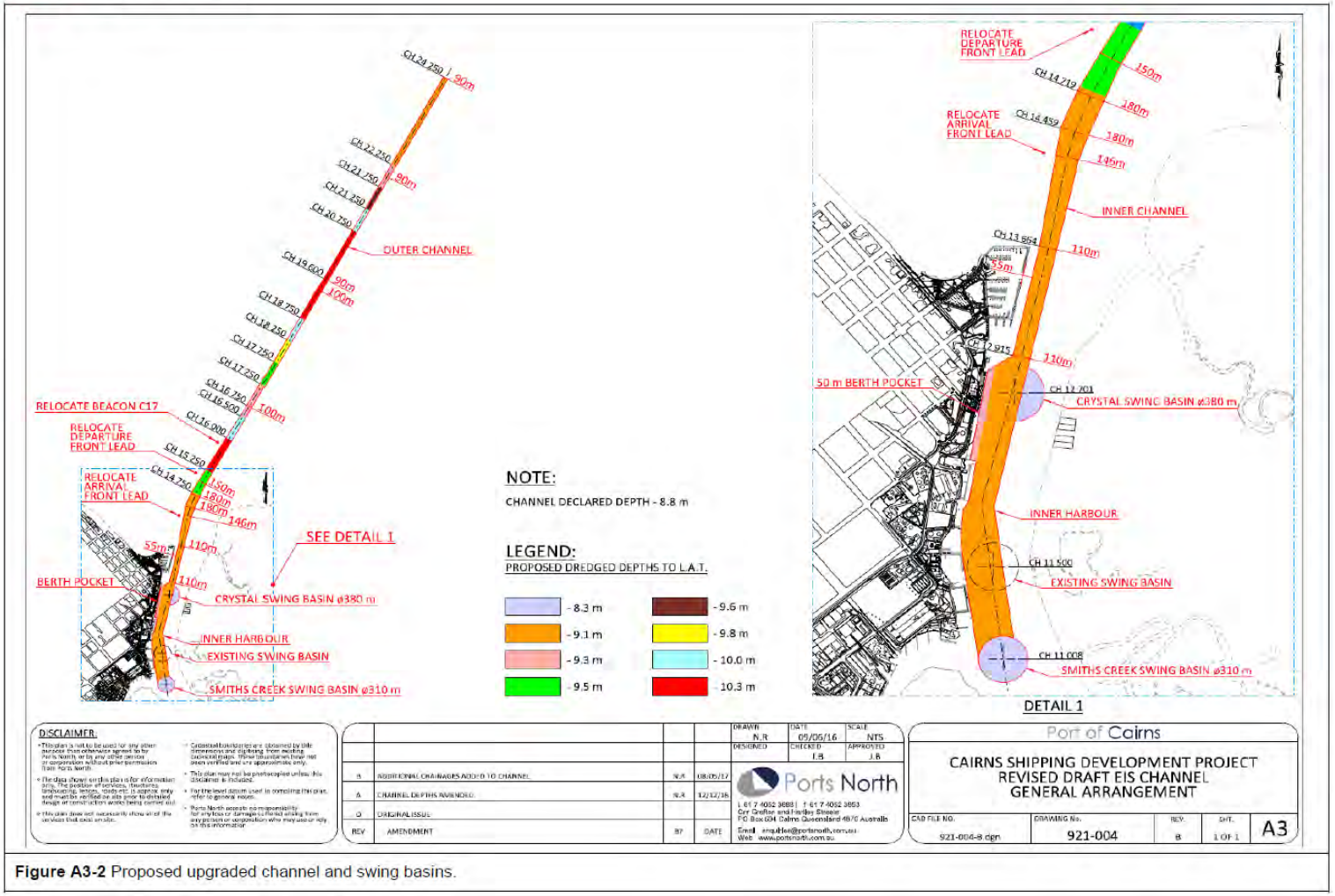

Figure A3-2 Proposed upgraded channel and swing basins.

