DESCRIPTION OF THE PROJECT

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LIST OF DRAWINGS ASSOCIATED WITH THIS SECTION	
Drawing Number	**Title**
S001-QL00704-01	Preliminary Bridge Layout
S002-QL00704-01	Preliminary Bridge Elevations
S003-QL00704-01	Preliminary Bridge Cross Sections
K019-QL00704-03	TOT Precinct Details
K218-QL00704-01	Typical Haul Road Construction Bund
K219-QL00704-04	Breakwater Sections
K220-QL00704-01	Typical Canal Sections
K221-QL00704-01	Typical Landform Sections
K222-QL00704-01	Typical Landform Interface of Canal Profile
K223-QL00704-02	Proposed Outer Entry Channel Dredge Area
SKa3-11 D	Proposed Ocean Terminal Townsville Sections
SKa3-10 D	Proposed Ocean Terminal Townsville Elevations
SKa3-12 A	Proposed Ocean Terminal Townsville Transit Port Option Base Plan
A1 HWH-001-003 6	Wharf and Deck Detail & Section
A1 HWH-001-004 5	Wharf Deck Sections
QL00017-SK-02 C	Townsville Ocean Terminal - Master Plan Plan View
A1 HWH-001-007	Services Plan for Wharf

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3. DESCRIPTION OF THE PROJECT

This Section describes the project throughout key stages of development including planning, construction, commissioning and long term operation of the TOT facility and decommissioning.

All elements of the project are described including the Breakwater Cove Precinct, the TOT Precinct, landscaped open space areas and road and pedestrian networks.

The Master Plan for development of the site is described including the location and design of major elements such as buildings, services and facilities provided within the development precincts.

Location of the Project Site

As indicated in Plate 3.1, the Project Site is:

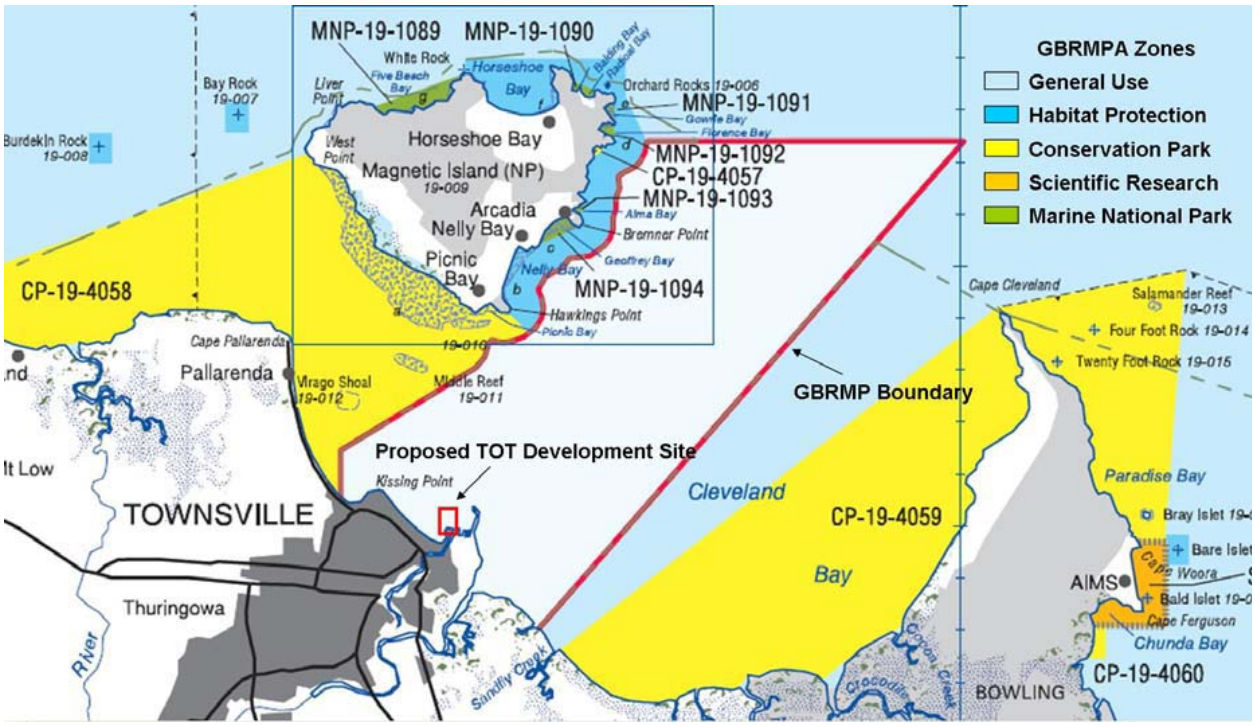
- Located along the North Queensland coast within Cleveland Bay. Adjoining the regional city of Townsville;
- Wholly within State Waters;
- Adjoins existing break waters and reclaimed land components upon which the Townsville Hotel and Casino Complex and the Townsville Entertainment Centre are located;
- Adjoins the active Port of Townsville.

Plate 3.1 Location of Project Site

The location of the Project Site in relation to protected and environmental areas is identified in the following Plates 3.2 and 3.3. .

The entire Project Site, Cleveland Bay and adjacent North Queensland coastline is included in the Great Barrier Reef World Heritage area Is noted that the site is not within the Great Barrier Reef Marine Park whose boundaries differ to that of the Great Barrier Reef World Heritage Area, however the Great Barrier Reef Marine Park Zoning for surrounding State waters of Cleveland Bay is identified in Plate 3.2.

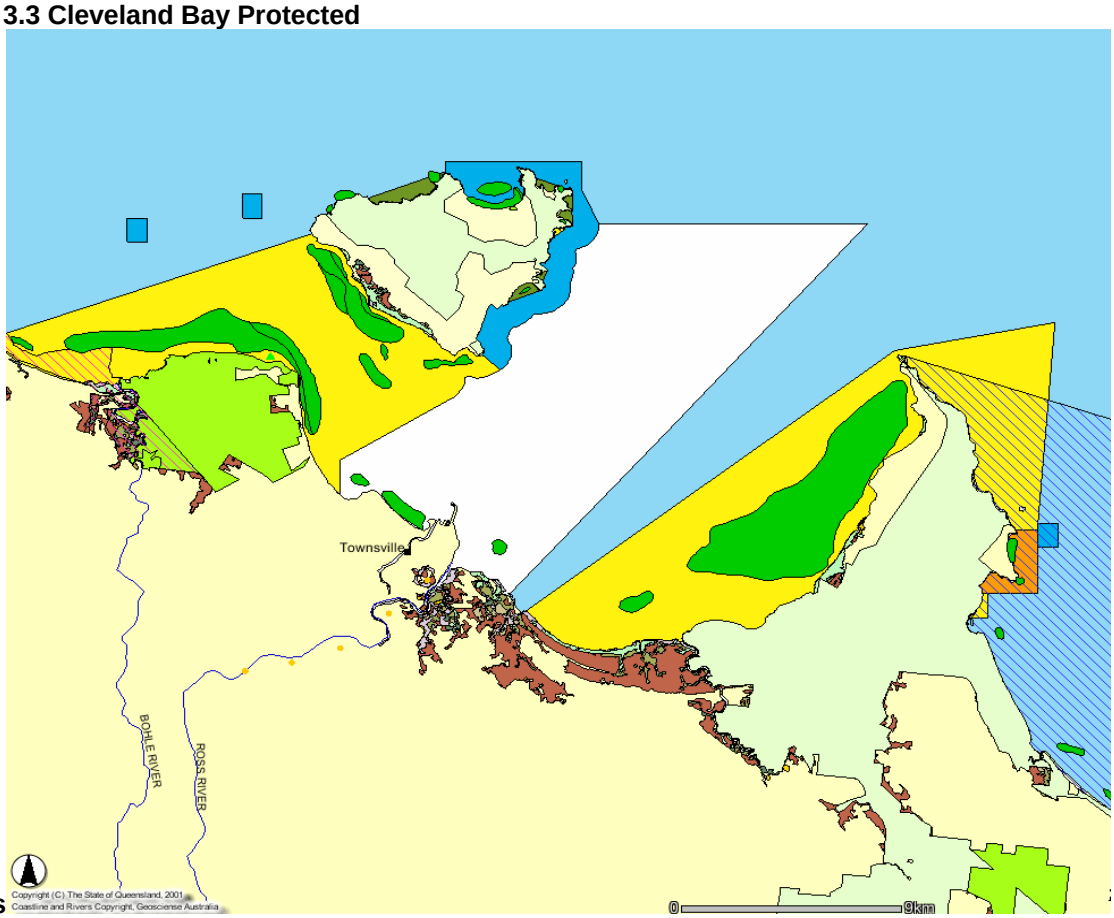
Plate 3.2 Great Barrier Reef Marine Park Zoning



Section 4.11 will discuss in detail the location of the Project Site in relation to protected areas (e.g. Fish habitat areas and the Great Barrier Reef Marine Park) and other sensitive areas (e.g. seagrass beds) however as identified in Plate 3.3, in summary the Project Site is:-

- Not contained in declared fish habitat area;
- Not contained within the Great Barrier Reef Marine Park;
- Contained within a Dugong Conservation Area.

Plate 3.3 Cleveland Bay Protected Areas



Legend

Seagrass Meadows - Qld 1984-88
Seagrass Watch sites
Community Monitoring Sites
Fish Habitat Areas
A
B
Protected Areas
Conservation Park
National Park
National Park Scientific
Resources Reserve
Coastal Wetlands - Northern
Closed Avicennia
Closed Avicennia/Ceriops
Closed Ceriops
Closed Mixed
Closed Rhizophora
Closed Rhizophora/Ceriops
Landward Rim
Medium Seagrass
Open Avicennia
(more)

Open Avicennia/Ceriops
Open Ceriops
Saltpan
Sparse Seagrass
Water and Terrestrial
Coastal Wetlands - Central
Closed Aegiceras
Closed Avicennia
Closed Avicennia/Ceriops
Closed Ceriops
Closed Mixed
Closed Rhizophora
Closed Rhizophora/Aegiceras
Closed Rhizophora/Avicennia
Closed Rhizophora/Ceriops
Dense Seagrass
Exposed Banks
Medium Seagrass
Open Avicennia
Open Avicennia/Ceriops
Open Ceriops
Saline Grassland
(more)

Saltpan
Sparse Seagrass
Water and Terrestrial
Major Towns
Rivers
Great Barrier Reef Marine Park Zones
Buffer
Conservation Park
General Use
Habitat Protection
Island/Cay
Marine National Park
Preservation
Scientific Research
Reefs
Coastline

The following photomontages given an example of the TOT Project, once constructed within the direct surrounding environment.

Plate 3.4

Plate 3.5

Plate 3.6

As will be discussed in detail in Section 3.4, the preferred construction methodology is to encapsulate the Project Site, dewater and excavate the proposed canal areas to create the future land platforms. As such, this will avoid significant dredging 'in the wet' and will significantly minimise requirements for dredge material disposal locations and risk of sedimentation plumes. Excavated material will be recycled on site.

Ongoing maintenance dredging disposal requirements will be discussed in Section 3.4. It should be noted that within the Project Site, the Proponent holds pre-existing dredging obligations to ensure navigability of the marina access channel to the existing Breakwater Marina. These obligations are part of the lease conditions for the Breakwater Marina and ongoing maintenance obligations post construction of the TOT Project will generally replicate that pre-existing obligation.

Detailed concept and layout plans for the TOT Precinct and the terminal building are located in Section 3.4.2 and the specifications for construction of the TOT Precinct have been agreed with the State who will be the ongoing owner of the facility. Future operational requirements are discussed in Section 3.5.

The provision of all required services to the Breakwater Cove Precinct residential area is discussed in Section 3.4.2 and is further considered in Section 4.4 dealing with necessary non transport infrastructure requirements of the TOT Project overall.

Section 3.3 will discuss and identify the planning intents in relation to:

- The location and layout of retail and commercial facility;
- The location of the various precincts including the marina;
- Vehicular and pedestrian access, car parking requirements and open space areas.

Detailed stormwater and drainage design, traffic circulation matters and other civil infrastructure works are further discussed throughout Section 4 and the reader should see the specific provisions in that Section of this EIS for further details.

Section 3.4 will discuss the proposed construction sequencing and methodology and the proposed haulage routes to support the overall project construction program.

The overall objective of this Section is to complete construction and operation of the TOT Project to achieve the anticipated development outcome identified in Plate 1.2.1.

3.1 Ecologically Sustainable Development

An assessment of the TOT Project's compatibility with the principles of ESD;

- As outlined in the National Strategy for Ecologically Sustainable Development (NSESD);
- In compliance with State policy relating to ESD including the standard criteria defined by the *Environment Protection Act 1994* (EP Act); and
- The regional planning policies of the Townsville-Thuringowa Strategy Plan that focus on ESD;

has been undertaken for the TOT Project.

ESD Policy and Principles

The Townsville-Thuringowa Strategy Plan outlines a set of Regional Planning Policies which aim to guide planning and decision making for regional development, several of which focus on the principles of ESD. These policies aim to ensure that urban settlement patterns, natural resource use, employment and investment, water supply and waste management within the region are consistent with the principles of ESD.

The *Environmental Protection Act 1994* (EP Act) aims to protect ecological processes and the quality of life for current and future generations in Queensland through development of environmental protection policies that address specific factors such as air, noise, water and waste. The standard criteria defined by Schedule 3 of the EP Act include the principles of ESD as set out in the *National Strategy for Ecologically Sustainable Development* (NSESD) which are to be considered in assessment of development in Queensland.

The principles set out by the NSESD are:

- *"Decision making processes should effectively integrate both long and short-term economic, environmental, social and equity considerations;*
- *Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;*
- *The global dimension of environmental impacts of actions and policies should be recognised and considered;*
- *The need to develop a strong, growing and diversified economy which can enhance the capacity for environmental protection should be recognised;*
- *The need to maintain and enhance international competitiveness in an environmentally sound manner should be recognised;*
- *Cost effective and flexible policy instruments should be adopted, such as improved valuation, pricing and incentive mechanisms; and*
- *Decisions and actions should provide for broad community involvement on issues which affect them."*

The standard criteria as defined by the EP Act also include addressing a number of instruments described under Schedule 3. All applicable Local, State and Commonwealth legislation including the Queensland Environmental Protection Policies (EPPs) have been considered in each of the elements under assessment for the EIS.

Environmental values identified under the EPPs are protected by implementation of the TOT Project's Environmental Management Plan (EMP) contained in Section 5 of this EIS. All recommendations arising from the specialist investigations included as Appendix to this EIS in Section 7 are also included in the EMP.

Best practice environmental management measures are proposed for protection of receiving environments that may be affected by construction and operational activities associated with the TOT Project.

Compatibility with ESD Principles

Economic, Environmental, Social and Equity Considerations

The EIS prepared for the TOT Project has considered social, economic and environmental aspects of the development in a comprehensive, integrated assessment to maintain intergenerational equity and ensure that project activities do not compromise the quality of life for future generations. The TOT Project will contribute significant social and economic benefits to the Townsville region providing a valuable resource for use by present and future generations.

Social Factors

A program of community consultation has been undertaken to identify and engage the community and project stakeholders and to ensure that those affected by the TOT Project are given the opportunity to participate in project planning and in the EIS process. During this program, social values and expectations were identified and community concerns and issues were addressed as part of the social impact assessment, contained in Section 7, **Appendix 21**. A summary of the social assessment is included in Section 4.13 of this EIS.

The TOT Project will provide uninterrupted access from The Strand for pedestrian and cycling pathways to the proposed Strand Breakwater promoting integration of the development with existing public open spaces. Landscaped parkland within the development will provide opportunities for public use of the Project Site and will maintain foreshore access for the local community and visitors.

The TOT Precinct facility will provide important tourism infrastructure for use by public members and visitors to Townsville. The terminal building provides equitable access for disabled persons to terminal services and amenities. The building design and strategic location of key terminal activities allows spaces for passengers and visitors to gather and provides equitable opportunities for community interaction.

The close proximity of the Breakwater Cove Precinct to existing public transport networks will facilitate use of alternative transport options and reduce the need for private vehicle use. Transport nodes will be provided within the TOT Precinct for connection to existing transport networks and access to the City of Townsville and the wider region.

Environmental Factors

Baseline monitoring of existing environments has been conducted and modelling was undertaken to predict likely changes in these environments as a result of the TOT Project. Where required, the project design was modified and the construction methodology was altered to prevent unacceptable impacts on environmental values.

Environmental constraints associated with material source sites were identified early in the planning stage of the TOT Project and alternative sites and methodologies were investigated in consultation with regulatory agencies to ensure that the environmental values of sensitive areas were protected and species, communities and sites of conservation and cultural significance were avoided.

Residential lot layout and layout of structures in the TOT Precinct was designed to minimise air and noise impacts by separation of ocean terminal activities from sensitive receptors in the Breakwater Cove

Precinct. Internal waterway design was modified to ensure adequate tidal flushing and to protect water quality and aquatic habitats.

Detailed site investigations were carried out to identify environmental values associated with adjacent aquatic and terrestrial habitats and to set objectives and targets for environmental protection. The Environmental Management Plan (EMP) provided in Section 5 will ensure that recommendations arising from these investigations are implemented during construction and operation and that the use of non-renewable resources is minimised. Materials reuse and recycling will be considered during all phases of development. Opportunities for conservation of resources such as energy, water and construction materials have been identified and measures will be implemented during all phases of development.

Economic Factors

The TOT Project is expected to generate substantial economic benefits to the regional economy. The TOT Project will provide important tourism and marina infrastructure attracting increased visitation in these sectors. It will provide increased opportunities for local businesses and for the level of business investment in Townsville. The project will generate opportunities for additional tourism-related businesses and flow-on benefits for local employment, existing local businesses and service providers through construction stages and later operator and passenger-related expenditure.

A detailed Economic Impact Assessment of the TOT Project has been undertaken and is included in Section 7: **Appendix 23**. The results are presented in Section 4.15.

The Precautionary Principle

The Precautionary Principle states that where an activity may cause serious or irreversible damage, even where there is a lack of scientific certainty about the potential impacts, the proponent of the activity must take precautionary measures to limit the risk of environmental damage.

A precautionary approach has been adopted where knowledge of existing ecosystems was limited and site-specific surveys were conducted to supplement existing background information. Potential impacts associated with the construction and operational activities of the proposed development have been identified and assessed by detailed studies and site investigations undertaken as part of this EIS. A more detailed knowledge of the Project Site has allowed specific management measures to be prepared to reduce the risk of environmental impacts.

A hazard and risk assessment has been undertaken to assess the consequences of all potential impacts identified and is discussed in Section 4.16.

An EMP has been prepared to mitigate potential adverse impacts that may occur during the construction and operational phases of the TOT Project.

Monitoring programs have been developed and are detailed in the EMP to provide an early warning of adverse changes in sensitive environments and to limit any risk of irreversible damage.

Global Dimension of Environmental Impacts

The Proponent recognises that impacts that occur on a local scale may have far-reaching effects beyond the boundaries of the Project Site and may be felt on a global scale. Potential environmental impacts of the TOT Project have been assessed in a local, regional, national and international context.

In addition to impacts on species and communities protected under State and Commonwealth legislation, potential impacts have been assessed to ensure protection of World Heritage values and significant sites and species protected under international treaties and agreements. Environmental objectives and impact mitigation strategies for protection of significant species and communities are provided in the EMP.

Strong, Growing and Diversified Economy

The development of an ocean terminal in Townsville is expected to contribute to growth of industry and businesses within the local and regional areas. The cruise shipping industry is a high-growth, high yield tourism industry generating approximately $438 million in Australia during 2005/06. Increased cruise shipping in Townsville is expected to generate opportunities for additional tourism-related businesses and will generate flow-on benefits for existing businesses and service providers.

Additionally, the TOT Project is expected to generate considerable employment during the construction phase generating some 1,200 positions over a 7 year period. The economic benefits of the TOT Project are discussed in detail in Section 4.15.

Enhancement of International Competitiveness

It is estimated that the international cruise industry has experienced an average growth of around 8% per annum since 1980. The growth of this industry in the Asia Pacific region has been considerably greater in the last decade due to increasing interest in destinations outside the Caribbean, Mediterranean and other dominant northern hemisphere destinations.

The majority of cruise traffic currently involves routes through the South Pacific and Tasman Sea to major Australian ports such as Sydney, Brisbane and Melbourne as appropriate infrastructure exists. However, some cruising operates in the Coral Sea between Whitsundays, Townsville and Cairns. There is opportunity for growth in the cruise industry within Australia as identified by the Economic Impact Study undertaken by Transpac Consulting. It is expected that the TOT Project will capture an increased portion of this market through provision of improved facilities for cruise vessels. An analysis of the international cruise shipping industry is provided in Section 4.15 of the EIS.

Improved Valuation, Pricing and Incentive Mechanisms

Adoption of policy instruments including provision of incentive mechanisms is not applicable to the TOT Project. However environmental values have been identified during site-specific investigations undertaken in preparation of this EIS.

The value of natural environments is influenced by a number of factors including the economic benefits of natural resource use and extraction, the social benefits of recreational and amenity uses and the expectations of individuals. In ensuring that the proposed development does not reduce the value of our natural capital, it is necessary to consider all environmental values within the Project Site and surrounding areas.

Although it is difficult to assign a monetary value to environmental factors, it can be assumed that the value of a natural asset will be influenced by any reduction in the existing condition of the asset. The existing condition of environmental values has been assessed as part of this EIS and will be monitored and protected during construction and operation of the project by implementation of impact mitigation measures.

Community Involvement

A program of community consultation has been undertaken throughout the EIS process and will continue through construction of the TOT Project. This program facilitates community involvement and input to the EIS and allows identification of social values and community concerns. Project information and project point-of-contact details were provided to community members to enable feedback throughout the life of the project.

The community consultation program involved identification and engagement of key project stakeholders and interest groups to gain an understanding of community expectations for the project. The TOT Project will provide new services and amenities for use by the local community including spaces for recreation and reflection. The TOT Project will establish a sense of place for Breakwater Cove residents and identify the TOT Precinct as a major marine transport facility.

The community consultation program included media placements and public relations undertaken by Transpac Consulting. Strategies for community engagement included:

- Information brochures distributed to local residents;
- Community survey and identification of issues and concerns;
- Community Open Day; and
- Meetings with key project stakeholders.

The community consultation undertaken for the project and social impact assessment is detailed in Section 4.13.

Future Residences in Breakwater Cove Precinct

Future landowners will be provided with information on Townsville City Council's initiative of *Sustainable Housing for the Tropics,* which aims to reduce greenhouse gas emissions through encouraging good design and construction of new homes.

Energy and water efficiency regulations for Townsville from 1 March 2006 include:

- Install AAA-rated or 3 Star WELS rated showerheads;
- Dual flush toilets not exceeding 6L full flush and 3L half flush;
- Water supplied to new Class 1 buildings not exceeding 500kPa;
- Fluorescent lights or externally ballasted compact fluorescent lights to 40% of total building floor area; and
- Energy efficient hot water system such as solar or heat pump or gas hot water system with 5 Star rating.

Council also encourages:

- Purchase of Clean Energy through the Ergon Energy Program;
- Installation of photovoltaic cells in homes; and
- Minimisation of waste during construction.

Significant improvements in the environmental performance of a building can be achieved through application of sustainable development measures including careful selection of construction materials, specification of efficient fittings and appliances and passive building design measures to ensure efficient use of energy and water resources. Passive design elements of new homes should include orientation of the building to reduce heat gain in summer and natural ventilation and daylighting to minimise the need for artificial cooling and electric lighting for daytime use.

An ESD element has been included in the EMP to be provided by the Breakwater Cove Body Corporate to future landowners to encourage adoption of sustainability principles.

ESD Checklist

In order to demonstrate the compatibility of the project with social, economic and environmental values, a checklist of key ESD considerations is provided in Table 3.1 below with an outline of proposed solutions to be implemented by the project and the section of the EIS that provides details of each of these solutions.

Table 3.1: Checklist of Project Compatibility with Social, Economic and Environmental Values*

Social Factors	Considerations	Project Specific Solutions	Relevant Section of the EIS
Community Services	How will the project impact on the quality, quantity and accessibility of existing community services?	The project provides an improved community facility for reception of cruise vessels and access for visitors to the region. Improved access to the site is provided by the extension of existing pedestrian networks to the Strand Breakwater.	Section 4.13: Social
Community Engagement	How will the project impact on cultural and recreational activities?	Recreational activities will be facilitated by open space provisions including fishing platforms, pedestrian walkways and landscaped parklands along existing and future breakwater structures.	Section 4.13: Social
Cultural & Heritage Values	How will the project impact on areas of cultural and heritage significance?	A cultural heritage assessment has been conducted to identify sites of cultural heritage significance. All practicable measures have been proposed to protect items and places of value to local communities.	Section 4.12: Cultural Heritage
Transportation	How will the project impact on cycling, pedestrian and public transport networks?	The project will provide connections to public transport networks and linkages with cycling and pedestrian pathways to reduce the reliance of users of the site on private transport.	Section 4.3: Traffic and Transport
Public Safety and Amenity	How will the project impact on safety and amenity of private and public spaces?	Public safety will be achieved through application of CEPTD principles within open space areas and streetscapes. Public amenity of open space areas and residential amenity will be achieved through landscape and building design appropriate to tropical Queensland and integration with the existing character of surrounding areas.	Section 3.5.2: Operation of Breakwater Cove Precinct Section 3.3 Concept Master Plan
Energy Efficiency And Greenhouse Gases	How will the project impact on Energy Consumption and Greenhouse Gas Emissions	All buildings within the Project Site will be constructed in accordance with Building Code of Australia energy efficiency provisions. Greenhouse gas impacts have been assessed and mitigation measures proposed to reduce emissions.	Section 4.4.2.1: Energy Section 4.8: Air

Social Factors	Considerations	Project Specific Solutions	Relevant Section of the EIS
Natural Resources And Waste Management	How will the project impact on the use of non-renewable resources and use of recycled or renewable materials	All buildings within the Project Site will be constructed in accordance with Building Code of Australia energy efficiency provisions. Water demand from the site has been calculated and measures proposed to reduce demand on potable water supplies including harvesting of rainwater Waste stream elements have been assessed for reuse and recyclability and measures are proposed to facilitate recycling with the TOT and BC Precincts	Section 4.4.2.1: Energy Section 4.4.2.2: Water Supply and Storage Section 4.5 Waste
Air Emissions	How will the project impact on existing air quality?	An Air Quality Assessment has been undertaken including monitoring of ambient environments and measures are proposed to reduce air quality impacts on surrounding land uses and the BC Precinct.	Section 4.8: Air
Noise Emissions	How will the project impact on the existing noise environment?	A Noise Impact Assessment has been undertaken including monitoring of ambient environments and measures are proposed to reduce noise impacts on surrounding land uses and the BC Precinct.	Section 4.10: Noise and Vibration
Soil and Land	How will the project impact on existing soils and landforms?	Soils and geology of the Project Site have been assessed to determine the potential for impacts on existing landform. Measures are proposed for reduction of soil erosion, protection of site stability and prevention of land contamination.	Section 4.2: Land
Water Quality	How will the project impact on existing water quality?	The existing water quality of surface and groundwater in the vicinity of the site has been assessed to identify potential impacts. Measures are proposed to protect the quality and quantity of existing water resources that may be affected by the project.	Section 4.6: Water Resources
Water Efficiency	How will the project impact on demand on existing water supplies?	The demand on existing water supplies has been calculated and the requirements for upgrade of infrastructure have been identified. Measures are proposed to reduce demand on municipal supplies through recycling of stormwater harvesting from impermeable areas within the site.	Section 4.4.2.2: Water Supply and Storage Section 4.6: Water Resources

Social Factors	Considerations	Project Specific Solutions	Relevant Section of the EIS
Ecology	How will the project impact on adjacent aquatic and terrestrial environments?	A full Environmental Impact Assessment has been undertaken of aquatic and terrestrial environments adjacent to and downstream of the Project Site. All ecological values and species and habitats of conservation significance have been identified and measures are proposed to protect or enhance these environments. Where possible, project design and/or methodologies have been modified to ensure protection of ecological values.	Section 4.11: Nature Conservation
Business Development	How will The project impact on local Businesses And the Level Of Business Investment in Townsville	The project will generate opportunities for additional tourism-related businesses and flow-on benefits for existing local businesses and service providers.	Section 4.15: Economy
Employment	How many and what types of jobs will be created as a result of the project?	The project will generate demand for skilled and unskilled labour during construction, providing 1200 positions over a seven year period.	Section 4.15: Economy Section 4.13: Social

*Adapted from City of Melbourne Sustainability Assessment Questionnaire (City of Melbourne 2006).

ESD - Conclusion

The TOT Project has been designed and developed to ensure that economic goals have been balanced with social equity and protection of environmental quality. Social, economic and environmental values have been identified and considered for all phases of development and the principles of ESD have been applied to protect these values.

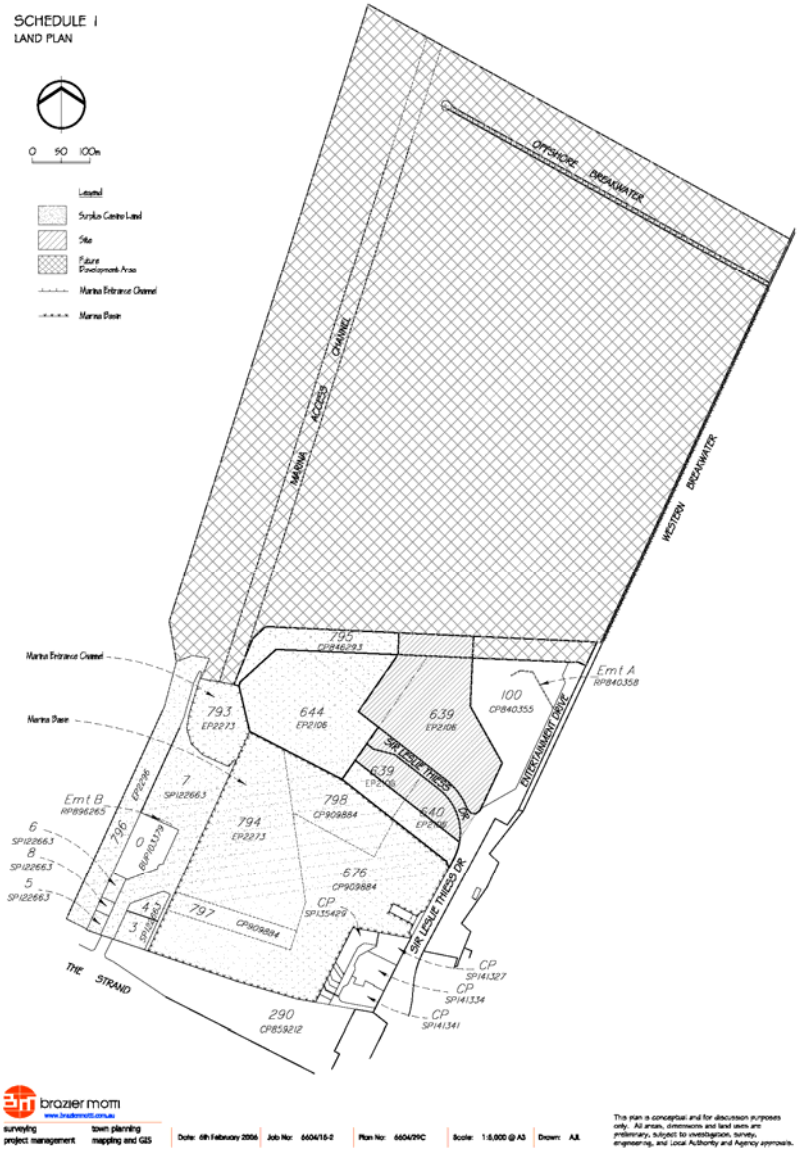
Implementation of the principles of ESD has been achieved for the project through:

- Review and modification of construction methodologies and operational activities where required;
- Identification of social, economic and environmental values through detailed studies and site investigations;
- Identification of potential adverse or beneficial impacts of the development on receiving environments;
- Assessment of the level of risk associated with potential impacts;
- Determining impact mitigation measures required to protect social, economic and environmental values;
- Development of objectives, performance indicators and standard criteria to be achieved; and
- Preparation of monitoring programs to evaluate the effectiveness of impact mitigation measures and determine the requirement for corrective actions.

3.2 Location

As the Project Site is below the high water-mark, it holds no registered real property description under the Land Title Act 1994. The proposed boundary of the Project Site is identified in Plate 3.2 and the Project Site is defined as the "Future Development Area" within the BICA Act.[1] Land Tenure details will be discussed in Section 3.7 of this EIS.

Plate 3.2: Brazier Motti Survey Plan



[1] *Future Development Area* means -

(a) All that area of land generally in accordance with the land identified on the plan in Schedule 1 as the Future Development Area including land covered by water; and

(b) Any future description of the land specified in paragraph (a) consequent upon any resurvey of that land.

In a local context, the TOT Project will represent an infill of the existing Port Western Breakwater and Northern Offshore Breakwater area. The Project Site is located at an important interface of several areas of distinctive local character:

- Public Green space areas of The Strand with its shady avenues and recreational foreshore;
- The Port of Townsville facilities; and
- The existing Townsville Casino and Hotel Complex, Breakwater Marina and Townsville Entertainment Centre.

The Townsville central business district is also located within walking distance of the Project Site.

This is identifiable in Plate 3.2-4.

As discussed previously in Section 1.3, the Project Site is located in an area that has historically been earmarked for future development and adjoining Surplus Casino Land has now been released pursuant to the provisions of the BICA Act to create an adjoining new residential waterfront residential precinct.

In a regional context, Townsville is located approximately central to the two major cruise ship and super yacht sailing destinations, the Whitsundays and Cairns. Townsville represents a gateway facility not only to the adjoining Great Barrier Reef World Heritage Area, Magnetic Island and the surrounding coastal environments but also to the inland of Northern Australia. Townsville's Port Facilities adjoining the development are of regional significance and presently cater for cruise ships and US Naval vessels visitations, together with all normal industrial and port commercial traffic. This has lead to limitations in the ability to increase visitations by the unavailability of a dedicated large cruise ship facility.

The justification for the TOT Project has already been detailed in Section 2.1 of this EIS in that regard.

3.3 Concept Master Plan

The Future Development Area Scheme (FDA Scheme)

The BICA Act requires a land use planning scheme to be prepared. This planning scheme will be known as the FDA Scheme. At the conclusion of the EIS a request for the Minister of Local Government's approval will be made by the Proponent. A copy of the proposed FDA Scheme is contained in Section 7, Appendix 25.

The FDA Scheme will take effect as a preliminary approval under the Integrated Planning Act (IPA). Which means the provisions of the FDA Scheme will take priority over the provisions of the Council's Planning Scheme – Townsville City Plan 2005.

Townsville City Plan 2005 does not currently apply to the project site as it is not yet land within the local government area of Townsville. BICA provides a mechanism for the land platforms created through reclamation to become land which will then fall within the local government area. By establishing the FDA Scheme prior to the land being created it brings forward Council's jurisdiction, defines the development outcomes and in so doing will be used to regulate the reclamation.

The FDA Scheme is a Master Plan for the development which defines the Preferred Land Uses (or PLU's) and the physical elements.

Master Plan

The Master Plan proposes a breakwater extending northward from Mariner's Peninsula formerly known as Surplus Casino Land to the north-west corner of the Project Site and together with the existing northern breakwater forms a new entrance channel to the Breakwater marina.

Inside this new breakwater, three (3) fingers will be constructed in an east/west alignment and the Northern Breakwater will be widened.

The existing Port Western Breakwater which forms the western entrance into Ross Creek will be developed to accommodate the TOT Precinct. The artist's impression below illustrates these elements of the Master Plan.

Overall Planning Objectives

FDA Scheme objectives are to:-

- Create a vital, mixed use and highly urbane residential environment focused on high quality residential living, waterfront public access and marina facilities.
- Development respects highly visible nature of the FDA Scheme Area and provides a built form that interacts positively with:
    - Existing development in the locality, particularly the Breakwater Island Casino-Hotel Complex and the Townsville Entertainment Centre, as the pre-eminent casino/gaming entertainment facility in Townsville;
    - The Strand public open space, and
    - The existing Breakwater Marina.
- Enforce a residential development design within the FDA Scheme Area which will protect residential and commercial developed buildings from Amenity Impacts from the Port of Townsville through FDA Port Protection Code.
- Establish and maintain a scale and density of development which respects the planned intent within this FDA Scheme;

- Provide for a comprehensive development that includes the following elements:
    - High quality predominantly multiple dwelling residential buildings in a variety of built forms and densities;
    - Public open spaces, landscaping and pedestrian circulation;
    - Private and public access to waterfront;
    - Facilities to support marina and boating activities; and
    - Lot sizes that incorporate landscaping and visual buffers for individual uses;
- Residential development must provide all necessary residential and residential visitor car parking required on-site.

Elements of the FDA Scheme

The Project Site is divided into five (5) PLU's.

The Ocean Terminal Precinct

This precinct will accommodate the Ocean terminal facility which in addition to a berth capable of accommodating vessels up to 258m in length will include multi purpose land based facilities to support the needs of visiting passenger and military vessels such as customs, immigration and security facilities. The facility has been designed that it can be utilised not just when there is a vessel in the berth, and at other times may available for functions, exhibitions and conferences when not required by visiting vessels, subject to the Operators requirements, customs and security controls. These activities would complement and support the Townsville Entertainment Centre.

The Entertainment Centre Precinct

This precinct is located seaward of the current Townsville Entertainment Centre and will allow for the expansion of the Townsville Entertainment Centre at some time in the future. In the interim it will accommodate a car park with some five hundred (500) spaces.

The Marina Precinct

This precinct is located adjacent to the marina between the existing Casino Breakwater and the first of the proposed east/west fingers and will accommodate the land based activities associated with the marina which is not under the jurisdiction of the FDA Scheme. Uses such as bait and tackle shops, chandlery, charter boat operators, brokers and the like are expected to establish in this area.

The Multiple Dwelling Precinct

This precinct is primarily located on the first of the proposed east/west fingers and typically is intended to accommodate residential units above an active ground level which includes retail, hospitality and commercial land uses. The scale of the development is mostly six (6) stories or less except for a small area on the western end of the first finger where a building up to nine (9) storeys is permitted.

The Traditional Residential Precinct

This precinct accounts for most of the second and third fingers and typically accommodates dwelling houses on individual lots – most would have a private marina berth. Allotment sizes

could be as small as 400m2 – some dwellings may share common walls or have zero side boundary setbacks.

The Green Space Precinct

Typically this precinct accommodates the publicly accessible areas where people will be able to freely move about and enjoy numerous waterside recreational pursuits.

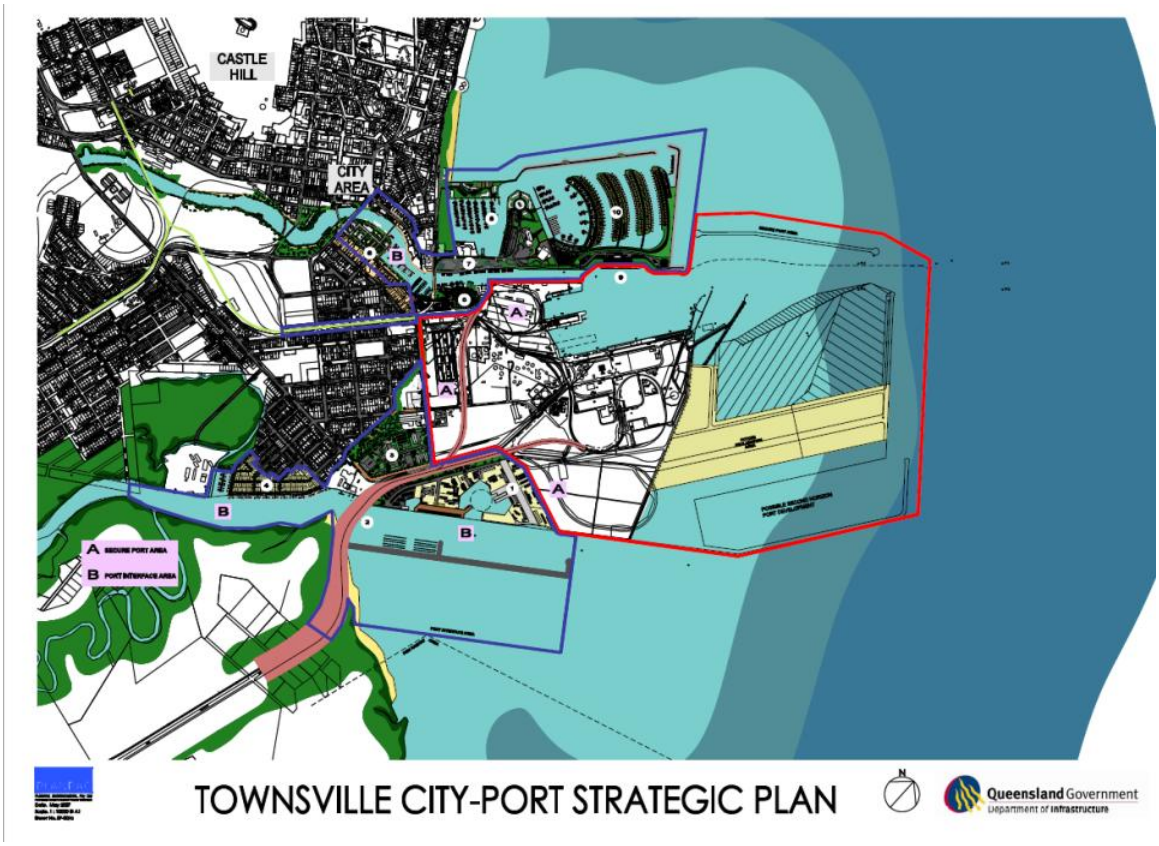
City Port Strategic Plan

The objective of the Townsville City Port Strategic Plan (the Plan) is to provide a shared vision for an effective and sustainable interface between Townsville's port area and the adjacent city area, which will protect the port's operations efficiencies and enhance the City's urban amenity and functionality. It was therefore appropriate to take into consideration preparation of the Master Plan.

The Plan provides a conceptual example of the type of development that could be achieved within the city port interface.

The Plan has been developed in consultation with the Townsville Port Authority, Townsville City Council, Department of State Development, Queensland Transport, Queensland Treasury and Main Roads Department.

A copy of the Plan appears on the next page. It clearly encompasses the development and therefore it could be concluded that the development is an appropriate interface with the Port.



Townsville City Plan 2005 (City Plan)

Regard was also had to the City Plan in preparation of the Master Plan, in particular:-

- District Code 1 and the Breakwater Precinct provisions in that Code. As stated earlier, the City Plan does not apply to the FDA. The Breakwater Precinct designation applies to the area around the Casino and Mariners Peninsula.

Typically the precinct is intended to accommodate; accommodation buildings, motels, catering shops, restaurants, shops and multiple dwellings up to eight stories in height. The Master Plan envisages as similar range of uses for the FDA and is therefore complimentary.

The FDA Scheme includes specific development requirements in the form of a Code. The Scheme provides that the Code takes priority over the City Plan codes which nevertheless continue to apply except when there may be inconsistencies.

City Plan Codes

In preparation of the FDA Scheme Code, regard was also had to the following City Plan codes to ensure consistently of the scheme of later development of the breakwater Cove precinct with other development Codes applicable in the wider Townsville Area with the intent of the FDA Scheme Area Code:

- Residential Codes
- Works Codes
- Landscaping Code
- Re-configuration Code
- Parking and Access Code

In particular, the provisions of car parking for residential development within the breakwater Cove, both on site and visitors are generally in accordance with the City Plan Parking and Access Code. The FDA Scheme imposes satisfaction of the car parking requirements as a mandatory consideration for approval of any development within the Project Site.

City Plan Overlays

Regard was also had to the following City Plan overlay codes:

- Acid Sulphate Soils Overlay Code.
- Waterways and Wetlands Overlay Code.

Both overlay codes will be applicable to the development and cause no particular problems with the implementation of the Master Plan.

City Plan Policies

Regard was also had to the suite of City Plan Policies including the Developer Contributions Policy. The various Policies relevant to the development and the normal infrastructure charges/ contributions will be applicable.

Townsville Port Authority Land Use Plan

The Townsville Port Authority (TPA) has control over not only the existing Port operations area but also peripheral land like along Ross Creek. The TPA's holdings can be categorised as strategic and non-strategic port land. The purpose of the Land Use Plan is to provide a management framework for the Strategic Port Land.

The existing SCL land is not under the control of TPA and is therefore not included in the Land Use Plan – the to be reclaimed land in the FDA will similarly not be in the Land Use Plan, except for the Ocean Terminal facilities which may eventually come under the control of the TPA. The water lease around the Breakwater, including the Marina are however under TPA control and are identified as non-strategic and therefore not otherwise provided for in the Port Land Use Plan.

The TPA land on the western bank of Ross Creek north of the Strand is shown as strategic and identified in the Land Use Plan as "buffer", i.e. it separates the port activity from more sensitive urban uses.

It could be assumed therefore that the intent of the Land Use Plan is to ensure that land users on the western bank of Ross Creek are sympathetic with the port activities and can act as a buffer to any more sensitive urban uses. The Ocean Terminal Precinct in the Master Plan will effectively act as a buffer to the proposed residential development to the west.

It is also noted that the FDA Scheme will incorporate specific measures to protect the port activities from any incompatible land uses. – The Port Protection Code at Section 18.

Solar City

City Pacific Limited supports Townsville as a "Solar City" and is committed to sound sustainable practices.

Solar Cities is an Australian Government initiative designed to demonstrate how solar power, smart meters, energy efficiency and new approaches to electricity pricing can combine to provide a sustainable energy future in urban locations throughout Australia.

The project will commence in early 2008 and will focus on Magnetic Island. Around five hundred (500) solar photovoltaic systems will be installed on homes and virtually all island premises will have smart meters installed and receive an energy receive an energy assessment (see below). The Project also incorporates solar energy and energy efficiency measures in a significant number of new homes in two (2) estates on the mainland, a central business district commercial building, and a community capacity building educational program across Townsville.

City Pacific Limited will seek to be involved in the Solar City project and incorporate energy efficient measures within the TOT.

3.4 Construction

3.4.1 Construction Methodology and Sequencing

This Section defines the preferred construction methodology proposed for the formation of the land platforms and waterways for the TOT Project. The construction methodology, in simple terms will be by progressive reclamation of land utilising predominantly materials within the site, contained by breakwaters of rock material exported from existing external licensed rock and sand material sources and revetment walls.

As explanation of the construction methodology is enhanced by an understanding of the Drawings and Plans for the TOT Project, a complete suite of the drawings contained in the Construction Methodology Report is located as an Annexure to this section.