Figure A3-2 Proposed Upgraded Channel and Swing Basins

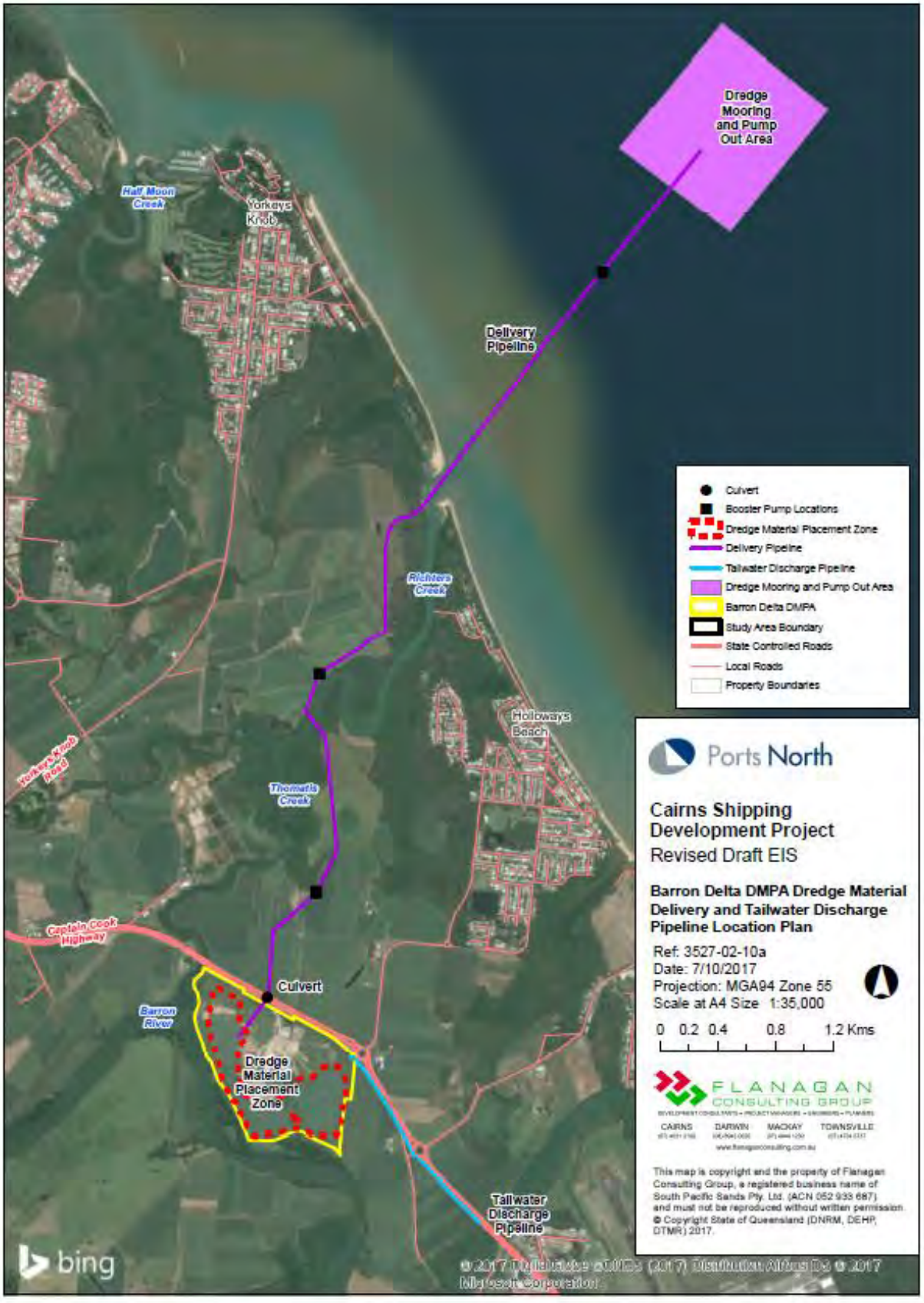

Figure A3-3 Barron Delta DMPA Dredge Material Delivery and Tailwater Discharge Pipeline Location Plan

(showing mooring and pump out area, pipeline alignment, return pipeline options and indicative booster pump locations)