Alternative Construction Methods

Alternative construction methods were considered prior to selection of the preferred methodology. These included:

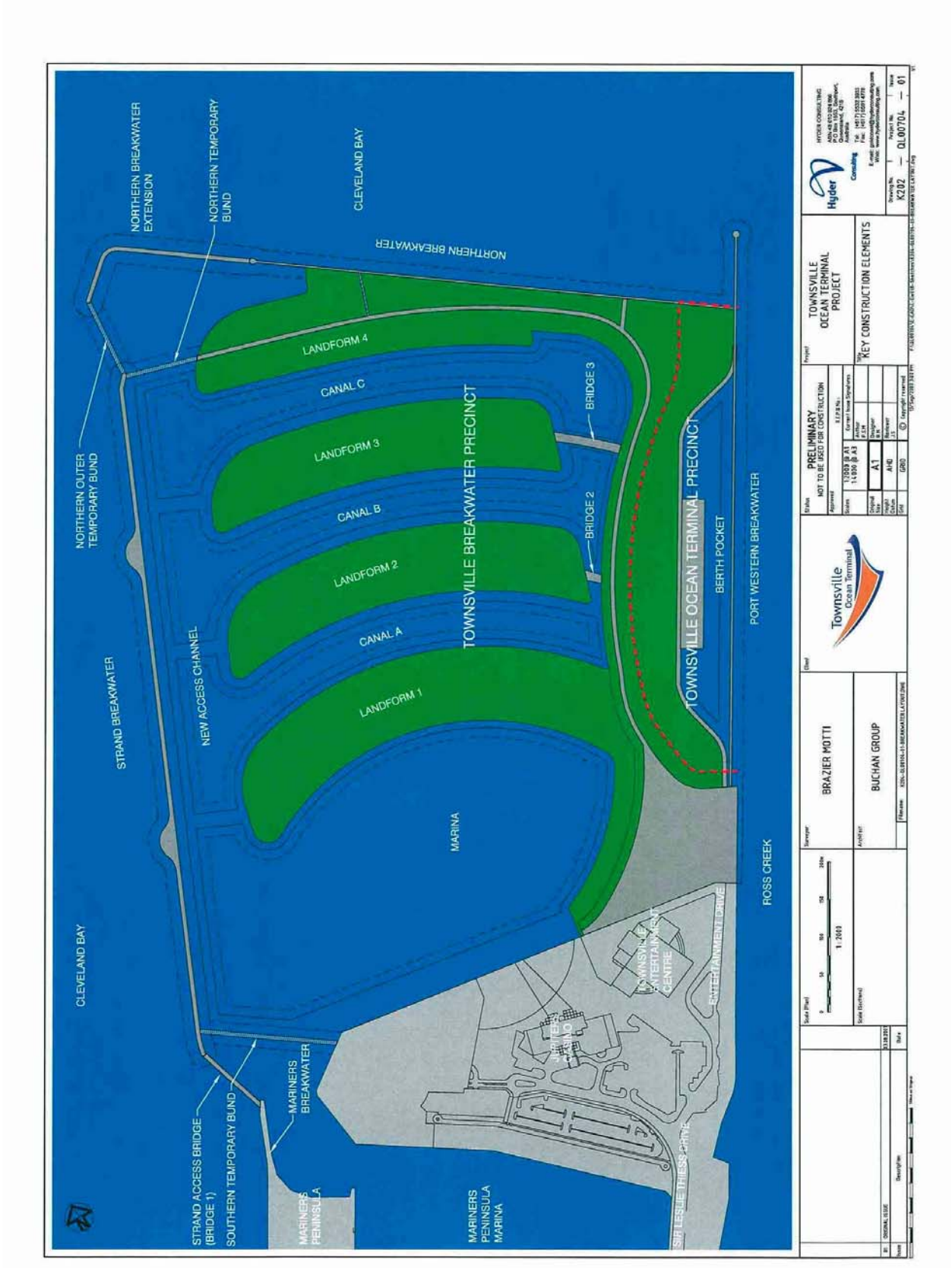
- Typical methods for reclamation of wet sites by dredging of adjacent marine bed sediments for sourcing of suitable fill materials; and
- A hybrid method to retain materials within the site by preloading landfill areas using stable inert materials.

These options were discounted due to unavailability of suitable volumes of sand in close proximity of the Project Site, environmental impacts and impacts associated with haulage of materials. The preferred construction methodology was developed in consultation with a construction contractor experienced in land reclamation development, and the Proponent's environmental consultant team.

Key Construction Elements

The various key construction elements are identified on Plate 3.4.1 to assist the reader understand the construction methodology.

Plate 3.4.1 - Key Construction Elements



Preferred Construction Method

Construction will proceed generally as described in the following 25 Step methodology and sequencing. To assist in the readers understanding of the methodology, explanatory illustrations have been provided.

Step 1 – Access Haul Road and Hardstand Area

An internal access haul road will be constructed within the site, by creation of a trafficable rock bund wall running adjacent to the existing Port Western Breakwater, Northern Breakwater.

An initial hardstand area will be generally located in the position of the future car park adjacent to the Townsville Entertainment Centre.

The access haul road will be created as a bund to serve as waterproof barriers between the Project Site and surrounding waterways through incorporation of a water barrier membrane such as High Density Polyethylene (HDPE) / NAVE membrane. See Plate 3.4.2 - Methodology Drawing K203-QL00704-01 and Design Drawing K218-QL00704-01.

One-tonne rocks will be used to form the base layer of the bund walls to penetrate the soft upper layer of the waterway bed and will found on the underlying stiff clay. Rock material will be tipped into place either directly from the truck or stored in stockpiles.

Stockpiles will be provided generally within the designated stockpile area as shown on Plate 3.4.2 - Methodology Drawing K203-QL00704-01. Stockpiled rock material will be transported into place by excavator, truck or barge within the TOT Project Site.

Step 2 – Perimeter Breakwater Construction

Construction of the Strand Breakwater and extension and remediation of the Northern Breakwater will be undertaken during Step 2. In general, corefill material will be placed to form the inner layer of the breakwaters. A HDPE water proofing membrane will be placed against the corefill material where required. Armour rock will be placed to form the outer layers of the breakwaters. See Plate 3.4.3 - Methodology Drawing K204-QL00704-01 and Design Drawing K219-QL00704-01.

Placement of rock material onto the breakwaters will be undertaken by an excavator or loader located on the breakwaters. Incorporation of a HDPE / NAVE membrane will enable these breakwaters to act as waterproof barriers between the Project Site and surrounding waterways.

Step 3 – Temporary Bunds Construction

In order to encapsulate the site for dewatering, a temporary bund will be constructed between the Strand Breakwater and the termination of the access road in the northwest corner of the site. This temporary bund will assist in isolating the construction site from the adjacent waterways. Additional temporary bunds will be positioned between the Strand Breakwater and the Northern Breakwater to complete the site encapsulation or isolation.

These bunds will be constructed of one-tonne rocks and crushed rock. One-tonne rocks will be used to form the base layer of the bund to penetrate the soft clay material and found on the stiff clay. See Plate 3.4.4 - Methodology Drawing K205-QL00704-01.

Step 4 –Terminal Haul Road Bund Construction

A second trafficable rock haul road bund wall will be constructed between the access haul road bund constructed during Step 1 and the Port Western Breakwater. See Plate 3.4.4.

Once this bund wall is created, the TOT Precinct can then be constructed concurrently with the rest of the site.

Step 5 – Sheet Piling of Future Land Area

Remaining perimeter areas in the northwest corner of the site will be sheet piled to close off the parkland area. Sheet piles will be protected with crushed rock and primary armour rock. A construction rock bund will be placed between the access haul road bund and the Northern Breakwater for creation of a water treatment area. See Plate 3.4.4.

Step 6 – Site Dewatering

The Project Site will be dewatered following construction of breakwaters, temporary bund walls and sheet piling by installation of spear pumps within the perimeter of the encapsulated area.

Dewatering will be undertaken progressively and water will be treated via a series of settlement ponds prior to discharge of water to surrounding waterways.

Dewatering will proceed in accordance with the recommendations contained in the Geotechnical Report and the Water Quality Report contained in Appendix 8 and 12 of this EIS. Plate 3.4.5 - Methodology Drawing K206-QL00704-01 shows indicative dewatering discharge points, however these will be confirmed at final engineering approval.

Full dewatering will not occur within the berth pocket and the Terminal Haul Bund due to the removal of part of the existing Port Western Breakwater in Step 11.

Step 7 – Excavation Treatment from Soft Layers to Storage Areas

Once the site is dewatered, the soft clay from Canal C and the intended temporary flocculent area will be removed down to the stiff clay layer by excavator and trucked by Rigid Dump Trucks to a temporary storage area in the northern corner of the site.

Soft clay from inside the berth pocket area will also be removed down to the stiff clay layer by excavator and trucked by Rigid Dump Trucks to the Future Parkland Area to complete filling to RL2.6m. See Plate 3.4.6 - Methodology Drawing K207-QL00704-01.

Geotextile fabric will be laid over the existing soft clay within the future parkland area. Then a 500mm layer of sand will be introduced for wick drain dewatering.

The soft clay material excavated from the TOT Precinct and will be laid over the sand layer in the Future Parkland Area.

Step 8 - Commencement of Clay Recovery and Revetment Wall Construction

The Breakwater Cove Precinct will be progressively excavated, filled and backfilled until completion of land reclamation areas to the required design levels.

Temporary clay bunds will be constructed and will be progressively relocated across the site to create “working cells” for excavation of soft clay and stiff clay. Within each working cell, soft clay will be either pushed by dozer or loaded by excavators into Rigid Dump Trucks for either storage or permanent placement in an excavated canal trench.

Land reclamation will be created by relocation of excavated stiff clay to landform sites and compacted in maximum layers of 300mm to 95% compaction with a maximum soil moisture content of 20 to 25% and to a maximum height of RL 2.6m.

A pre-cast revetment wall system will then be placed at the perimeter of the landform areas. Revetment walls will consist of a drainage membrane, engineered backfill and soil retention anchor system with rock armour protection placed at the toe of revetment walls.

Engineered fill will then be placed on landform areas to achieve final levels of RL 3.5m.

A temporary flocculent area will also be created during Step 8. Stiff clay layers exposed after Step 7 in Canal Area C will be placed in the Landform 4 and imported engineered fill material will be placed in the Future Parkland Area.

The construction sequencing for the TOT Project Site will follow this general progressive construction of landforms from north to south.

Construction sequencing will proceed concurrently in separate working cells and in the TOT Precinct as illustrated in Plate 3.4.7 - Methodology Drawing K208-QL00704-01. To "step out" the methodology however, each will be explained individually.

Step 9 – Commence Berth Pocket Clay Recovery

Stiff clay material will be excavated from within the TOT berth pocket and transferred to the terminal building area. See Plate 3.4.7 - Methodology Drawing K208-QL00704-01.

Step 10 – Continue Clay Recovery and Revetment Wall Construction

Soft clay material will be excavated from Canal B and Landform 3 and placed in Canal C. Engineered fill will be imported and placed in Landform 4 and the TOT Precinct. The Future Parkland Area will then be finished to a final profile of RL3.5m. See Plate 3.4.8 - Methodology Drawing K209-QL00704-01.

Step 11 – TOT Berth Pocket Works

The wharf piling in the terminal wharf area will be constructed from a barge mounted piling rig. Rock armour protection will be placed at the toe of the wharf embankment by clamshell excavator. Wharf pre-cast headstocks and decking will be placed via a land based 40t crane to complete the wharf structure. See Plate 3.4.8 - Methodology Drawing K209-QL00704-01.

The portion of the existing Port Western Breakwater directly in front of the berth pocket will then be removed by clam shell and conventional excavators. The excavated rocks will be available for re-use and subject to TPA consent can be barged for final placement at Mariners Peninsula and on the northern side of the Northern Breakwater. Alternatively, their relocation will be discussed with the TPA See Plate 3.4.8 - Methodology Drawing K209-QL00704-01.

Step 12 – Continue Clay Recovery and Revetment Wall Construction

Stiff clay will be excavated from Canal B and placed in engineered fill to form Landform 3. Landform 4 will then be finished to a final profile of RL 3.5m. The TOT Precinct will also be finished to a final profile of RL 3.5m. See Plate 3.4.9 - Methodology Drawing K210-QL00704-01.

Step 13 – Final Clay Removal from the Berth Pocket and Swing Basin

Stiff clays from below the removed rocks of the Port Western Breakwater and within the berth pocket will be excavated by cutter suction dredge for creation of the swing basin. These materials are considered unsuitable for reuse on site and will be removed to a suitable disposal site. See Plate 3.4.9 - Methodology Drawing K210-QL00704-01.

Step 14 – Dredge Future Marina Outer Access Channel

Approximately 15,433 m^3 of material will be dredged from within the outer access channel entrance. This material will be removed by cutter suction dredge and deposited within the excavation pit in Canal B. See Plate 3.4.9 - Methodology Drawing K210-QL00704-01.

Step 15 – Continue Clay Recovery from Canal A and Import Engineered fill to Landform 3

Soft clay material will be excavated from Canal A and Landform 2 and removed to the excavation pit in Canal B. Imported engineering fill will be placed within Landform 3 to achieve a final profile of RL 3.5m. See Plate 3.4.10 Methodology Drawing K211-QL00704-01.

Step 16 – Bridge 3 Construction

Bridges within the Breakwater Cove Precinct will be constructed in dry site conditions with piles being driven by conventional means. Rock scour protection will be placed by excavator at the base of the driven piles. Headstocks and decking will be placed on bridges via 40t crane and handrail will be installed at completion of the rock protection works. Bridge 3, which connects to Landform 3, will be constructed during Step 16. See Plate 3.4.10 - Methodology Drawing K211-QL00704-01 more detailed design drawings of the bridge construction is identified in the Construction Methodology Report.

Step 17 – Clay Recovery from Canal A

Stiff clay material from Canal A will be excavated and placed on Landform 2 to fill to RL 2.6m. Landform 3 will then be filled to achieve a final profile of RL 3.5m. See Plate 3.4.11 Methodology Drawing K212-QL00704-01.

Step 18 – Soft Clay Recovery from Marina

The soft clay layer from within the Marina basin and from Landform 1 will be excavated and relocated to the excavation pit in Canal A. Imported engineering fill will be placed on Landform 2 to fill to a final profile of RL 3.5m. See Plate 3.4.12 - Methodology Drawing K213-QL00704-01.

Step 19 – Bridge 2 Construction

Bridge 2, which links to Landform 2, will be constructed in dry site conditions with piles being driven by conventional means. Rock scour protection will be placed by excavator at the base of the driven piles.

Headstocks and decking will be placed by crane on bridges and handrail installed at completion of the rock protection works. See Plate 3.4.12 - Methodology Drawing K213-QL00704-01.

Step 20 – Continue Clay Recovery and Revetment Wall Construction

Stiff clay material will be excavated from the Marina basin and placed on Landform 1. Excavation of stiff clay from the Marina will be placed on the temporary flocculent area to fill to a level of RL 2.6m. Landform 2 will then be finished to a final profile of RL 3.5m. See Plate 3.4.13 - Methodology Drawing K214-QL00704-01.

Step 21 – Complete Soft Clay Material Recovery and Importation of fill to Landform 1

Imported engineering fill will be placed on Landform 1 to achieve a final profile of RL 3.5m. Approximately 175,000 m^3 of soft clay material that was temporarily stored within the on-site storage areas will be returned to the final disposal areas within the Marina by use of a cutter suction dredge See Plate 3.4.14 - Methodology Drawing K215-QL00704-01.

Step 22 – Commence the Strand Breakwater Bridge Construction

The bridge connection from Mariners Peninsula to the Strand Breakwater will be constructed by driving piles from the water via a piling rig barge. Bridge decking and headstocks will be placed from a barge based 40t crane. See Plates 3.4.3 and 3.4.14.

Step 23 – Complete Landform Construction

Landform 1 will be filled to achieve a finished profile of RL 3.5m. The temporary flocculent area will be then filled to achieve a final profile of 3.5m. See Plate 3.4.15 - Methodology Drawing K216-QL00704-01.

Step 24 – Staged Removal of Temporary Construction Bunds

Temporary construction bunds installed during Steps 1, 3 and 4 will be removed progressively by barge mounted clam shell excavators and materials will be deposited adjacent to the Strand and Northern Breakwaters. This will allow water to flow into the Project Site. Clay bunds at the end of each working cell will then be removed one by one allowing settlement of water and turbidity within canals on a staged basis prior to removal of each successive bund. See Plate 3.4.15 - Methodology Drawing K216-QL00704-01.

Step 25 – Complete the Strand Breakwater Bridge Construction

In the final step, the Bridge connecting Mariners Peninsula to the Strand Breakwater will be completed. See Plate 3.4.15 - Methodology Drawing K216-QL00704-01.

Plate 3.4.2 - Methodology Drawing K203-QL00704-01

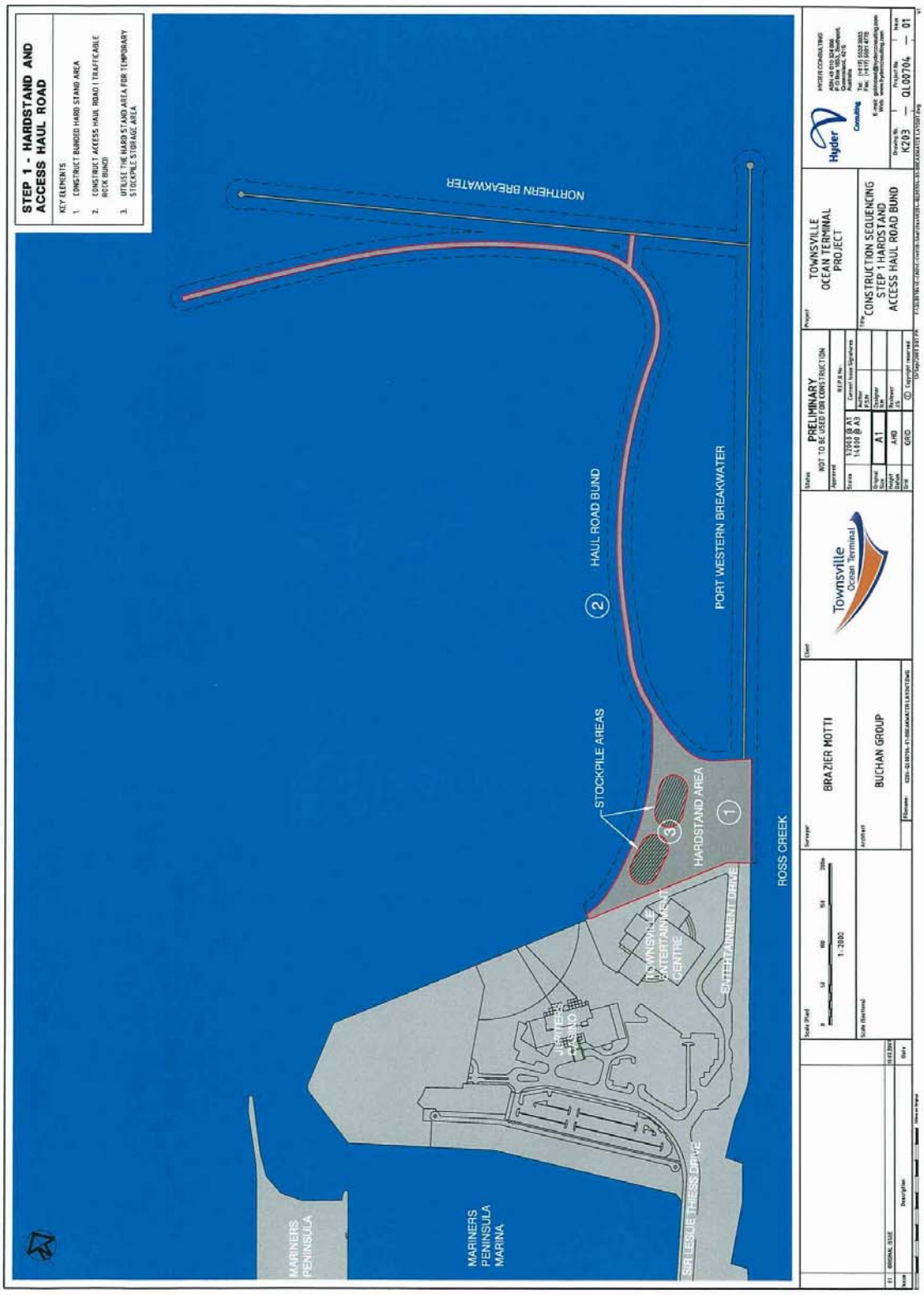


Plate 3.4.3 - Methodology Drawing K204-QL00704-01 and Design Drawing K219-QL00704-01

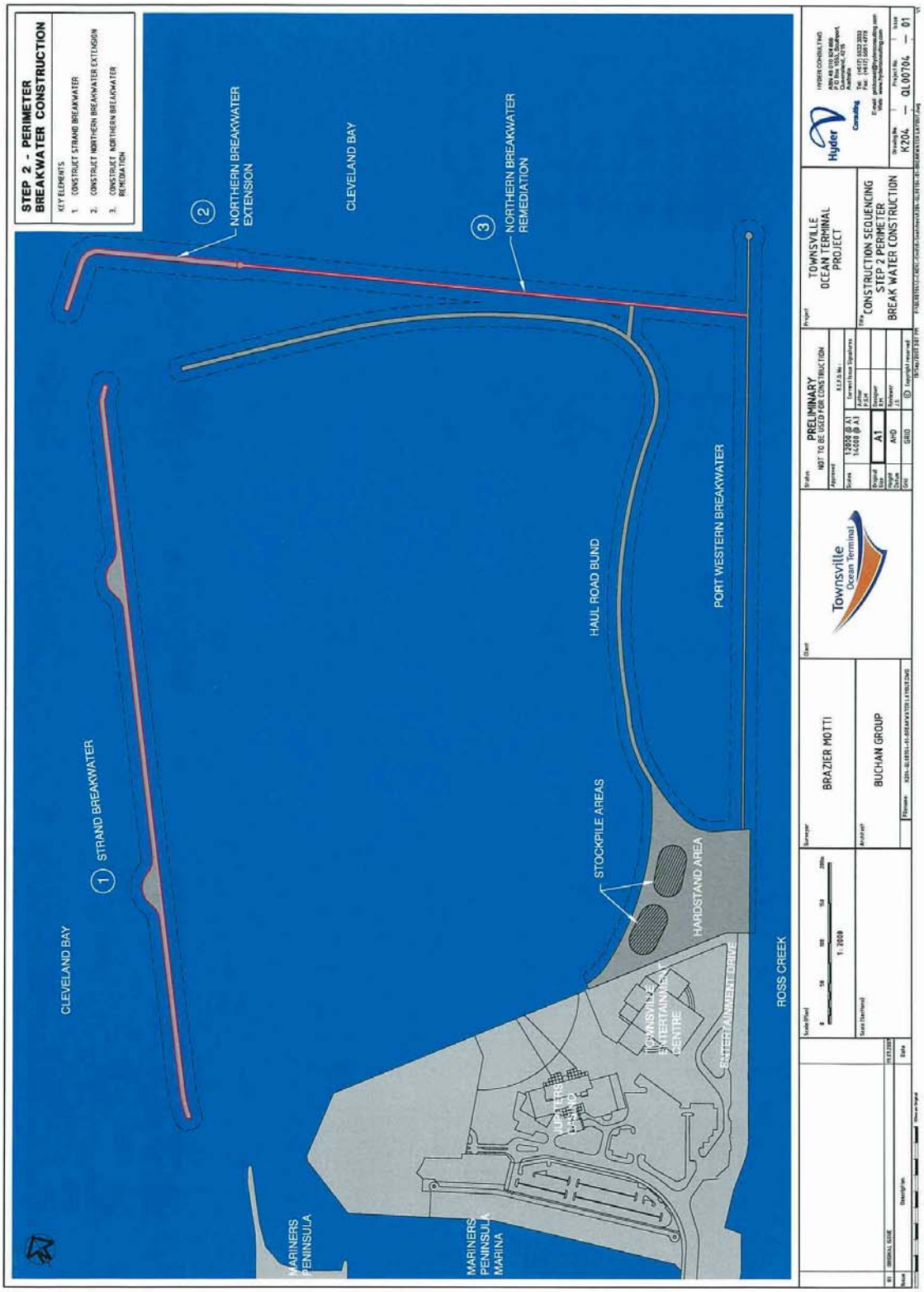


Plate 3.4.4 - Methodology Drawing K205-QL00704-01

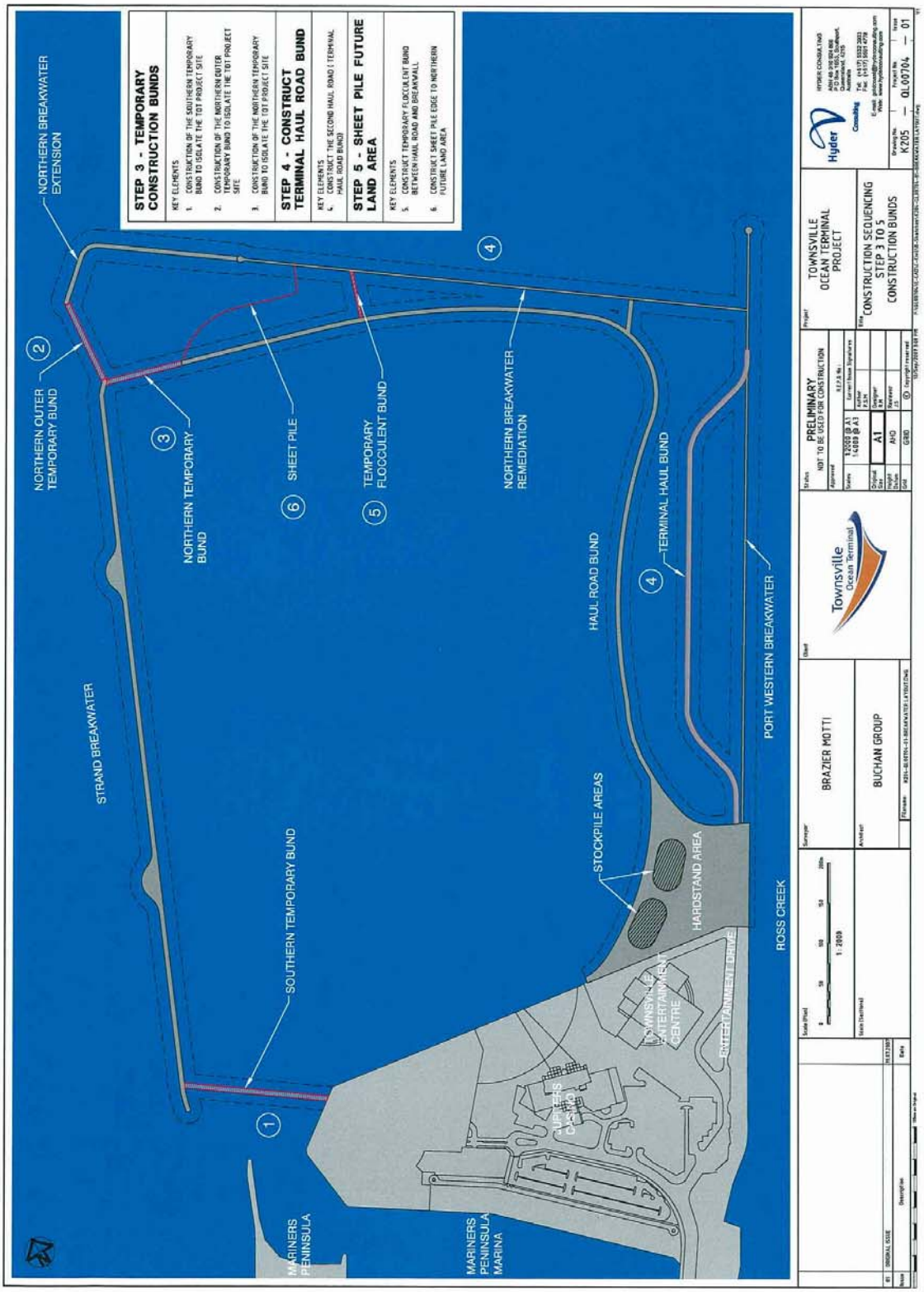


Plate 3.4.5 - Methodology Drawing K206-QL00704-01

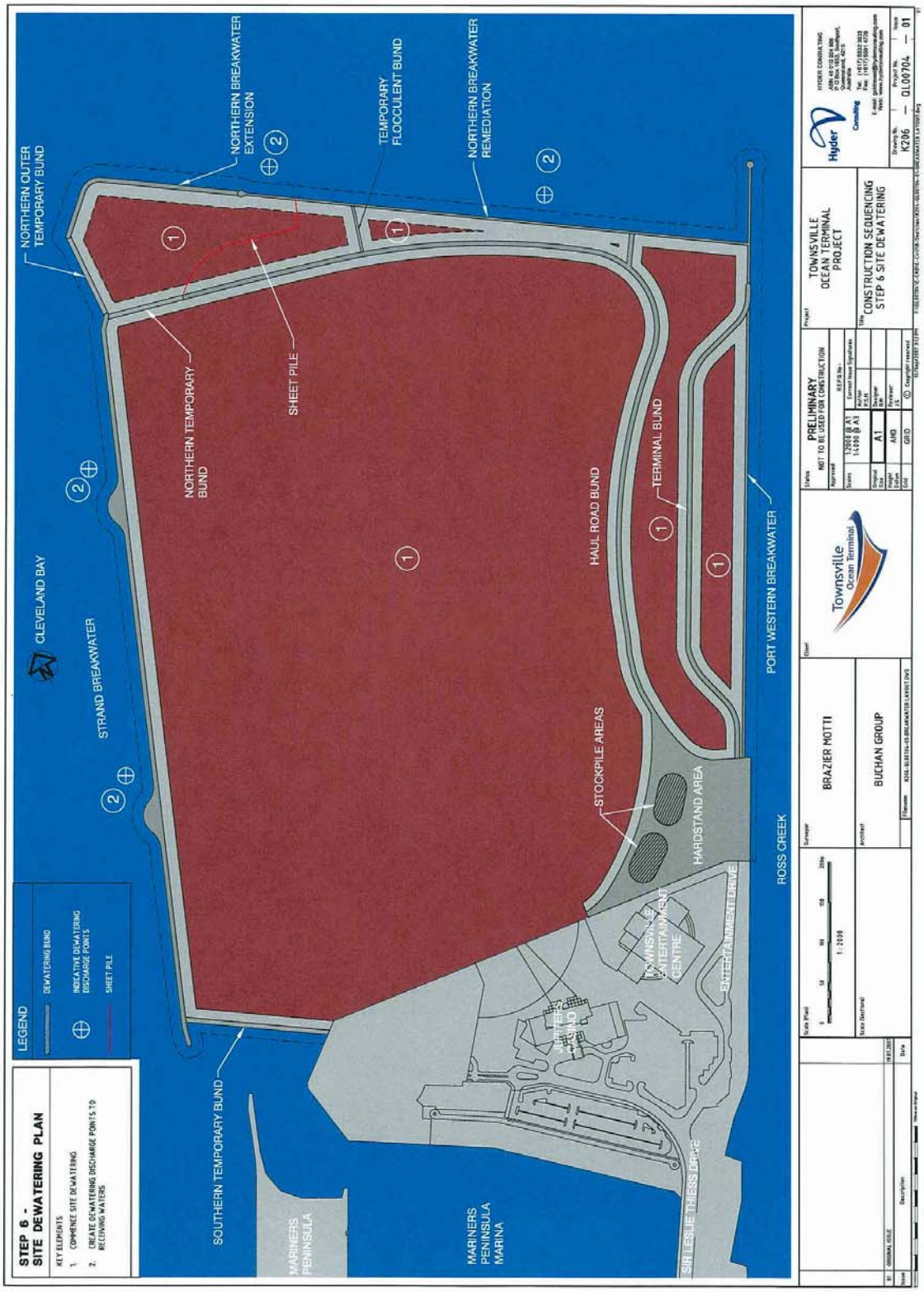


Plate 3.4.6 - Methodology Drawing K207-QL00704-01

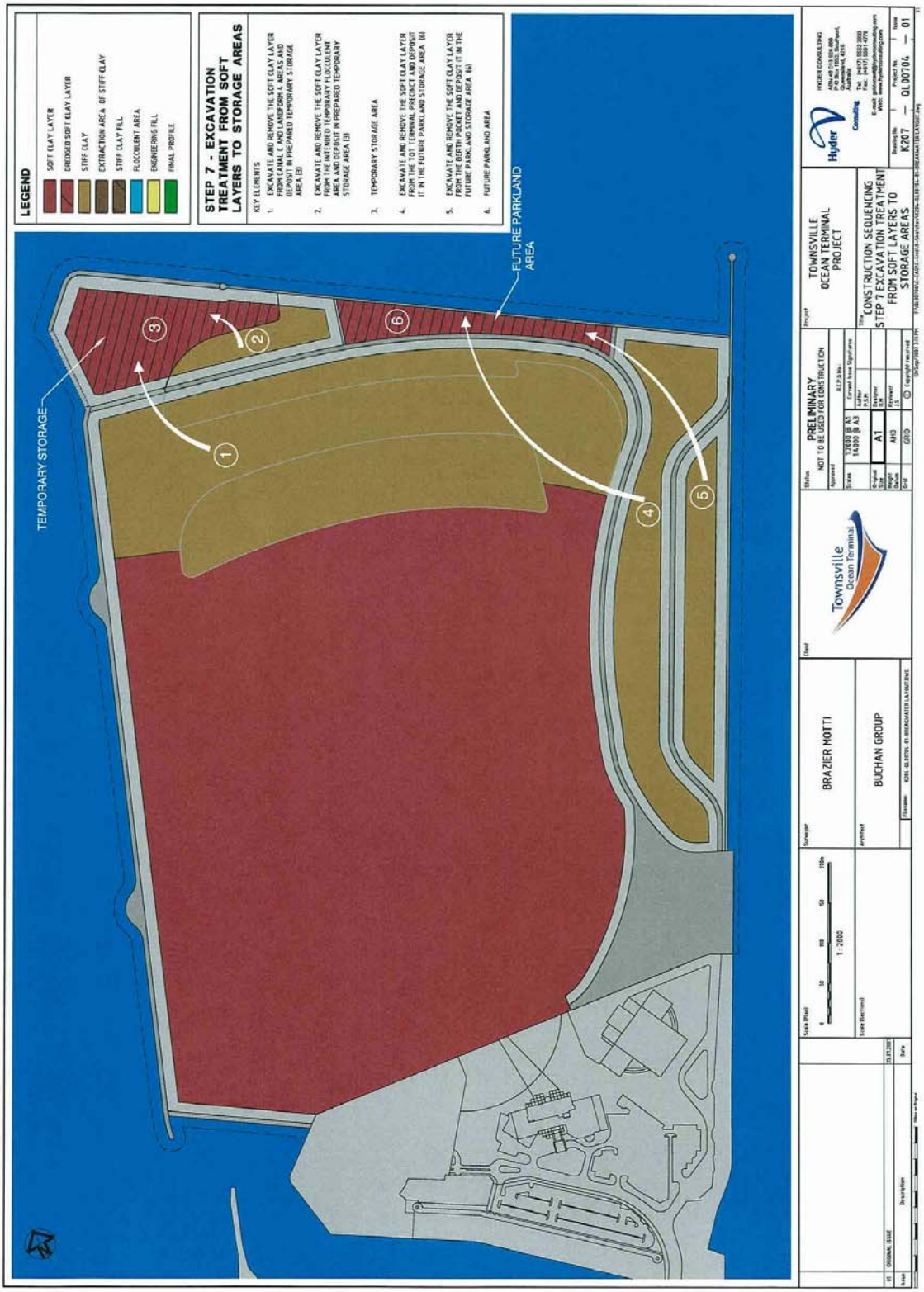


Plate 3.4.7 - Methodology Drawing K208-QL00704-01

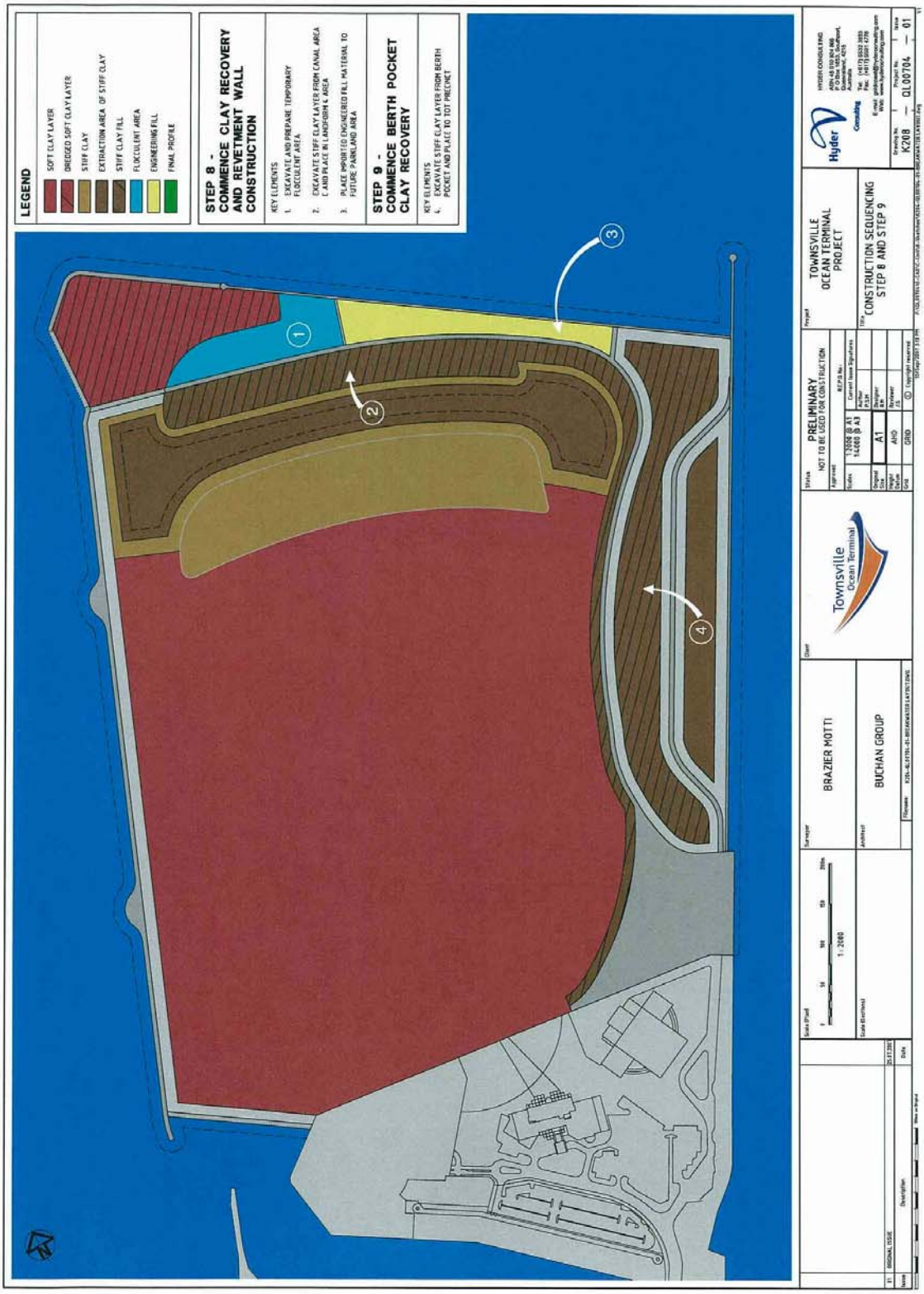


Plate 3.4.8 - Methodology Drawing K209-QL00704-01

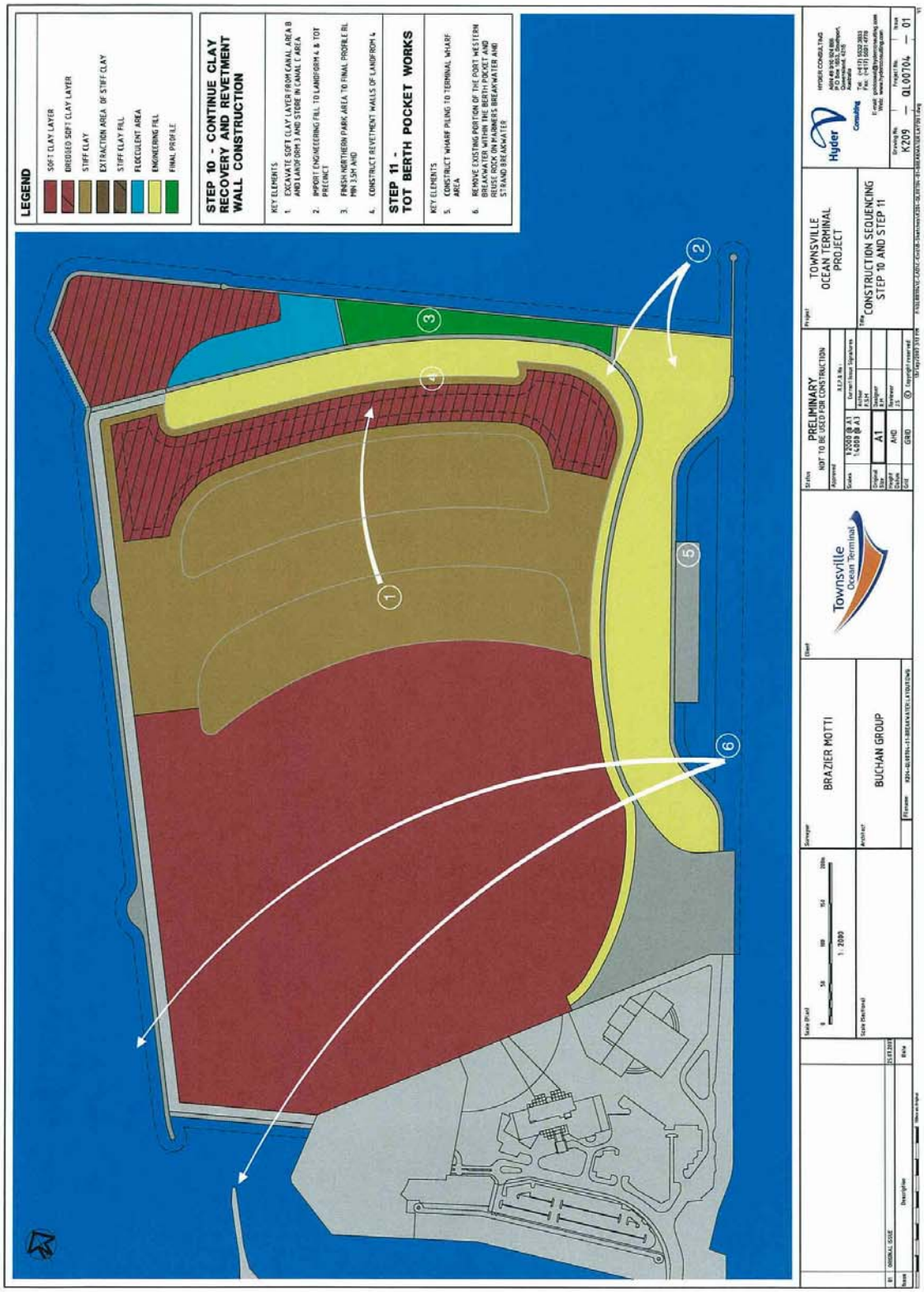


Plate 3.4.9 - Methodology Drawing K210-QL00704-01

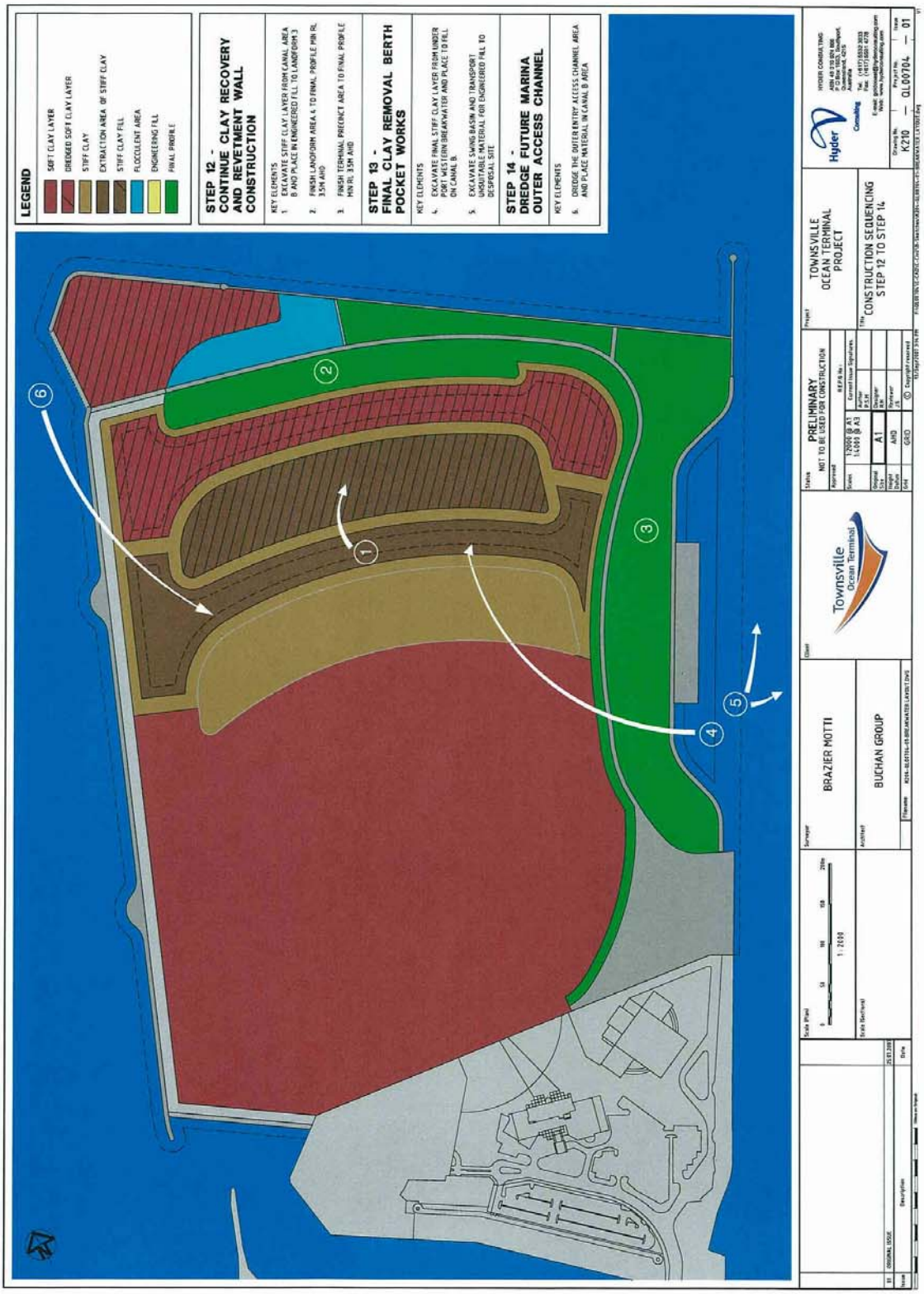


Plate 3.4.10 - Methodology Drawing K211-QL00704-01

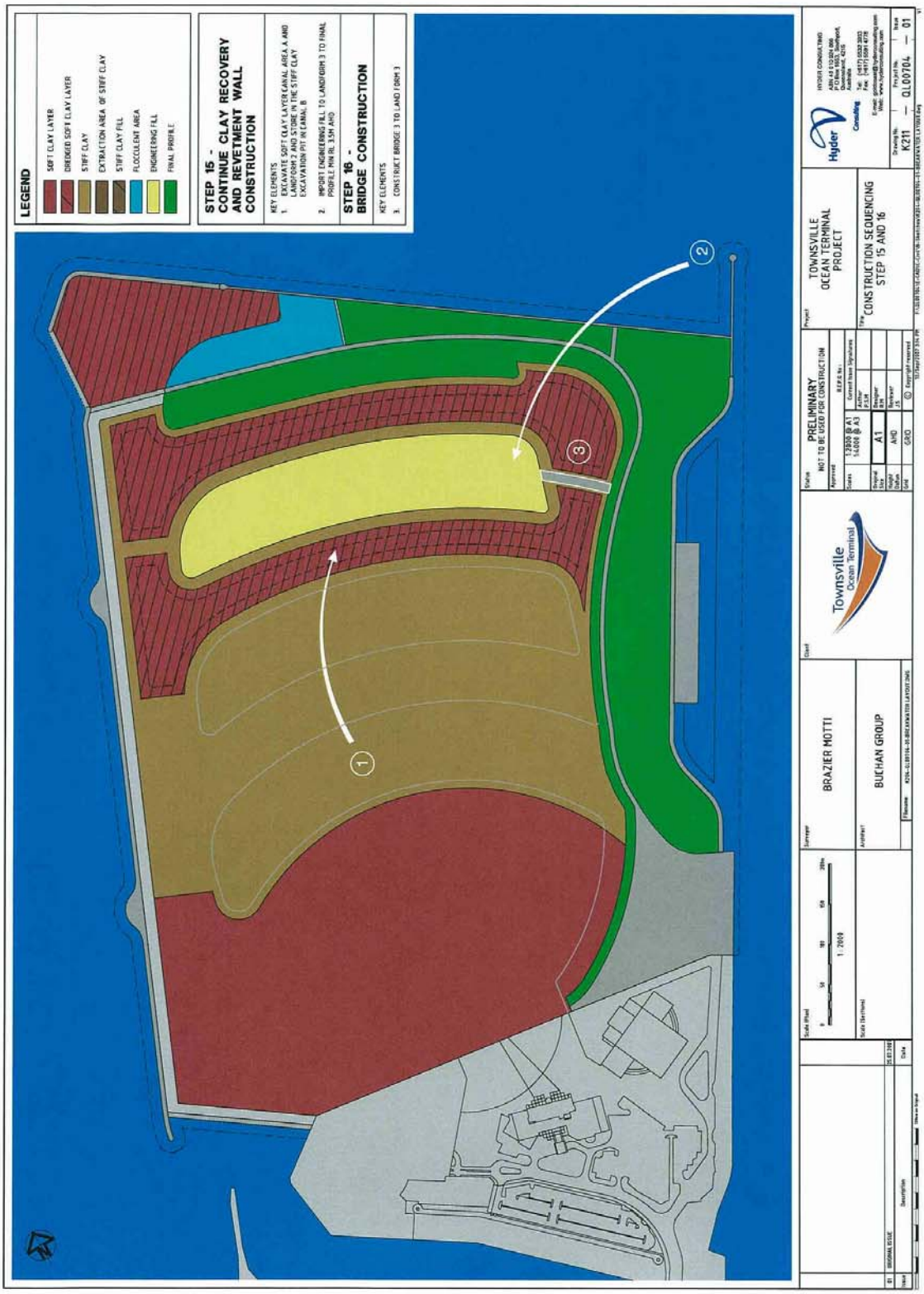


Plate 3.4.11 - Methodology Drawing K212-QL00704-01

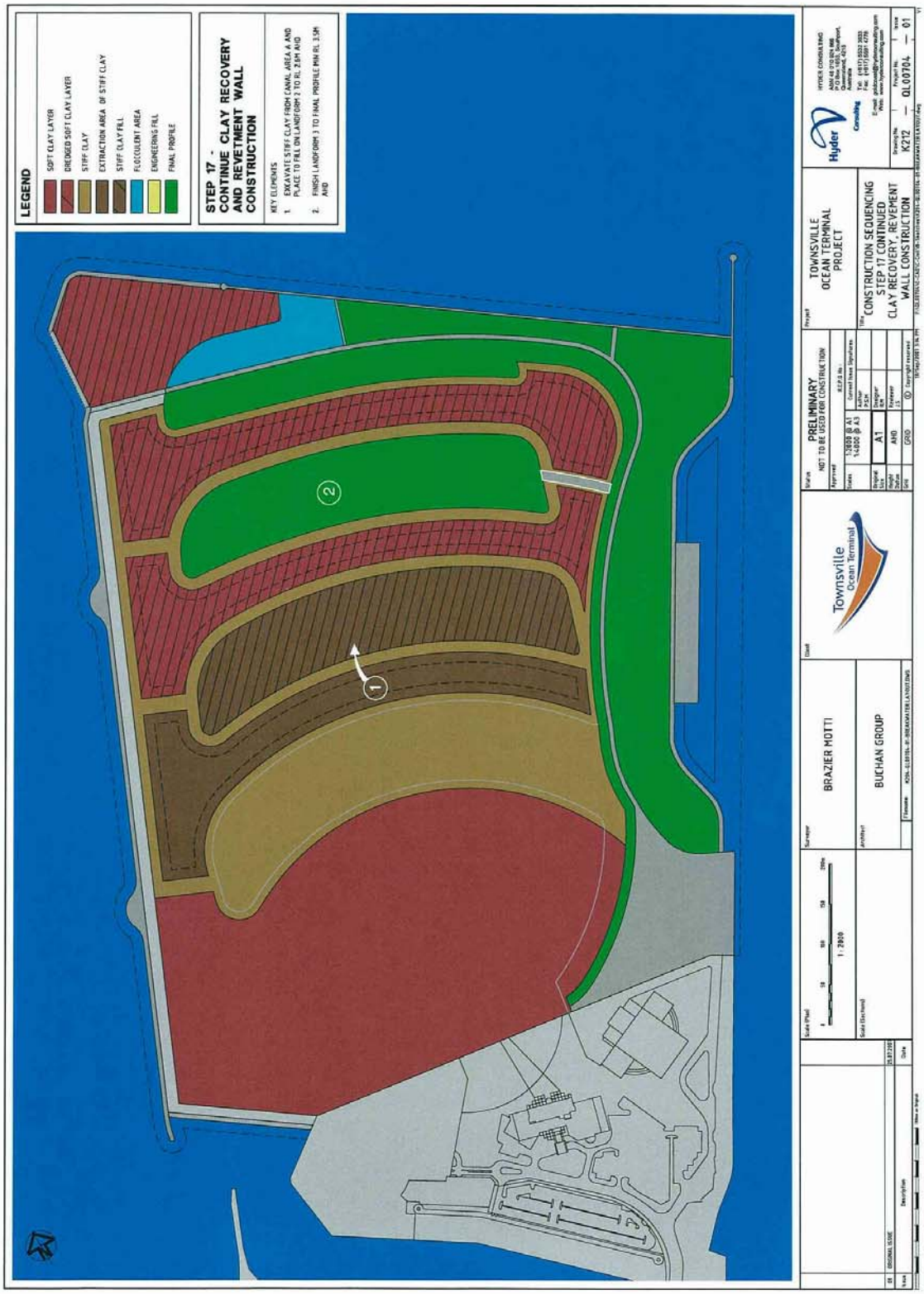


Plate 3.4.12 - Methodology Drawing K213-QL00704-01

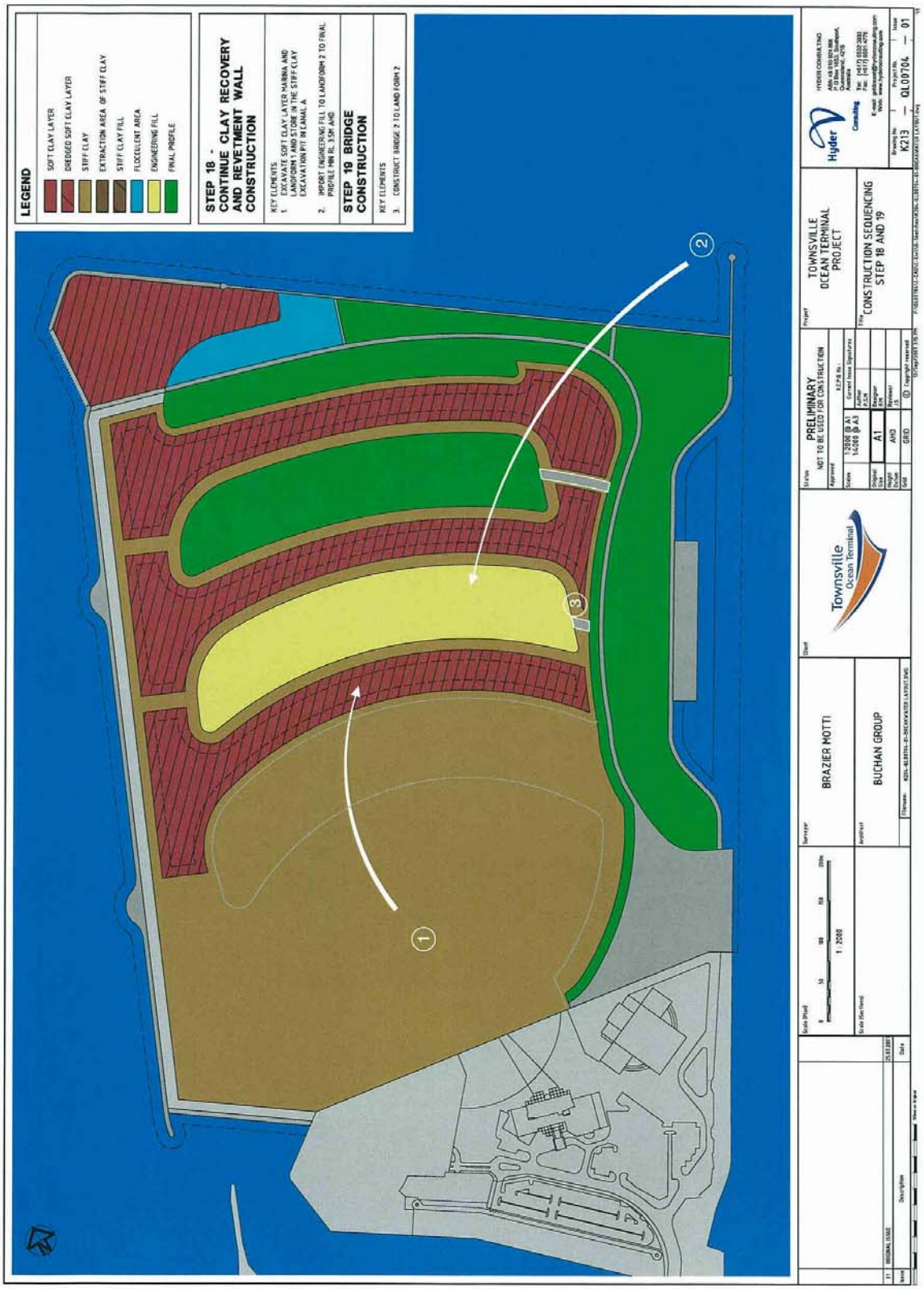


Plate 3.4.13 - Methodology Drawing K214-QL00704-01

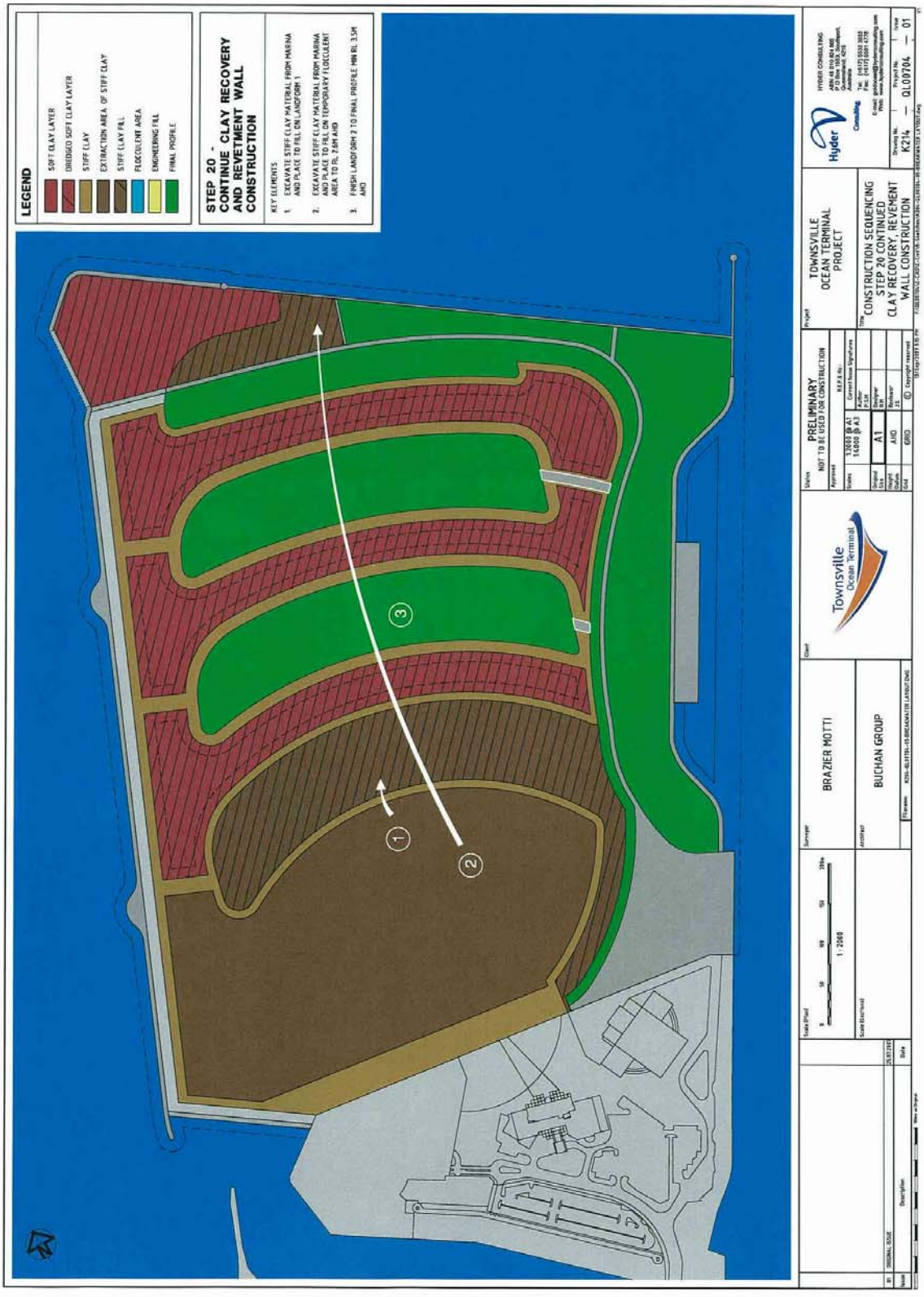


Plate 3.4.14 - Methodology Drawing K215-QL00704-01

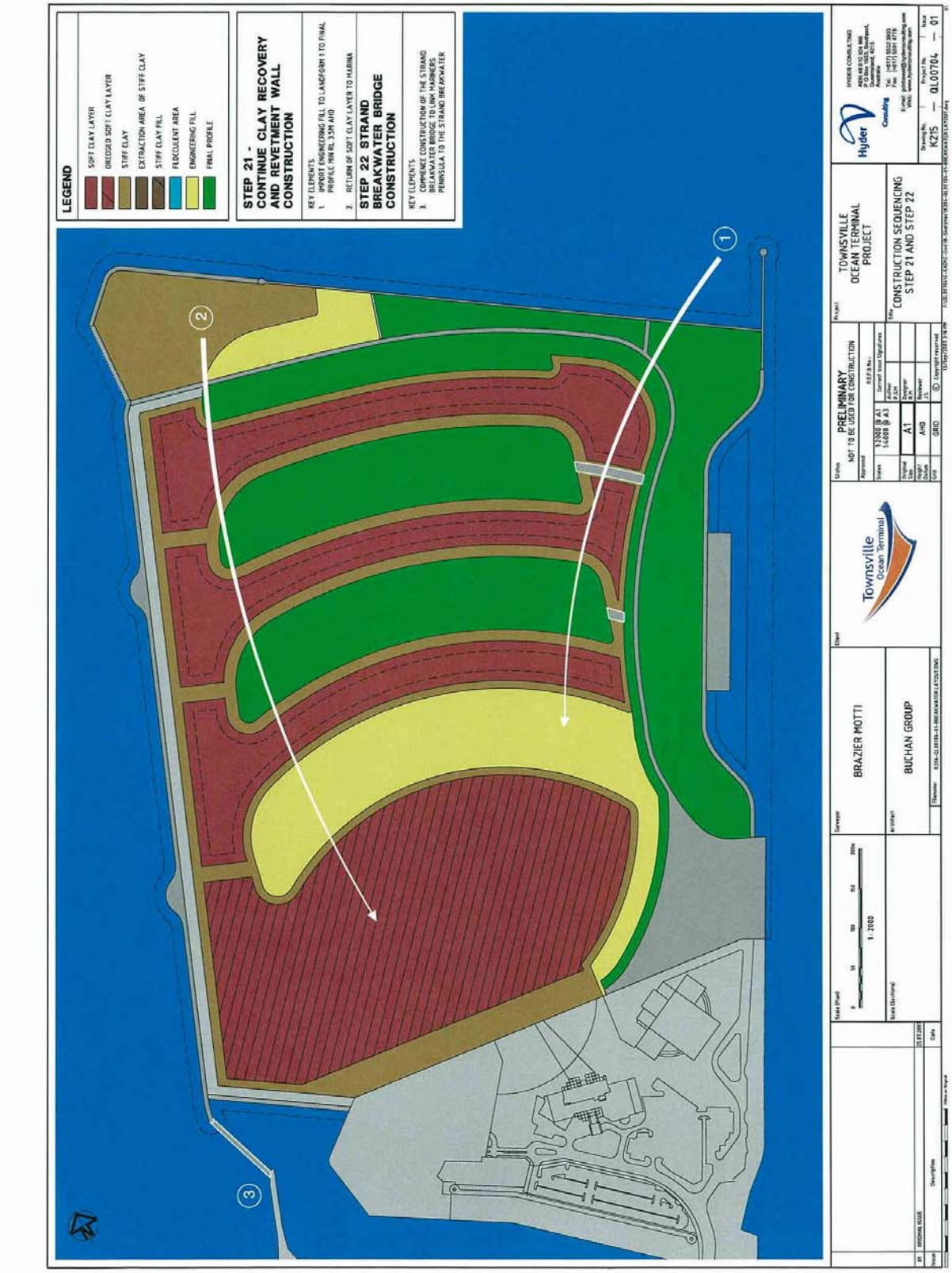
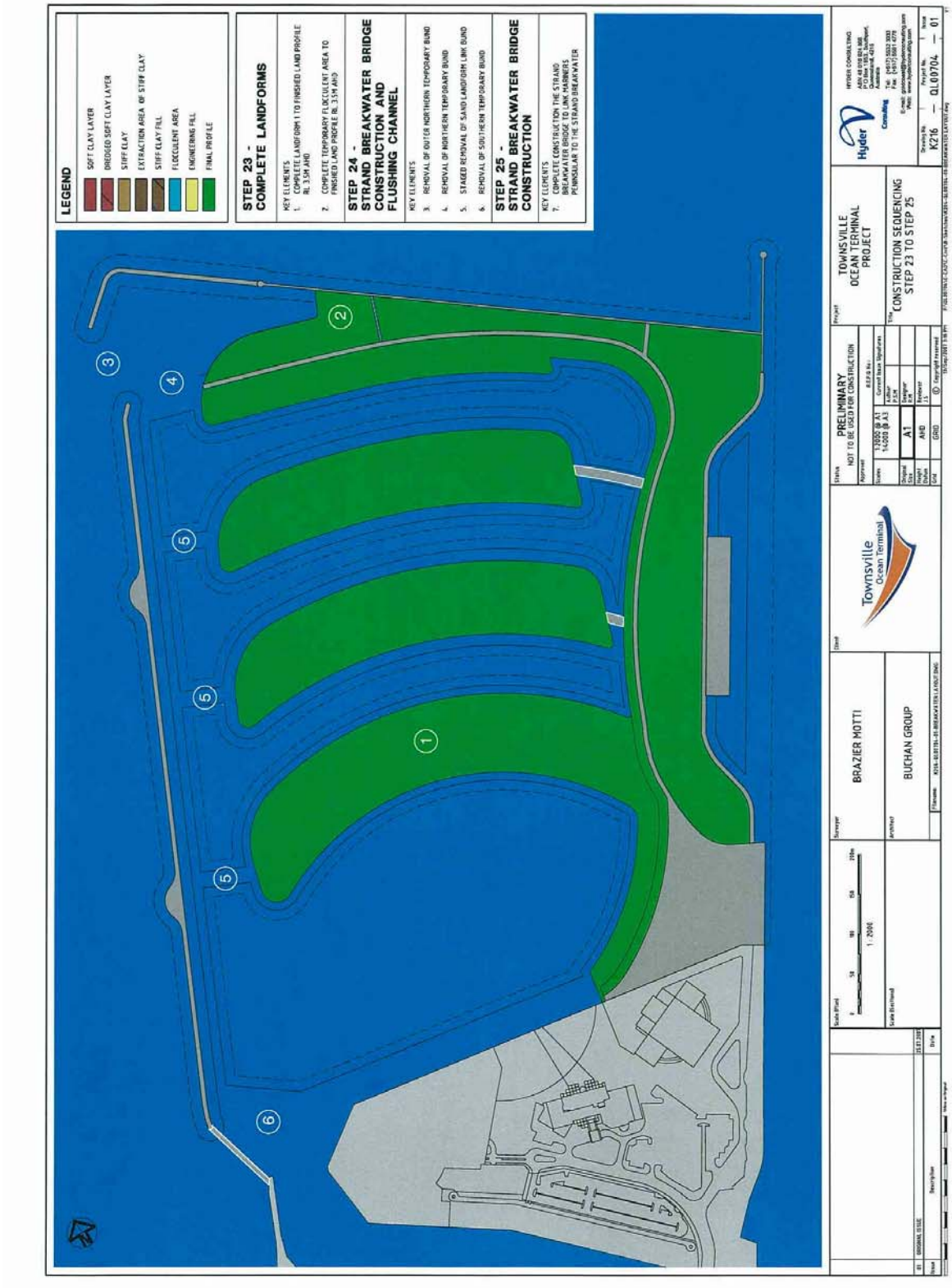


Plate 3.4.15 - Methodology Drawing K216-QL00704-01



Construction Plant and Equipment

The plant and equipment expected to be used within the TOT Project Site during the construction works detailed above is listed in Tables 3.4.1 to 3.4.4.

Table 3.4.1: Common Equipment used in All Areas

Equipment	1st Year	2nd Year	3rd Year
Sheet Piling Rig	√	0	0
Driven Piles Rig	√	√	√
Barge SLV 500	√	√	√
Dewatering Pump(s)	√	√	√
Pile Breakers	√	√	√

Table 3.4.2: Bulk Earthworks Equipment

Equipment	1st Year	2nd Year	3rd Year
100 t Digger	0	√	√
12G Grader	√	√	√
16G Grader	0	√	√
30t Excavator	0	√	√
40t Excavator	√	√	√
65t Excavator	√	√	√
Cutter suction dredge	√	0	0
825C 4 Wheel Compactor	0	√	√
988 Wheel Loader	√	√	√
Cat 740 40t Articulated Truck	√	√	√
D6 Dozer	√	√	√
D6 LGP Swamp dozer	0	√	√
HD 465 Rigid Dump Truck	0	√	√
Self Propelled Roller	0	√	√
Tandem Water Truck	√	√	√
40 t Crane	0	0	√
Franna Crane	0	√	√

Table 3.4.3: Civil Works Equipment

Equipment	1st Year	2nd Year	3rd Year
Excavators	0	0	√
Backhoe	0	0	√
Ditch Witch Trencher	0	0	√
Dozers / Drotts	0	0	√
Grader	0	0	√
Kerb Machine	0	0	√

Equipment	1st Year	2nd Year	3rd Year
Water Truck	0	0	√
Sheep foot Roller	0	0	√
Steel Drum Roller	0	0	√
Rigid Dump Trucks	0	0	√
A.C Placing Plant	0	0	√
Moxy Truck	0	0	√
Franna Crane	0	0	√

Table 3.4.5: Terminal Construction Works

Equipment	1st Year	2nd Year	3rd Year
Excavators	0	√	0
Backhoe	0	√	0
BobCat	0	0	√
Clamshell Digger / Dragline	0	√	0
Cranes Franna	0	√	√
Cranes 40 t	0	√	√
Scissor Lift	0	√	√

Material import and export arrangements, haul routes, vessel/vehicle types and frequency are discussed below in Section 3.4.4.