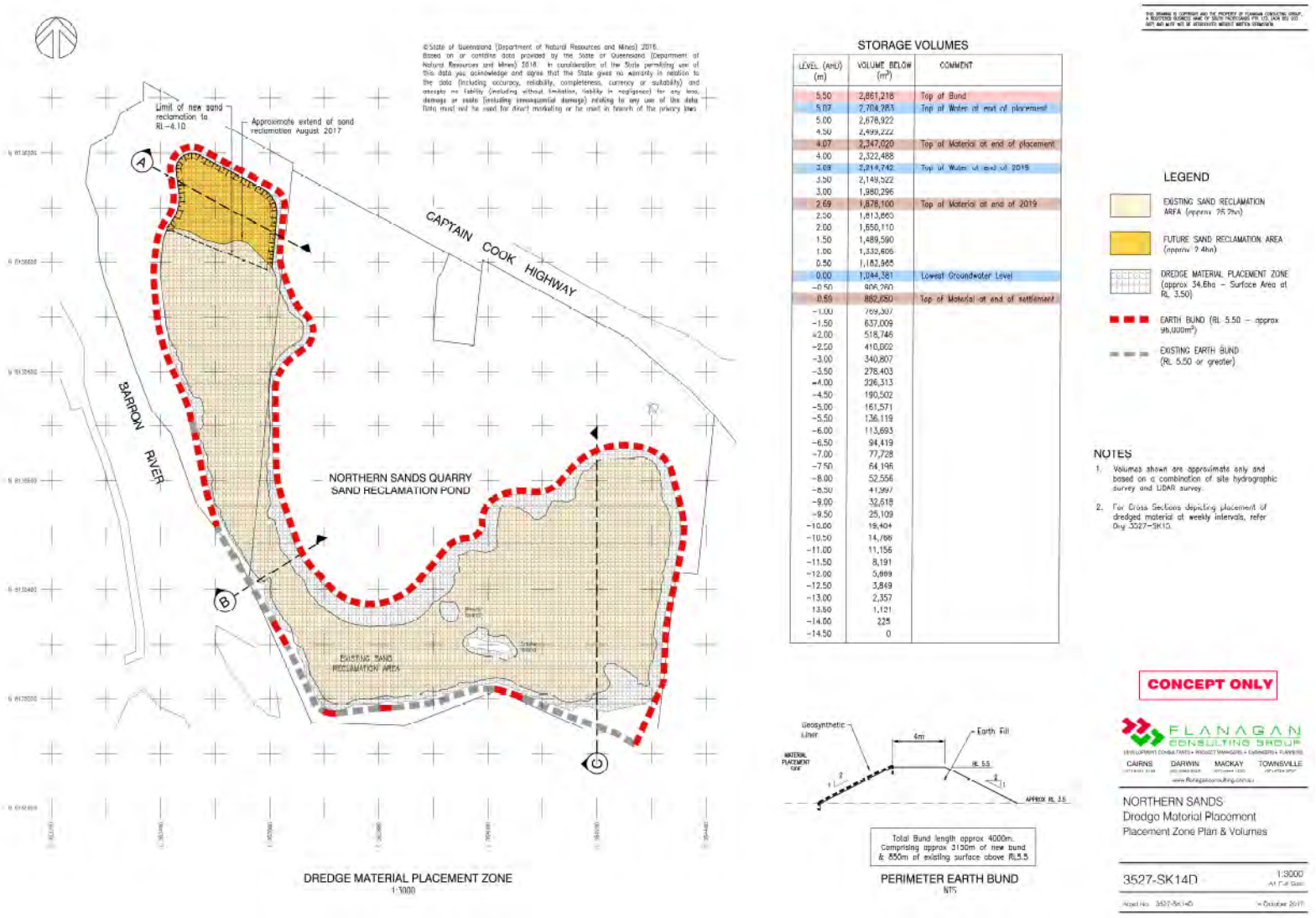

Figure A3-5 Barron Delta DMPA Concept Design

Figure A3-6 Stiff Clay DMPA, Tingira Street Portsmith.