Construction Traffic

Construction traffic will include construction contractors and staff private vehicles and heavy vehicles used in delivery of construction materials. Vehicle types and frequency are described in the Material Haulage Schedule in Section 3.4.4 of this EIS. Construction haulage routes are also described in that Section.

The construction contractor engaged to undertake these works will be required to develop a detailed localised Traffic Management Plan to control construction traffic in accordance with the project EMP identified in Section 5 of this EIS.

Hazardous Materials Transport

The following hazardous materials are likely to be used during construction:

- Concrete (cement powder)
- Diesel
- Oils, grease and lubricants
- Paint
- Solvents
- Silicons/Mastic
- Grouts
- Contact cement

Any hazardous materials required to be transported to or from the Project Site during construction will be appropriately handled to prevent release to receiving environments. Vehicles required to transport hazardous materials will be appropriately licensed to carry such materials and will display appropriate warning signs, in accordance with the relevant Australian Standards.

Measures for management of hazardous substances within the Project Site and action to be taken in the event of accidental spillage of material during delivery are provided in the project EMP in Section 5.

Preliminary Programme

It is anticipated the TOT project will be constructed over a 39 month period beginning in May 2008. The proposed phases of development and corresponding construction periods are outlined in the programme below.

Development Phase	Timeframe	Commencement
Construction of sea walls and bunds	12 months	May 2008
Excavation and compaction	14 months	March 2009
Precast / Engineering fill and rip rap	13 months	September 2009
Roads and services	12 months	March 2010
Landscaping works	6 months	April 2010
First settlements	--	June 2010
Construction of terminal building and wharf	16 months	Jan 2009
Handover and commissioning of TOT precinct	--	May 2010

The TOT precinct is anticipated to be completed and commissioned in May 2010. This is prior to completion of the Breakwater Cove precinct which is due to be completed in stages with the final stages being completed by May 2011.

Construction Employees

Construction of the TOT project is expected to provide employment for between 50 and 300 persons in any one year for a period of three years (approximately 440 positions over three years). It is likely that a further 175 to 200 persons would be employed in construction of private residential dwellings in any one year over a period of four years following completion of the project (approximately 760 positions over four years).

The maximum number of employees on site at any one time will be approximately 300 during the third year. This is likely to occur when the wharf and building construction works on the TOT Precinct will coincide with installation of roads and services and site landscaping works on the Breakwater Cove Precinct.

The construction workforce will predominantly be sourced from the local construction industry. It is expected any specialist construction personnel required to be sourced from other areas will be able to be housed temporarily within existing accommodation in Townsville given their small numbers. It is therefore not proposed to construct temporary accommodation for the construction workforce. Construction staff car parking will be provided in the hardstand area within the construction compound as indicated on Drawing K203-QL00704-01. It is expected, given the numbers of employees that will be utilised for the construction stage, will be easily accommodated on site.

Pollution Control Measures

Control of emissions and pollutants during construction will be achieved by implementation of the project EMP. The construction contractor will be required to prepare and implement a refined Construction Management Plan to be in accordance with the EMP.

Construction site operating hours will be, in accordance with the Townsville City Council, Planning Scheme and Local Law provisions to prevent amenity impacts on the immediate area. Activities generating excessive noise will be timed to minimise the amount of disturbance to sensitive receptors. In order to maintain acceptable air quality in and around the construction site, dust suppression techniques will be implemented to minimise airborne dust from vehicle and material movements within the site.

Stormwater runoff during construction will be controlled by use of filtration and detention devices prior to discharge to prevent mobilisation of sediment and prevent contaminants leaving the site. In the event of a spill within the site or during transport, immediate actions will be taken to contain spilled material and effective clean-up procedures implemented. In the case of dangerous or hazardous substances, a spill response plan will be implemented. This will include application of absorbent and/or neutralising substances. Spills will not be hosed or washed away. Any significant spills will be reported to the Environmental Protection Agency.

The contractor is to adopt a policy of waste management that ensures protection of natural resources through minimisation of construction materials and reduction of environmental impacts by ensuring appropriate recycling, reuse and disposal methods.

Temporary Works

A number of temporary works will be required to be installed during the construction stage and will be removed at practical completion of construction. These works will include:

- A temporary construction compound will be established within the Project Site to provide office, lunch room, first aid area and toilet facilities and to provide a location for stockpiles and storage of construction materials and equipment.

- Temporary fencing will be required to secure the construction site and prevent unauthorised access. This fencing will be located across the site land access points and will be constructed of chain wire fencing panels.

- Temporary bunding will be required to isolate the site from adjacent waterways. These bunds will be constructed of rock material and will be removed at the completion of site reclamation works to allow water to flow into canal and marina areas.

- One of the material delivery options involves barging of material to the Project Site from a Barge Point site located at the junction of Boundary Street and Benwell Road. Temporary stockpiling of rock and sand fill material will be provided within this site prior to transport to the Project Site.

- One of the material delivery options involves construction of a temporary opening (to provide a navigation width of 25m) bridge across Ross Creek. This is likely to be constructed of pre-cast concrete or steel section headstocks with pre-cast concrete or steel section bridge beams and pre-cast decking.

Maintenance of Safe Navigation

Safe Navigation of the Port of Townsville and surrounding waterways will be maintained during construction activities.

Where barge operations are required, vessels within the Port of Townsville will report to the Port Control office and will observe the red Port Busy Signal prior to entering the Port. Once construction vessels and equipment are in place within the site, all works will be conducted outside the main Port channel and navigational markers. It is not anticipated that construction works will impact on Port operations or stability of Port facilities.

In the event of a cyclone occurring during construction works, all works on the site will cease and standard damage mitigation measures will be undertaken to secure vehicles property and

materials in accordance with an emergency response plan. It is expected that a level of protection will be provided by proposed breakwaters which are to be constructed during the first phase of construction.

Sustainable Engineering Solutions

Consumption of fill materials has been reduced during site reclamation works through re-evaluation of required volumes of material. Re-use of materials excavated from within the site has reduced the requirement for sand as fill and has eliminated the need for extraction of sand material from nearby riverine sediments. The reduced volume of sand required for reclamation will now be sourced from existing licensed sand mining operations.

The design of the ocean terminal building has also considered options for sustainability. The internal building layout is adaptable to allow for reconfiguration of spaces should user requirements change over time and allows easy replacement of equipment and incorporation of developing technologies into the new structure without the need for significant redesign and further refurbishment construction.

Sustainable engineering solutions will be implemented to reduce the resource consumption during construction of the TOT project. These solutions will focus on resource efficiency including efficient use of energy, water and materials during construction. The construction contractor will be required to implement control measures outlined in the project EMP. These measures include:

- Reduction of greenhouse gas emissions and energy use through appropriate maintenance and servicing of plant and equipment used during construction activities;
- Reduction of dispersion of pollutants to receiving environments through adoption of pollution control measures; and
- Reuse or recycling of construction materials and minimisation of waste generated during construction as specified.

Capital Dredging

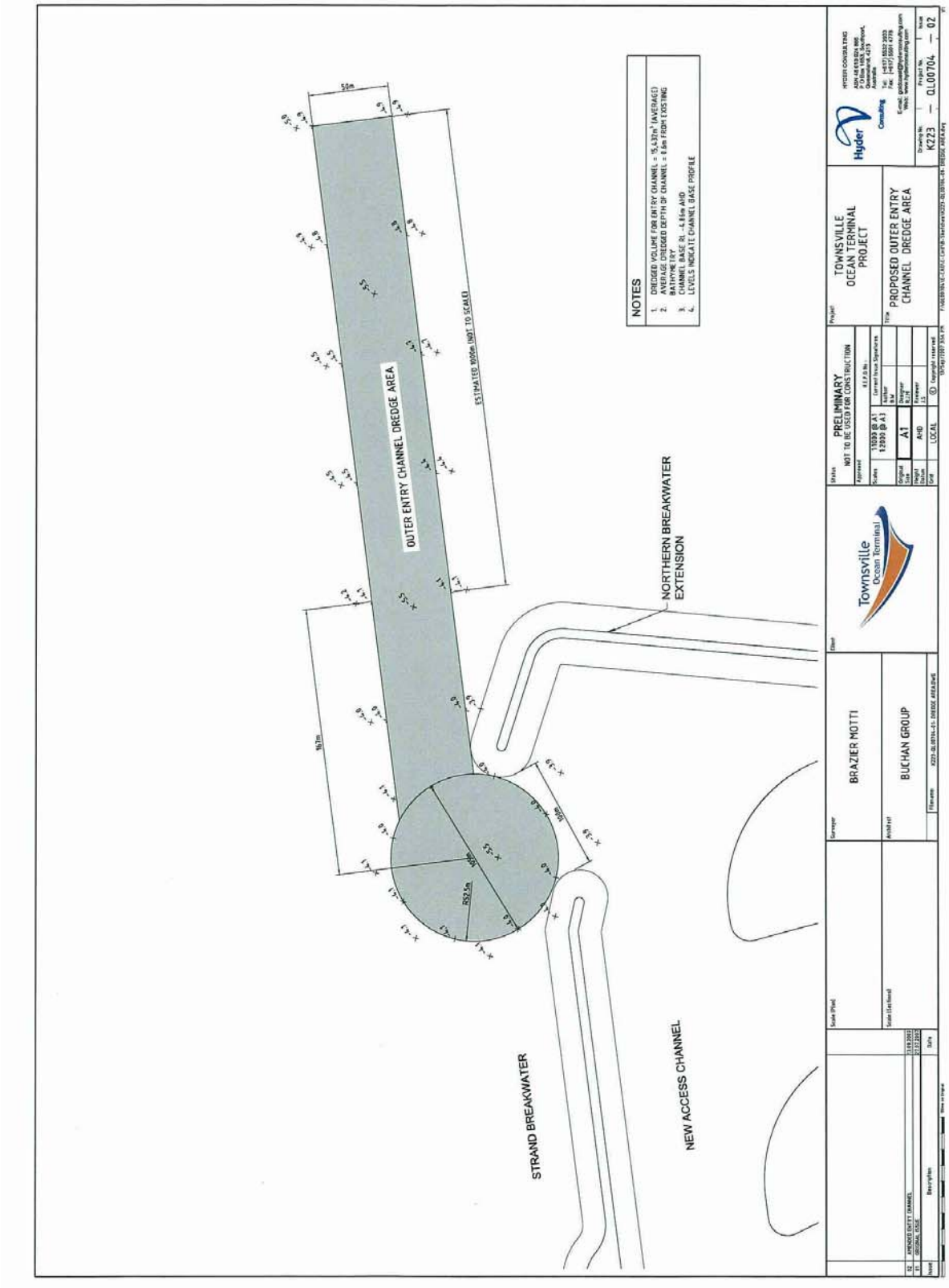
Capital dredging is required for creation of the TOT berth pocket and swing basin together with the outer access channel. Material to be dredged consists of soft organic clay and stiff/clay material. Proposed dredge areas are presented on Plate 3.4.15 - Design Drawing K223-QL00704-02.

It is proposed that the approximately 15,430m^3 of material to be dredged from the outer access channel will be disposed of on site.

Approximately 109,610m^3 of stiff clay material will be dredged from the Port Western breakwater for construction of the TOT Berth Pocket and approximately 145,940m^3 of sediment material will be dredged from within the Port area for extension of the TOT swing basin. The dredge spoil material gained during reclamation will be used within the TOT project Site. Excess spoil material, or material not suitable for use as fill material can be accommodated within the canal trenches. Negotiations will be undertaken with the TPA to investigate the use of the TPA's approved spoil disposal site or future Port Reclamation Area for disposal of maintenance dredge spoil material. If this material cannot be accommodated within TPA sites, approval will be sought for a land-based disposal site.

Dredging and material disposal will be timed to avoid impacts on marine fauna species as recommended by the Nature Conservation Report.

Plate 3.4.16 -


NOTES
1. DREDGED VOLUME FOR ENTRY CHANNEL = 15,437m³ (AVERAGE)
2. AVERAGE DREDGED DEPTH OF CHANNEL = 8.6m FROM EXISTING BATHYMETRY
3. CHANNEL BASE RL -14.6m AHD
4. LEVELS INDICATE CHANNEL BASE PROFILE
OUTER ENTRY CHANNEL DREDGE AREA
ESTIMATED 1000m (NOT TO SCALE)
NORTHERN BREAKWATER EXTENSION
STRAND BREAKWATER
NEW ACCESS CHANNEL
TOWNSVILLE OCEAN TERMINAL PROJECT
PROPOSED OUTER ENTRY CHANNEL DREDGE AREA
PRELIMINARY
NOT TO BE ISSUED FOR CONSTRUCTION
BRAZIER MOTTI
BUCHAN GROUP
Townsville Ocean Terminal

Tidal Works

The entire TOT Project construction will require works in tidal waters until such time as the site is fully bunded. As such, the approvals required for the initial stages will be Operational Works (Tidal Works) as defined under IPA. The nature and extent of these tidal works are described in the Construction Methodology and are illustrated throughout the Methodology and Design Drawings provided at the end of this Section of the EIS.

Works during Periods of Rainfall

In the event of excessive rainfall, it is proposed that construction works will cease and disturbed areas within the site will be stabilised. All temporary erosion and sediment control measures will be inspected daily to ensure that contaminants are not discharged from the site in stormwater runoff.

3.4.2 Construction of the TOT Precinct

Precinct Description and Location

The TOT Precinct will be located within the Port Western Breakwater as illustrated in Hyder Consulting Drawing No. K019 at the end of this Section. Design Drawings detailing the specifications of the terminal building and wharf structure have been prepared by Cullen, Grummitt and Roe and Buchan are also contained at the end of this Section.

Dedicated Berth

A berth pocket of 350m in length and 45m width will be located on the eastern side of the Port Western Breakwater with access for cruise ships and naval vessels provided from Platypus Channel within the Port of Townsville. The berth pocket will be dredged to a depth of 11.7m below LAT.

A clearance zone of 46m will be provided from the centreline of Platypus Channel to the berth pocket. The berth pocket will accommodate vessels up to the “Wasp” class and the State’s 'Benchmark Cruise Ship' identified in the *Queensland Shipping Plan*.

Wharf Structure

The TOT wharf structure will be 200m in length and will be of 30m width from the terminal building to edge of the berth pocket. The wharf structure will be a suspended reinforced concrete slab deck on steel piles. The wharf will be designed for B-double tanker and semi-trailer trucks and will have the capacity to receive military tanks up to 65 tonnes and tank/truck trailer combinations up to 95 tonnes.

Fenders will be provided for berthing of cruise ships and naval vessels at the deck face. Fenders for cruise ships will be a typical cone fender and facing panel. Naval vessels will berth to pneumatic “Fentek” or equivalent fenders placed on the quay line.

Service Provision

Water supply, sewerage and electrical and telecommunication services will be located in a services duct suspended beneath the wharf deck. Connections to existing Townsville City Council and Ergon Energy services will be provided to vessels at the deck face. Water will be provided by the Townsville municipal potable water supply. Connection will be provided to marine vessels at four (4) discharge locations within the wharf face.

Four sewage/greywater connection pits are provided at the wharf face for collection of ship-board wastewater. This will then be delivered to a sewage storage facility and pump station for

connection to the Townsville municipal sewerage network and treatment plant. There will be no treatment or disposal of sewerage within the TOT Precinct.

Wharf lighting will be provided in accordance with Australian Standards AS1158.3.1, AS3827 and AS4282. Flood lights will be appropriately shielded to prevent interference with navigation beacons and to prevent light spill onto residential areas.

Terminal Building

The terminal building has be specifically designed in accordance with detailed Specifications delivered to the Proponent from the State as part of the existing Development Agreement.

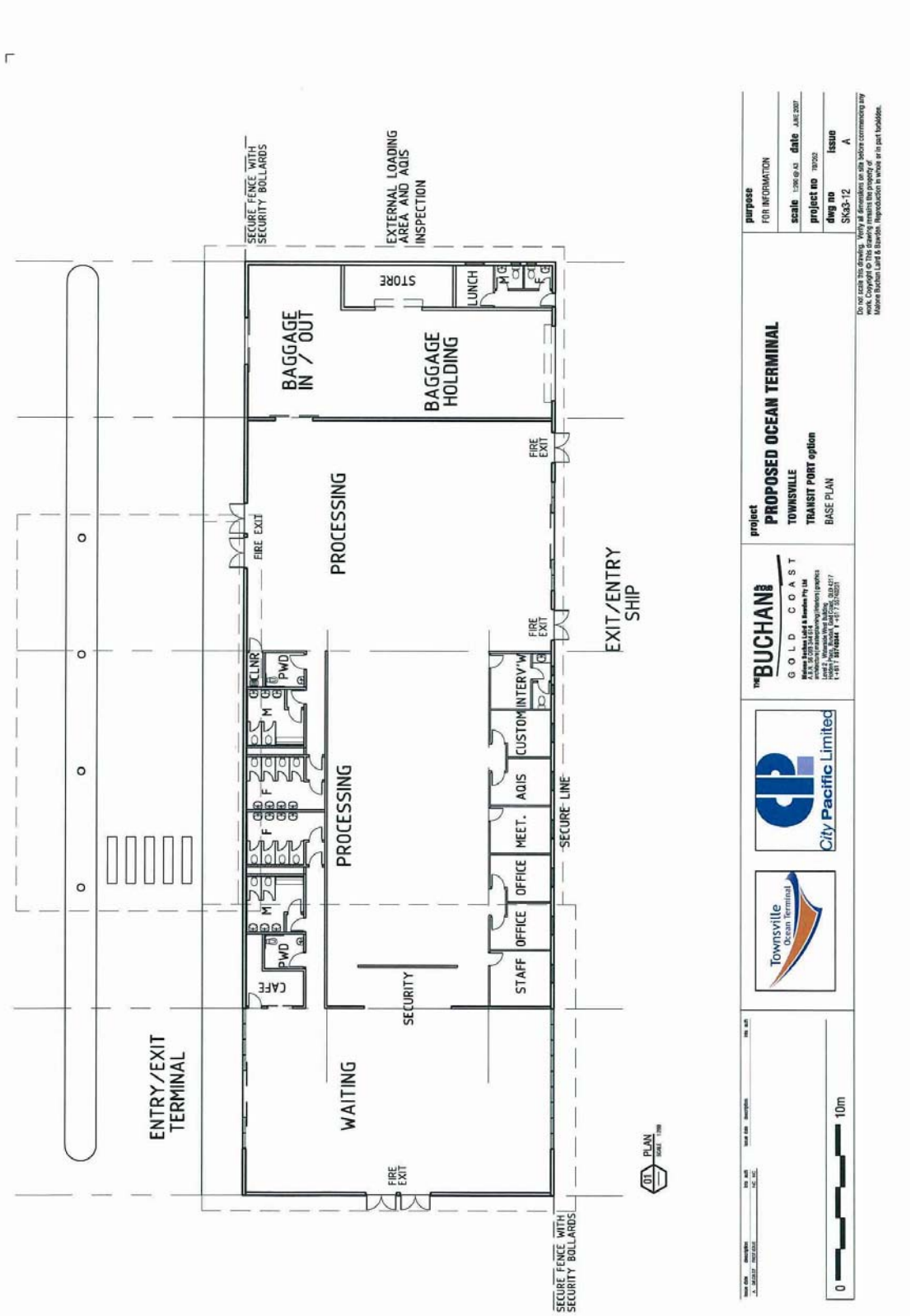
The terminal building will be a single storey rectangular structure of 20m by 60m and approximately 3.5m height at the eaves. The Terminal Building will have a gross floor area of approximately 1200 m^2. The building design will be a contemporary light form with a nautical theme.

It is proposed that the building will be an open, flexible structure providing the following facilities:

- A general hall area to cater for vessel arrivals and departures comprising a quarantine/customs area, transit hall, dining area/observation lounge, document check-in station and baggage pick up.
- Offices for accommodation of terminal operational staff and management, Customs and Australian Quarantine Inspection Service.
- General office space, staff rooms, meeting room, store room, security and interview rooms.
- A café and toilet facilities.

While the initial construction of this building is purely for terminal facilities, the FDA Scheme allows for future development of the TOT Precinct up to 2 storeys. See Appendix 25. Further, as it is expected that the TOT Precinct will be designated as Strategic Port land, future development options will be managed pursuant to the Townsville Port Authority's Land Use Plan and the *Transport Infrastructure Act 1994*.

Plate 3.1.2.1 - Shows the internal layout of the Terminal Building



Site Access and Traffic Management

The TOT Precinct will be linked to Entertainment Drive by means of a two lane divided road. This new road will cater for public, private and service vehicles and will be designed to meet the relevant Australian road design and Townsville City Council standards.

Separate demarcated set down areas will be provided for buses and taxis. Two spaces for taxis and two spaces for buses will be provided in the set down area immediately adjacent to the TOT Terminal. A holding area will be provided in the TOT Precinct for an additional 8 taxis and 10 buses. Emergency vehicles will access the TOT Precinct via the internal road system.

The following parking facilities will be provided:

- Twelve (12) onsite parking spaces for tour and shuttle buses (to be used as a parking area for up to 8 heavy trucks in the event of visitation by Navy vessels);
- Onsite parking for 100 visitors cars in a designated parking area;
- Reserved uncovered parking for twentyfive (25) official vehicles adjacent to the terminal building; and
- Twenty five (25) uncovered spaces for VIP and hire vehicles in close proximity to the TOT terminal.

Protected Areas

The location of the project Site in relation to protected areas is described and illustrated on maps in Section 4.11 of the EIS.

Preliminary Programme for the TOT Precinct

The construction of the TOT precinct will occur over a 28 month period as described in Section 3.4.1. Construction of the terminal building and wharf structure will commence at the completion of construction of seawalls and site bunding in January 2009 and will continue for a period of 16 months. The TOT is expected to be commissioned in May 2010.

Visual Character and Layout of Buildings and Structures

The visual character of the Terminal Building will be functional with a contemporary light form and a nautical theme, designed to blend into rather than dominate the TOT Precinct structurally. As identified in Plate 3.4.2.2 below, the Terminal Building has a porte-cochere of approximately 400m^2 providing protection from wind, rain and sun for the loading/unloading of vehicles and queuing of passengers before entering into the terminal building. This porte-cochere will reinforce the maritime theme externally with an upswept roof line for visual compatibility with the sweeping lines to which modern cruise ships are regularly designed.

Internally, the layout for the terminal building is functional and represents a reception and departures hall capable of meeting AQIS and Australian Customs criteria in terms of security provisions, customs processing and secure baggage handling facilities. This functional internal layout is identified in Plate 3.4.2.1 above.

Plate 3.4.2.2 - 3D Architectural Image

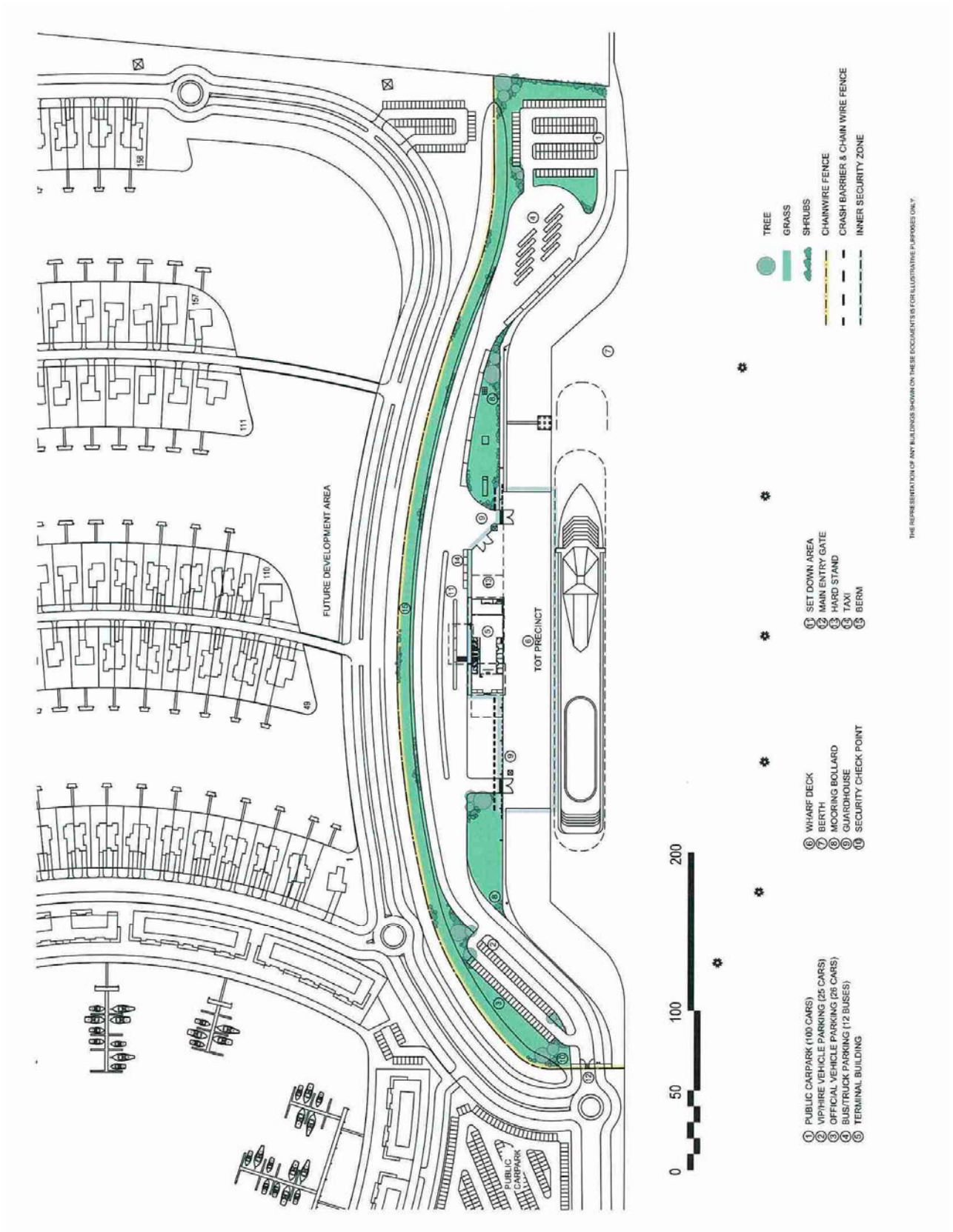
More detailed cross sections, elevations and other drawings of the building structure are located at the end of this Section in the Construction Methodology report in Section 7, Appendix 5.

A discussion on the Visual Amenity impacts of the building and surrounding areas use also contained in Section 4.9.