Figure A3-6 Tingira Street DMPA Configuration

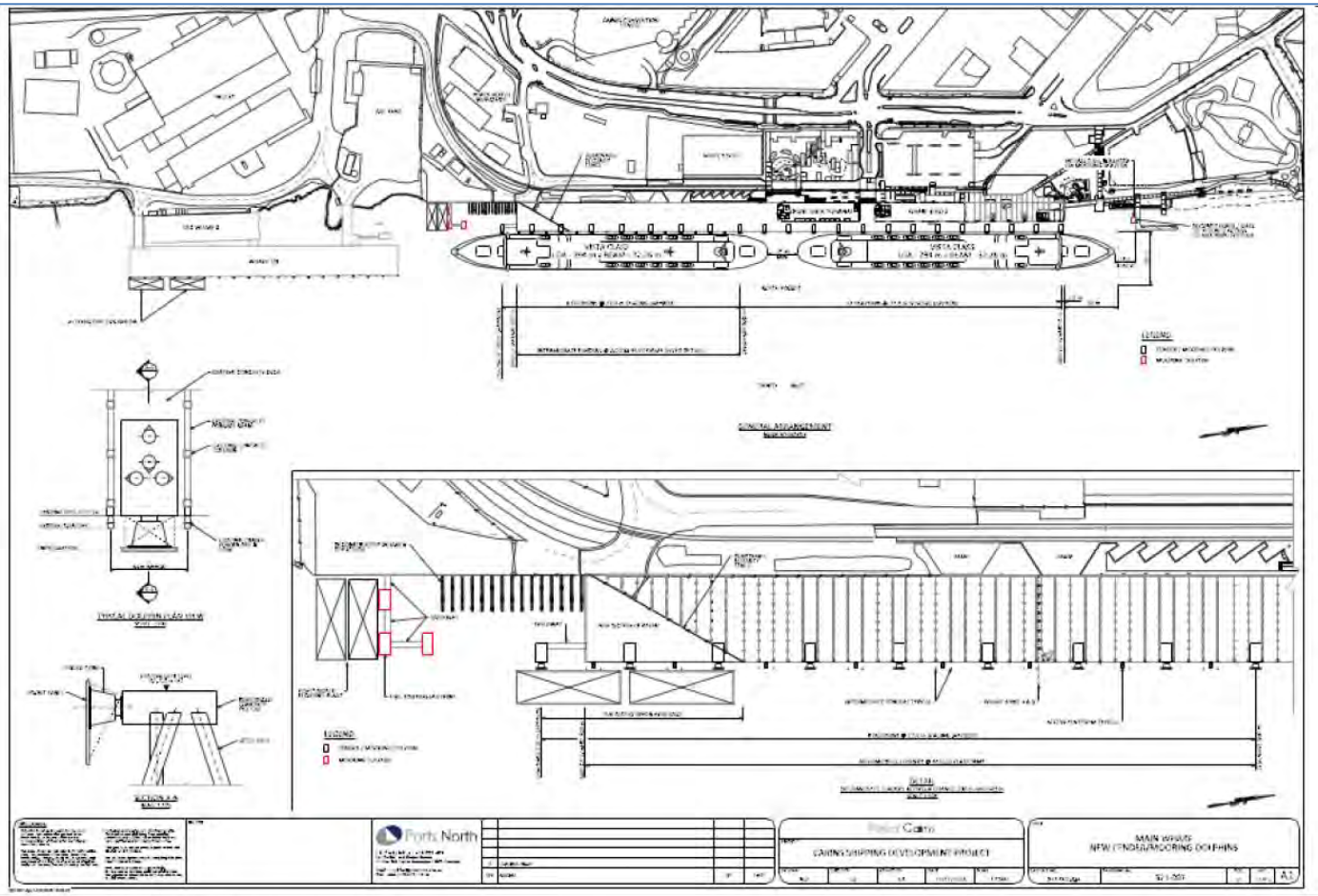

Figure A3-8 The wharf design – berthing structure every five piles.

Figure A3-8 Wharf Design – Berthing Structures

Proposed Terms of Reference for Expert Advisory Panel

1. Introduction

This Terms of Reference sets out the teams, roles and responsibilities for monitoring and management of water quality impacts from TSHD and BHD dredging associated with the CSD project. Based on Chapter C2, Dredge Management Plan (DMP) of the revised EIS, an Expert Advisory Panel will be established to oversee the development and implementation of the Reactive Monitoring Program (RMP).

For the purposes of these Terms of Reference, the descriptions of reactive and validation programs described in the Chapter C2, Dredge Management Plan (DMP) of the Revised Draft EIS, are to form portions of the Receiving Environment Monitoring Program referenced within the conditions of the EA for ERA-16 and other approvals that require monitoring of marine ecology or water quality to manage the dredging activity for the project.

2. Expert Advisory Panel

2.1 Purpose

The purpose of the Expert Advisory Panel is to:

- Provide technical advice to Ports North and regulatory agencies on risk management techniques to minimise the impacts of dredging and marine construction works associated with the CSD Project on the marine ecology of Trinity Inlet/Bay and surrounds.
- Provide input, review and comment to the CSD Project Management Team and Regulatory Oversight Committee on applications for various approvals (especially associated with the Environmental Authority for dredging.
- The Expert Advisory Panel will provide science based advice on marine ecological issues to assist in defining and implementing management techniques to ensure the project meets all approval conditions and adopts leading practice during
    - the detailed design phase - including input to applications for various approvals, and
    - the marine construction works (dredging, transport of material and tailwater discharge from placed dredged material).
- Provide independent, expert based input on the scientific basis underlying the REMP and contingency measures in the Dredge Management Plan (DMP).
- Provide independent, expert based input to the application for Environmental Authority in relation to the suitability of water quality triggers for managing the dredging activity.
- Endorse the RMP and contingency measures in the DMP.
- Provide independent oversight of the implementation of the RMP.
- Oversee management and monitoring strategies associated with the dredging and marine construction works to address conditions associated with regulatory agency marine environmental permits and approvals. These will include baseline data collection, monitoring program design, and identification of specific monitoring indicators to identify changes to coastal ecosystems.
- Oversee implementation of the Reactive Monitoring Programs (RMPs), with appropriate triggers and corrective actions, designed to avoid or minimise impacts. These include including Capital Dredging RMPs (relating to dredge plumes and seagrass) and

Tailwater Management RMPs (relating to the release of tailwater and groundwater influences associated with the Barron River DMPA).

- Validation Monitoring Programs (VMPs) designed to confirm EIS predictions. These include a Capital Dredge Plume VMP to valid dredge plume source assumptions underlying marine water quality impact assessments, a Biological VMP (based on a Before-After-Control-Impact design) to validate impact predictions for soft sediment benthic invertebrates, seagrass and reef habitats and a Tailwater Management VMP to validate modelled predictions for tailwater and groundwater influences associated with the Barron River DMPA.
- Monitor the effectiveness of implementation of the environmental management plans associated with the dredging and marine construction works including the Dredge Management Plan and Construction Environmental Management Plan, and recommend where that corrective actions needed be implemented.
- Review environmental performance of the dredging against criteria and triggers and evaluate corrective actions.
- Communicate monitoring results to stakeholders through the Ports North Communication and Liaison Team.

2.2 Likely membership

It is expected that the Expert Advisory Panel will be made up of:

- Independent Chair
- Secretariat
- Technical Advisors - recognised specialists in particular environmental fields
- Recognised specialist in dredging
- Port of Cairns Technical Advisory Consultative Committee (TACC) representatives as required.
- Ports North CSDP Project Manager
- Ports North Environment Manager

The advisory panel would also be supported as required by individuals with expertise on mega fauna, corals, monitoring and statistics.

Potential nominations for Chair will be identified by Ports North for election by members of the Expert Advisory Panel, and ratified by the CSD Project Management Team. State and Federal Governments will have veto over the appointment of independent Technical Advisors listed at 2.4.3. The secretariat will be provided by Ports North.