As will be noted on Plate 3.4.2.3, the wider TOT Precinct surrounding the Terminal Building includes all necessary general infrastructure requirements such as car parking, landscaping and security fencing. A particular landscaping feature is the creation of a 3 metre high landscaped berm topped with an acoustic fence which separates the entire TOT Precinct from the adjoining Breakwater Cove residential area.

The visual mitigation benefits of this berm together with its noise attenuating affects are further discussed in Section 4 of this EIS.

Plate 3.4.2.3


FUTURE DEVELOPMENT AREA
TOT PRECINCT
PUBLIC CARPARK
158
157
111
110
49
TREE
GRASS
SHRUBS
CHAINWIRE FENCE
CRASH BARRIER & CHAIN WIRE FENCE
INNER SECURITY ZONE
① PUBLIC CARPARK (100 CARS)
② VIP/HIRE VEHICLE PARKING (25 CARS)
③ OFFICIAL VEHICLE PARKING (26 CARS)
④ BUS/TRUCK PARKING (12 BUSES)
⑤ TERMINAL BUILDING
⑥ WHARF DECK
⑦ BERTH
⑧ MOORING BOLLARD
⑨ GUARDHOUSE
⑩ SECURITY CHECK POINT
⑪ SET DOWN AREA
⑫ MAIN ENTRY GATE
⑬ HARD STAND
⑭ TAXI
⑮ BERM
0
50
100
200
THE REPRESENTATION OF ANY BUILDINGS SHOWN ON THESE DOCUMENTS IS FOR ILLUSTRATIVE PURPOSES ONLY

Modification of Surrounding Facilities

The Proposed TOT Precinct will see little modification to the existing port facilities except for the specific indentation to create the TOT Precinct berth pocket from the existing port western Breakwater. This indentation is required to ensure that visiting cruise ships remain free of the port channel and swing basin at all times and for the creation of appropriate berthing facilities. The entrance to the Port does not require alteration.

As there is minimal long wave action across Cleveland Bay and hence into the entrance of Platypus channel and the Port, consideration of long wave action impacts were unnecessary and no change to the existing Platypus Channel navigational infrastructure nor dredging to the existing Platypus Channel, except for the integration of the berth pocket into the existing swing basin in terms of depth is required.

Detailed illustrated plans identifying the TOT layout, indicative parking areas, access provisions, vehicle and pedestrian circulation paths together with all infrastructure servicing requirements and proposed provisioning arrangements including water, sewerage and electricity telecommunication services are located at the end of this Section 3.

3.4.3 Construction of the Breakwater Cove Precinct

Precinct Description and Location

Landforms will be constructed by reclamation of land within the Breakwater Cove Precinct in accordance with the Construction Methodology outlined in Section 3.4 of this EIS to provide sites for a range of Project Sites including multiple dwellings, detached dwellings, and a small area of commercial and retail services. Typical landform sections and canal sections are illustrated on Design Drawings K220-QL00704-01 to K222-QL00704-01 at the end of this Section.

Actual construction of buildings within the Breakwater Cove precinct will be controlled by the Future Development Area (FDA) Scheme as discussed in Section 3.3 and all residential development will be governed by the Community Management Scheme structure outlined in Section 3.7.

Final lot reconfiguration and building design will be approved by later reconfiguration applications pursuant to the provisions of the FDA Scheme, however see Map 6 of the FDA Scheme in Appendix 25 which indicates the Reconfiguration Concept that will be applicable to the Project Site once the FDA Scheme is approved.

The 3D computer illustrations located show an example of what overall development of the Breakwater Cove Precinct may entail.

The existing Northern Breakwater will be upgraded to provide protection of the Breakwater Cove Precinct. In addition, the new Strand Breakwater will be construction to provide protection of land fingers and navigational access. This breakwater also provides for public access.

Site Access and Traffic

The Breakwater Cove Precinct will be connected to Entertainment Drive by means of a public two way road. The main access road will be designed to cater adequately for pedestrians and on road cyclists. Internal roads will cater for public, private, emergency and service vehicles. These roadways will be designed to meet the relevant Australian road design standards and local council requirements.

Vehicular access to the traditional residential waterway peninsulas will be provided by private roadways with limitations on on-street parking. The multiple dwelling peninsula is accessed by a public road and on-street parking will be provided for visitors to the sites and private parking will be provided within the future residential properties.

Pedestrian footpaths and walkways will be provided on footpath areas and within open space zones. Bicycles routes will be accommodated by a combination of ongrade pathways within verge areas and within road corridors. Access to the new Strand Breakwater will be provided via the Mariners Drive (private road) precinct. Access onto the Strand Breakwater will be restricted to pedestrians, cyclists and maintenance/emergency vehicles only.

Traffic management matters are discussed further in Section 4.3 of this EIS.

Service Provision

Water supply, sewerage and electrical and telecommunication services will be located in underground services trenches within the roadway corridor and within easements as described in the Infrastructure Report. Connections will be provided to existing Townsville City Council and Ergon Energy services to each residential lot and apartment lot.

Water will be provided by the Townsville citiwater municipal potable water supply. Connection will be provided to each residential lot and apartment lots. Sewerage infrastructure will be connected to the Townsville City Council infrastructure.

Details of all service provisions and infrastructure within the Breakwater Cove Precinct are provided in the Infrastructure Report in Section 7, Appendix 10 and are discussed in Section 4.4.

Protected Areas

The Project Site is within the Great Barrier Reef World Heritage Area and a Dugong Protection Zone. The location of the site in relation to protected areas is described and illustrated on maps in the Nature Conservation Report and discussed in Section 4.11of the EIS.

Preliminary Program for the Breakwater Cove Precinct

The Breakwater Cove precinct will be constructed in stages over a 39 month period as outlined in Section 3.4. Construction of seawalls and site bunding will commence in May 2008. First settlements to transfer title to third party residents on future developers are expected to be completed by June 2010.

3.4.4 Material Extraction and Delivery

Material Extraction

The initial sources of fill material were identified in the Initial Advice Statement for the TOT Project as being taken from riverine waterways both adjacent to the site and possibly remote from the TOT Project Site. As has been discussed in the Construction Methodology in Section 3.4.1 Extraction of material to be used for fill for the TOT Project Site during site reclamation is no longer proposed to be undertaken from within nearby riverine sediments.

Re-use of on-site stiff clay materials has significantly reduced the haulage requirements for the TOT Project.

These quantities are detailed in Table 3.4.4.1.

Table 3.4.4.1: Existing material within the Project Site to be used in reclamation of land

Material	Quantity
Soft clay material	65,634 m^3
Stiff clay material	1,579,057 m^3
Existing breakwater materials	54,950 m^3[2]

[2] Includes berth pocket breakwater rocks, subject to TPA discussion

Additional material required for fill will now be sourced only from existing licensed extraction operations. Sand and rock material will be mainly sourced from the following locations.

- Roseneath Quarry
- Pinnacles Quarry
- Marathon Quarry

Material Quantities

The delivery of rock, sand and engineered fill material from quarries to the Project Site will occur during three construction stages of twelve months each. The quantity of material to be delivered to the Project Site during each construction stage is detailed in Table 3.4.4.2.

Table 3.4.4.2: Quantity of material to be delivered to the Project Site during construction

Material	Stage 1	Stage 2	Stage 3
Quarry rock (>150mm)	67,641m^3	162,486m^3	20,128m^3
Crushed rock (<150mm)	286,678m^3	161,667m^3	--
Sand	--	8,440m^3	--
Engineered fill	--	35,827m^3	256,721m^3
Total Materials	354,319 m^3	368,420 m^3	276,849 m^3
	580,439 tonnes	621,125 tonnes	446,984 tonnes

Material Delivery

A number of alternative transport options were considered for delivery of material from quarries, these are detailed in the following sections.

The preferred method for import of rock, sand and engineered fill material to be used in construction of the Breakwater Cove and TOT Precincts is for material to be delivered to the Project Site by road registered trucks from Roseneath, Pinnacle and Marathon Quarries via Boundary Street to a temporary bridge crossing of Ross Creek.

Three other options have been considered for delivery of material to the Project Site. These options are discussed in following sections.

Option 1 – Temporary Bridge and Haul Road (Preferred)

This option proposes that the bulk of the material will be delivered from Roseneath, Pinnacle and Marathon Quarries via Boundary Street to a temporary bridge across Ross Creek and then to the Project Site during Construction Stages 1, 2 and 3 as described below.

Delivery from Pinnacle Quarry to City Limits

Trucks delivering material from Pinnacle Quarry will use the haul route along Gumlow Road turning east on Hervey Range Road then continuing along Ross River Road. Trucks will then turn left onto Nathan Street (Bruce Highway) and then right onto Woolcock Street. See Plate 3.4.4.1 - Haul Route Maps – Drawing K424-QL00704-01 Pinnacle Quarry.

Delivery from Roseneath and Marathon Quarries to City Limits

Trucks will use the northern haul route from Roseneath and Marathon Quarry along Flinders Highway then turn right onto the Bruce Highway. Trucks will then turn left onto Abbot Street and

continue north onto Railway Avenue. See Plate 3.4.4.2 - Haul Route Maps – Drawing K417-QL00704-01 Marathon Quarry and Plate 3.4.4.3 - Drawing K426-QL00704-01 Roseneath Quarry.

Delivery from City Limits to Temporary Bridge at Ross Creek

Trucks from Roseneath and Marathon Quarries will turn right at Boundary Street then left onto Archer Street and continue on to Ross Street. Trucks from Pinnacle Quarry will continue west from Woolcock Street onto Boundary Street then left onto Archer Street and continue on to Ross Street.

Trucks from all quarries will then turn left from Ross Street into the present Curtin Brothers Marine site continuing over temporary haulage roads and bridge (openable for marine traffic). Once over the temporary bridge, trucks will turn right onto Sir Leslie Thiess Drive to the Project Site. Trucks will return to the quarries via the same route. The proposed frequency of material deliveries for Option 1 is provided in Table 3.4.4.3.

Table 3.4.4.3: Option 1 haul route material delivery frequencies

Option 1 Stage	Material Volumes	Delivery Times	Vehicle Frequency	Total Movements
Stage 1	580,439 tonne of rock	Ten hours/day six days/week	5.79 vehicle movements per hour	17,475 over 12 months
Stage 2	621,125 tonne of rock, sand and engineered fill	Ten hours/day six days/week	6.94 vehicle movements per hour	20,960 over 12 months
Stage 3	446,984 tonne of rock and engineered fill	Ten hours/day six days/week	4.19 vehicle movements per hour	12,653 over 12 months

Advantages and Disadvantages of Option 1

Option 1 utilises existing major truck routes and does not require haulage of materials through built-up areas of Townsville or The Strand. The proposed route is less visible to members of the public and will result in fewer noise and air quality impacts associated with heavy vehicle use in built-up areas.

In addition, there is no requirement for barging of material via Ross River and across Port of Townsville navigational channels, which will cause the Project potential impacts of adverse weather delays, restrictions on delivery timing due to tidal movements and other operational interruption associated with the double handling requirements barge transport to the Project Site will necessitate.

The Townsville City Plan Policy 3 identifies a future 4-lane “Bascule” bridge across Ross Creek as part of the proposed upgrades to the Breakwater Road Network. This bridge will extend from Ross Street on the southern creek bank to the Strand on the northern creek bank. The location for alignment of the proposed temporary bridge is to be within the corridor of this future Bascule bridge. The proposed location was chosen to minimise impacts on users of Ross Creek and associated waterways including the Magnetic Island ferry service, the Volunteer Marine Rescue service and the Port of Townsville.

It is proposed that the temporary bridge will be openable to enable masted and larger vessels to pass through to minimise impacts on upstream recreational users of Ross Creek. It is proposed that the bridge will be opened nightly from 7.00pm to 7.00am the following morning. It will also open for a short period at fixed times during the day including on Wednesday afternoon to accommodate the regular Wednesday night sailing event.

Plate 3.4.4.1 - Haul Route Maps – Drawing K424-QL00704-01 Pinnacle Quarry

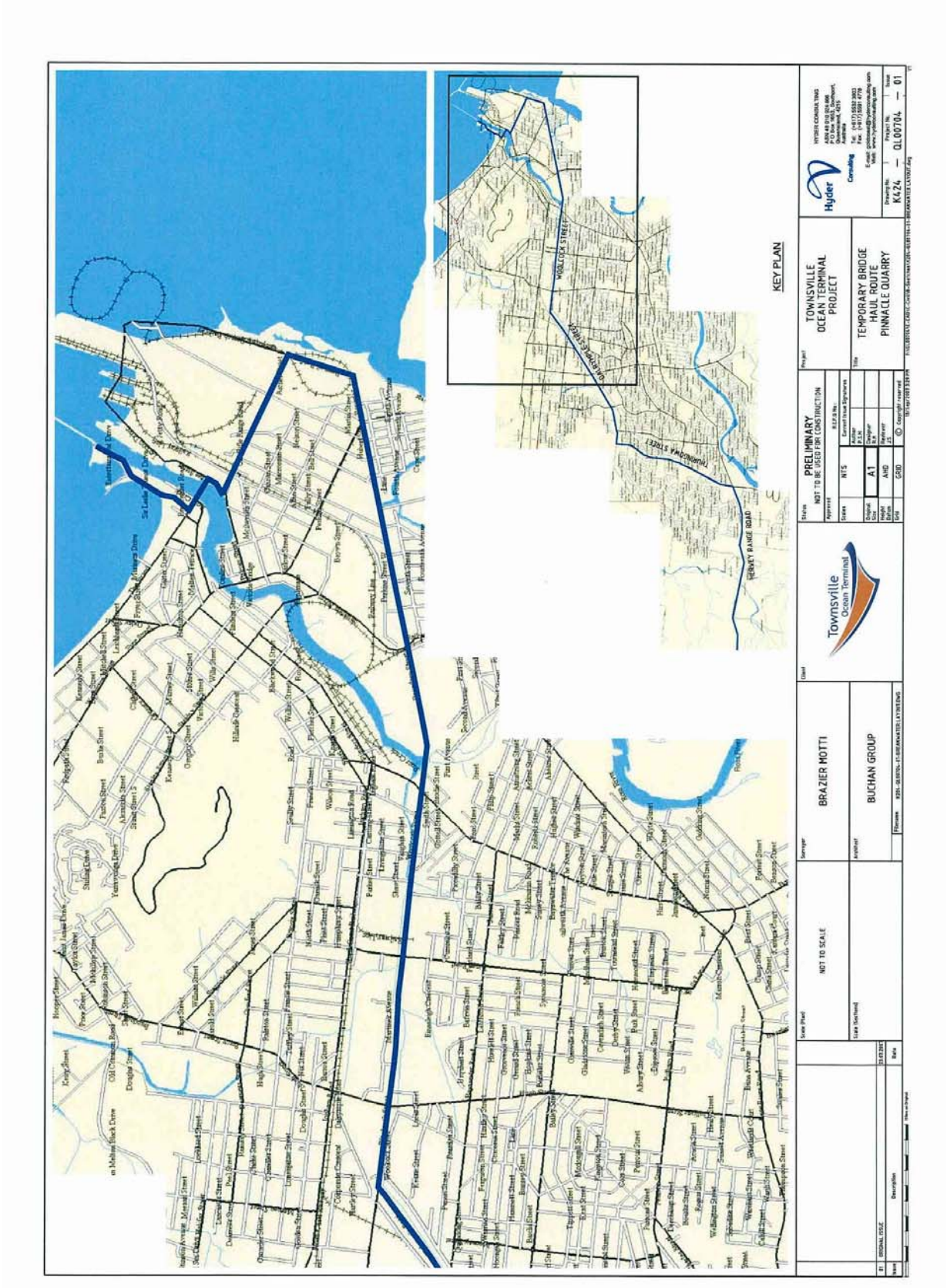


Plate 3.4.4.2 - Haul Route Maps – Drawing K417-QL00704-01 Marathon Quarry

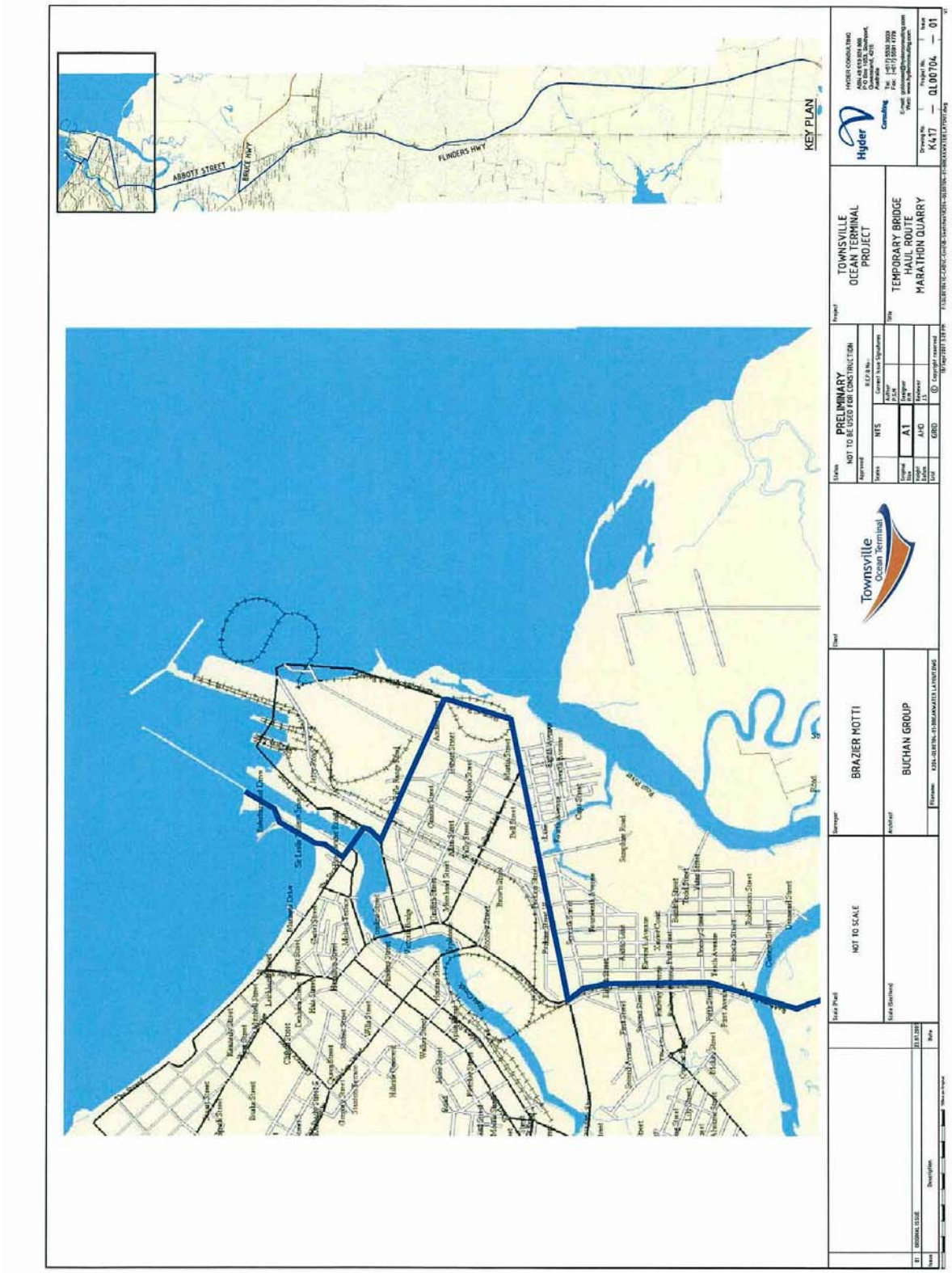
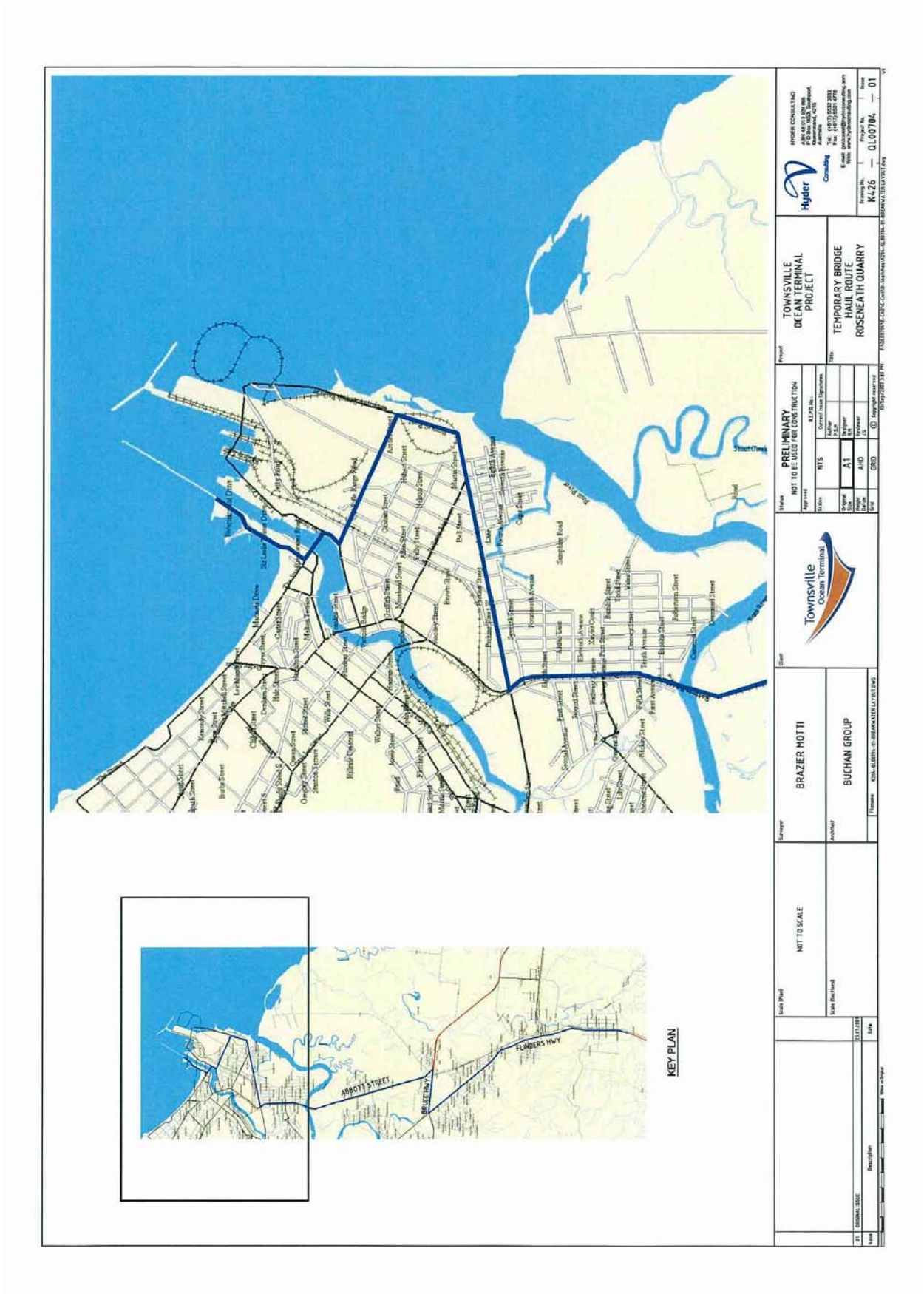


Plate 3.4.4.3 - Drawing K426-QL00704-01 Roseneath Quarry



Option 2 – Strand Haul Road and Barge Transport

It is proposed that material will be delivered from Roseneath Quarry via The Strand directly to the Project Site during Construction Stage 1 and from Roseneath, Pinnacle and Marathon Quarries via Boundary Street to the Barge Point site then by barge to the Project Site during Construction Stages 2 and 3.

Stage 1 - Delivery from Roseneath Quarry to the Project Site via The Strand

Trucks will use the northern haul route from the Roseneath Quarry along Flinders Highway then right onto the Bruce Highway. Trucks will then turn left onto Abbot Street and continue north onto Railway Avenue/ Saunders Street/ Dean Street. Trucks will follow Dean Street to Oxley Street then turn right onto The Strand then left onto Sir Leslie Thiess Drive onto Entertainment Drive and continue to the Project Site *(*See Plate 3.4.4.4 - Haul Route Maps – Drawing K401-QL00704-01 Roseneath Quarry).