Regulators and the Chair of the Ports North Maintenance Dredging TACC have a standing invitation to attend Expert Advisory Panel meetings.

The Expert Advisory Panel may extend an invitation for attendance of other representatives for specific meetings by a majority vote.

2.3 Scope of Work (prior to and during dredging)

The scope of work for the Expert Advisory Panel is to be reviewed and finalised by the Expert Advisory Panel at its first meeting.

However, it is anticipated that the scope of work for the Expert Advisory Panel will involve:

- Prior to the application for Environmental Authority (and commencement of dredging):
  - Provide independent expert input into the preparation of the RMP and contingency measures in the DMP, including:
    - Review and comment on the scope of work for the Technical Advisors in relation to ecological surveys, setting of water quality triggers and ecological health indicators, and preparation of the RMP and DMP.
    - Critically review and comment on the RMP and contingency measures in the DMP, including the monitoring trigger levels and indicators that have been set.
    - Advise on appropriate trigger levels for inclusion in the Environmental Authority application.
  - Approve the final RMP and DMP for implementation.

- During Dredging:
  - Receive fortnightly updates on monitoring from the Technical Advisors and any mitigation responses to level 1 triggers.
  - In the event that level 2 water quality triggers are exceeded, provide real-time advice to Ports North on biological response triggers and mitigation measures.
  - In the event that level 3 water quality triggers are exceeded, provided real-time advice to Ports North on whether dredging should be suspended.
  - Receive, investigate and respond to any complaints or incidents relating to TSHD dredging.
  - Advise on whether ongoing monitoring of mechanical (BHD) dredging is required.
- On completion of dredging:
  - Critically review monitoring results and mitigation measures.
  - Provide a formal report to Ports North.

2.4 Specific Roles

2.4.1 Independent Chair

The Independent Chair will need to have the following characteristics:

- A working knowledge of water quality
- A good understanding of marine ecosystem health
- Experience with facilitating groups of this nature

Roles and responsibilities for the independent chair will include:

- Determining meeting dates
- Setting the agenda for meetings
- Putting budgets to the secretariat
- Facilitating meetings in an orderly manner, ensuring that Expert Advisory Panel members and observers behave respectfully and constructively.
- Reviewing incoming correspondence
- Drafting correspondence on behalf of, and in consultation with the Expert Advisory Panel.
- Finalising correspondence taking Expert Advisory Panel comments into account
- Providing final correspondence to the Secretariat for mailing and posting on website

- On advice from the Expert Advisory Panel, or in the event of a serious complaint, advising Ports North about mitigation actions, including whether dredging should be halted.

2.4.2 Secretariat

Roles and responsibilities for the secretariat (Ports North) will include:

- Taking notes during meetings and draft meeting minutes and action lists
- Coordinating incoming and outgoing mail, and forwarding incoming mail to the Chair.
- Organising meeting venue (Ports North office), refreshments and other requirements for Expert Advisory Panel meetings.
- Distributing information to members on behalf of the Chair
- Maintaining attendance records, minutes, and correspondence
- Posting information on website on behalf of the Chair
- Distributing minutes of past meetings, agenda and items for review and discussion to members at least two weeks before each scheduled meeting
- Handling logistical issues such as transport, expense claims and payments
- Submitting Expert Advisory Panel budget to Ports North for approval
- Managing the budget for the Expert Advisory Panel.

2.4.3 Technical Advisors

Technical advisors will be recruited, and included at meetings when required, to provide expertise in the following areas:

- Water quality:
  - Water quality objectives
  - Water quality monitoring approaches, including acute ecosystem health indicators
- Coral reef ecosystems
- Seagrass ecosystems
- Marine megafauna, including underwater noise.

Technical advisers should have experience with turbidity-related impacts.

Their role will be to provide expert technical input as directed by the Chair, and in accordance with the objectives of the Expert Advisory Panel.

2.4.4 Dredging operations specialist

The dredging operations specialist will have experience in dredge (TSHD and BHD) operation, and will:

- provide input on water quality contingency measures for the respective dredge operations,
- In the event of trigger levels being reached, provide advice on appropriate responses.

2.5 Term of Panel

Membership will be for approximately 2 years (12 months before dredging works, the period of dredging activity and construction, and for 6 months following project completion).

2.6 Conflict of Interest

All members of the Expert Advisory Panel will be required to declare all existing or potential conflicts of interest to the CSD Project Management Team prior to accepting membership of the Expert Advisory Panel. Members will provide updates on any arising conflicts to the Chair as appropriate during their period of appointment.

2.7 Attendance at Meetings

Attendance is required by all panel members unless agreed with the Chair of the Expert Advisory Panel based on consideration of the current agenda and issues. When a proxy is required the member is to inform the Chair that they are unable to attend the meeting and that their nominated proxy will need to attend. It is the responsibility of the member to ensure that the proxy is provided with a briefing on the meeting and any documentation that will be needed.

2.8 Agenda

The Chair will call for agenda items at least two weeks before the proposed meeting date. This will advise of the proposed meeting date, time and location.

The Chair will collate agenda items and circulate an agenda one week before the meeting date.

2.9 Reporting

Minutes will be taken of all meetings and, following signoff by the Chair, will be reported to the CSD Project Management Group, Regulatory Oversight Committee and TACC within 48 hrs of the Panel meeting. Minutes will be provided on the Ports North website within 72 hrs of the Panel meeting.

Any decision of the Panel that is inconsistent with the advice of an independent expert member will be reported to the Regulatory Oversight Committee and TACC noting the basis for the dissenting view.

2.10 Meeting Frequency

Meetings (in person or electronically) will be initiated one year prior to dredging and occur approximately every 2-3 months until dredging commences (the meeting frequency to be confirmed by the EAP). Weekly meetings will be held during dredging works unless the Panel considers monitoring results indicate the need for more frequent meetings (recognising the potential for more frequent electronic communication as required).

2.11 Post-project Report

On completion of post-construction monitoring, the Expert Advisory Panel will prepare a report that provides an overview of the monitoring, identifies any residual detectable environmental effects from the marine project works that may require further consideration and makes recommendations for future dredging within Trinity Inlet and Trinity Bay by Ports North.

2.12 Indicative Expert Advisory Panel Schedule – Dredging

An indicative schedule for the Expert Advisory Panel for the Dredging is provided in **Table 1** below.

Table 1 – Indicative Schedule

Activity	Timing	Tasks
Pre-project Commencement		
	12 months before dredging	Introductions Confirm and approve EAP membership CSD project overview Confirm Terms of Reference with State and Commonwealth agencies Confirm EAP operating protocols Overview of (relevant) CGER and other project documentation Work program for Expert Advisory Panel Discuss RMP and DMP requirements
Offline review	3 months before dredging	Review 1st draft RMP and DMP (contingency measures) Provide comment to Chair
		Confirm scope, communication and reporting protocols Develop draft Reactive Monitoring Programs and Validation Monitoring Programs (techniques, indicators and locations) Review interim threshold values for monitoring actions
Meeting 2	2 months before dredging	Agree on requirements for final draft RMP and DMP
Pre-dredge Monitoring		Confirm deployment of monitoring equipment Update marine ecological risk assessment Review equipment reliability and data management/validation Refine Reactive and Validation Monitoring Programs design/ thresholds
		Finalise Reactive Monitoring Programs, Validation Monitoring Programs, CEMP and DMP in conjunction with regulators
Commencement of Dredging		Implementation of Reactive Monitoring Programs Implementation of Validation Monitoring Programs – plume model
Offline reviews	Fortnightly during dredging	Review monitoring data from RMP Provide feedback to Chair
Meeting 3	Midway during dredging	Discuss implementation of the RMP and contingency measures in DMP Make recommendations for adjustments as appropriate
Completion of Dredging		
Meeting 4	3 months after completion of dredging	Review monitoring results from RMP Prepare post-dredging report to Ports North.
Post Dredge Monitoring		Complete impact Validation Monitoring Programs

2.13 Indicative Reporting Structure