Stages 2 and 3 - Delivery from Roseneath, Pinnacle and Marathon Quarries to Barge Point Site

Trucks from Pinnacle Quarry will utilise the haul route to the city limits as described for Option 1 and will then continue west onto Boundary Street Trucks from Roseneath and Marathon Quarries will utilise haul routes to the city limits as described for Option 1 and will then turn right at Boundary Road.

Trucks from all quarries will continue along Boundary Street to the Barge Point barge landing site at the junction of Boundary Street and Benwell Road. (See Plate 3.4.4.5 - Haul Route Maps – Drawing K414-QL00704-01 Roseneath Quarry, Plate 3.4.4.6 - Drawing K412-QL00704-01 Pinnacle Quarry and Plate 3.4.4.7 - Drawing K405-QL00704-01 Marathon Quarry).

Material may be stockpiled within the Barge Point site then transported by two SLV 500-tonne barges via Ross River to the Project Site. Transport by barge may occur 24 hours per day. However, material would be delivered in two 8-hour shifts. Rock material would be loaded onto the barges by excavator or front end loader from stockpiles, as rocks greater than 1 tonne cannot be loaded directly from trucks to the barge.

The proposed frequency of material deliveries for Option 2 is provided in Table 3.4.4.4.

Table 3.4.4.4: Option 2 haul route material delivery frequencies

Option 2 Stage	Material Volumes	Delivery Times	Vehicle Frequency	Total Movements
Stage 1	580,439 tonne of rock	Six hours/day six days/week	10.27 vehicle movements per hour	18,615 over 12 months
Stage 2	621,125 tonne of rock, sand and engineered fill	Ten hours/day six days/week	6.94 vehicle movements per hour	20,960 over 12 months
Stage 3	446,984 tonne of rock and engineered fill	Ten hours/day six days/week	4.19 vehicle movements per hour	12,653 over 12 months

Advantages and Disadvantages of Option 2

This option requires heavy vehicle haulage through the Townsville CBD and will have associated noise and air quality impacts on sensitive receptors including businesses, schools and residential areas. Programme delays may occur as a result of requirements to avoid peak traffic. In addition, this option will result in deterioration of existing road infrastructure which will require significant upgrade.

This option also requires delivery of materials by barge to the Project Site. Barges will be required to utilise navigation channels within Ross River and across the Port of Townsville and will be subject to programme delays due to adverse weather and tidal movements. The Barge landing Site is also subject to long term use concerns in relation to the construction requirements of the future Port Access Road bridge works over Ross River.

Plate 3.4.4.4 - Haul Route Maps – Drawing K401-QL00704-01 Roseneath Quarry

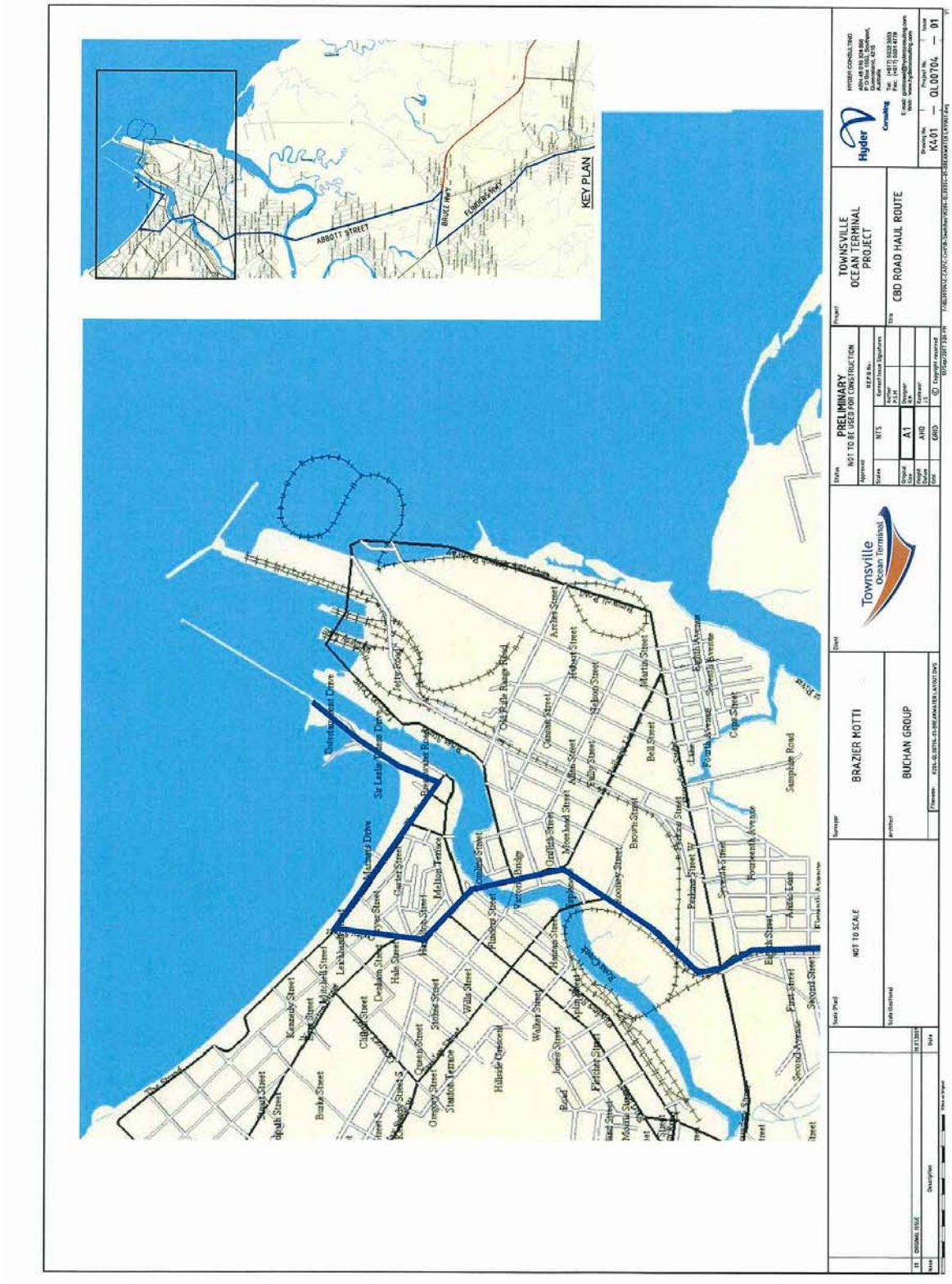


Plate 3.4.4.5 - Haul Route Maps – Drawing K414-QL00704-01 Roseneath Quarry

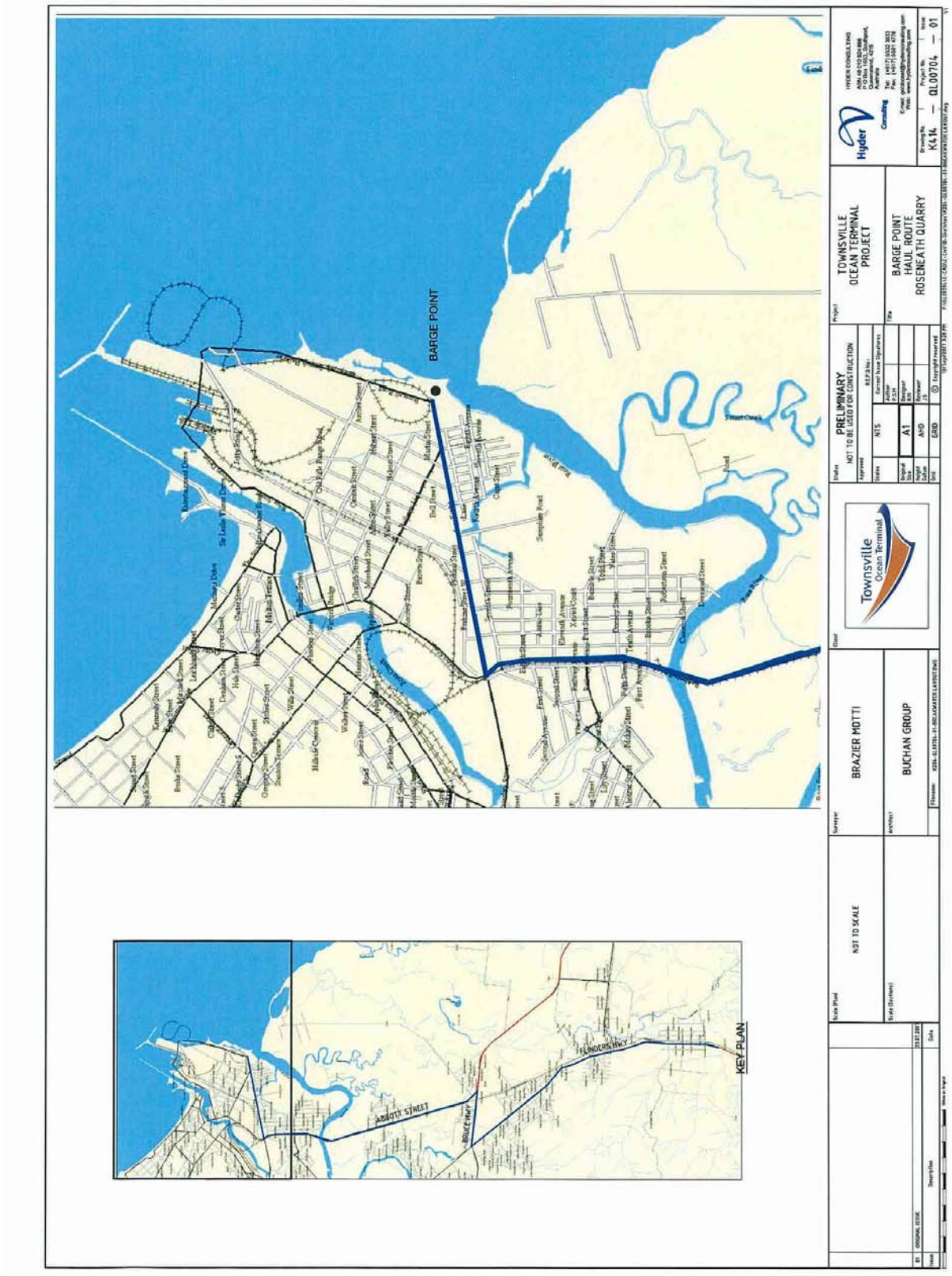


Plate 3.4.4.6 - Drawing K412-QL00704-01 Pinnacle Quarry

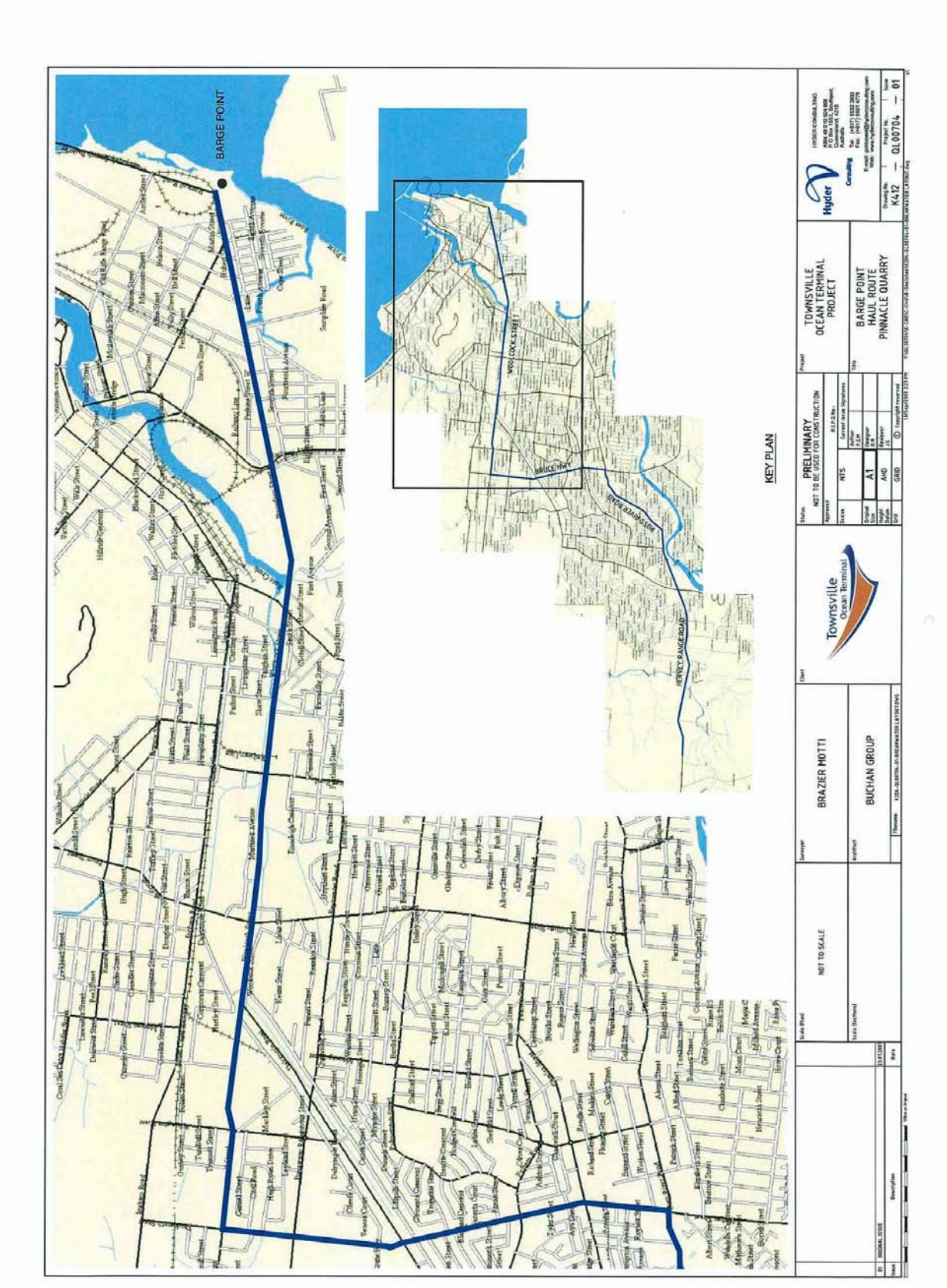
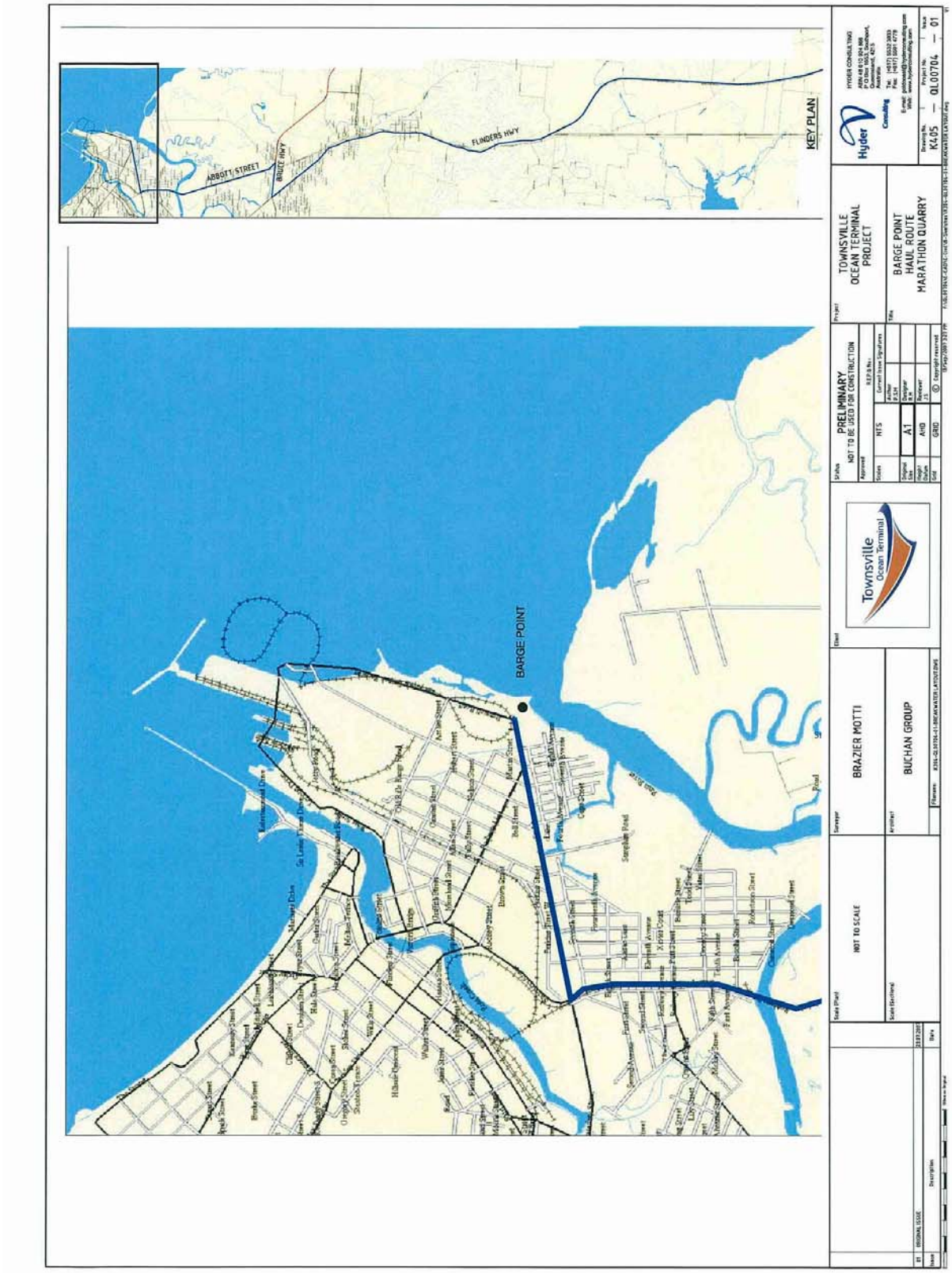


Plate 3.4.4.7 - Drawing K405-QL00704-01 Marathon Quarry



Option 3 – Warburton/Bundock Street Haul Road and Barge Transport

It is proposed that material will be delivered from Roseneath Quarry via Warburton/Bundock Street directly to the Project Site during Construction Stage 1 and from Roseneath, Pinnacle and Marathon Quarries via Boundary Street to the Barge Point site then by barge to the Project Site during Construction Stages 2 and 3.

Stage 1 - Delivery from Roseneath Quarry to the Project Site via Warburton / Bundock Street

Trucks will use the northern haul route from the Roseneath Quarry along Flinders Highway then turn right onto the Bruce Highway. Trucks will then turn left onto Abbot Street and continue north onto Railway Avenue. Trucks will turn left onto Boundary Street/Woolcock Street then right onto Hugh Street/Percy Street. Trucks will follow Bundock/Warburton/Eyre Street then turn left onto Oxley Street then right onto The Strand. Trucks will follow The Strand and turn left onto Sir Leslie Thiess Drive then take Entertainment Drive to the Project Site.

Stages 2 and 3 - Delivery from Roseneath, Pinnacle and Marathon Quarries to the Barge Point Site

Trucks from Roseneath, Pinnacle and Marathon Quarries will utilise haul routes to the Barge Point site as described for Option 2 - See Plates 3.4.4.5 - 3.4.4.7

The proposed frequency of material deliveries for Option 3 is provided in Table 3.4.4.5.

Table 3.4.4.5: Option 3 haul route material delivery frequencies

Option 3 Stage	Material Volumes	Delivery Times	Vehicle Frequency	Total Movements
Stage 1	580,439 tonne of rock	Six hours/day six days/week	10.27 vehicle movements per hour	18,615 over 12 months
Stage 2	621,125 tonne of rock, sand and engineered fill	Ten hours/day six days/week	6.94 vehicle movements per hour	20,960 over 12 months
Stage 3	446,984 tonne of rock and engineered fill	Ten hours/day six days/week	4.19 vehicle movements per hour	12,653 over 12 months

Advantages and Disadvantages of Option 3

This option also requires heavy vehicle haulage through built-up areas in Townsville and will have associated noise and air quality impacts on sensitive receptors. This option will result in deterioration of road infrastructure which will require significant upgrade and major temporary traffic control works due to haulage along busy arterial roads to Townsville CBD. Programme delays may occur as a result of requirements to avoid peak traffic along these roads.

This option also requires delivery of materials by barges, which will be required to utilise navigation channels within Ross River and across the Port of Townsville and will be subject to programme delays due to adverse weather and tidal movements.

Presentation of the details of this proposed haul route during community consultation resulted in negative public reactions. Given the social constraints associated with the use of this haulage option, it has been discounted.

Option 4 – Southern Haul Road (Future Port Access Route)

This option would involve haulage of quarry materials along an existing unsealed road located within the Townsville State Development Area to the south of the Ross River.

Haulage during Stage 1 would be as described in Options 2 and 3 as material would need to be delivered directly to the project site via The Strand or via Warburton/Bundock Street. Haulage during Stages 2 and 3 would be via the unsealed road to a new barge landing point to be constructed within the Ross River, then delivery by barge to the project site.

Advantages and Disadvantages of Option 4

This option requires heavy vehicle haulage through built-up areas in Townsville and will have associated noise and air quality impacts on sensitive receptors. This option will result in deterioration of road infrastructure which will require significant upgrade and major temporary traffic control works due to haulage along busy arterial roads to Townsville CBD. Programme delays may occur as a result of requirements to avoid peak traffic along these roads.

Barges will be required to utilise navigation channels within Ross River and to traverse across the Port of Townsville and will be subject to programme delays due to adverse weather and tidal movements.

There will also be construction programme delays given the extensive works required for construction of the unsealed road to a standard required for conveying heavy vehicles during Stages 2 and 3 of construction.

There are also ecological and hydraulic constraints associated with this option given the location of the road within extensive flood-prone coastal vegetation areas. This route would also require construction of a barge landing site and dredging of Ross River.

Selection of Preferred Haul Route Option

Analysis of all four options has resulted in selection of Option 1 as the preferred haul route. This option will result in fewer impacts on residential and business areas and fewer environmental impacts. It also involves fewer programme delays associated with the use of barges and the need to avoid peak traffic periods in built-up areas.

It may be that for specific construction steps, the remaining options (or a mix of options) will also be appropriate, particularly if it results in overall lessening of the construction impacts of the TOT Project.

In terms of impacts from the preferred option on matters such as noise and air quality, these are dealt with in Sections 4.8 and 4.10.

Material Haulage Schedule

Option 1 – Temporary Bridge Haul Route (Preferred)

Stage 1

It is proposed that approximately 593,953 tonne of rock will be delivered to the Project Site by B-Double and Semi-Trailer for rock materials larger than 1 tonne to the Project Site via the temporary bridge and haul roads during the first twelve months of construction. It is expected that trucks will operate for ten hours a day for six days a week at a frequency of 5.79 vehicle delivery movements each hour. This will give a total of 17,475 deliveries to the Project Site via the temporary bridge haul route during Stage 1.

Stage 2

A total of 621,125 tonne of rock, sand and engineered fill will be transported by B Double and Semi-Trailer for rock materials larger than 1 tonne to the Project Site via the temporary bridge and haul roads for a period of twelve months. Trucks will deliver material at a rate of 6.94 vehicles per hour operating for 10 hours a day for 6 days a week. This gives a total of 20,960 deliveries of material to the Project Site via the temporary bridge haul route during Stage 2.

Stage 3

During Stage 3, approximately 446,984 tonne of rock and engineered fill will be delivered by B Double and Semi-Trailer for rock materials larger than 1 tonne to the Project Site via the temporary bridge and haul roads for a further period of twelve months. A total of 12,653 deliveries will be made during this period with trucks operating for 10 hours a day for 6 days a week giving a delivery rate of 4.19 vehicles per hour during Stage 3.

Option 2 Strand Haul Route and Barge Transport

Stage 1

It is proposed that approximately 580,439 tonne of rock will be delivered by truck and dog directly to the Project Site via the Strand during the first twelve months of construction. It is expected that trucks will operate for six hours a day for six days a week at a frequency of 10.27 vehicle delivery movements each hour. This will give a total of 18,615 deliveries to the site via the town haul route.

Stage 2

A total of 621,125 tonne of rock, sand and engineered fill will be transported by B Double and Semi-Trailer for rock materials larger than 1 tonne to the Barge Point site for a period of twelve months. Trucks will deliver material at a rate of 6.94 vehicles per hour operating for 10 hours a day for 6 days a week. This gives a total of 20,960 deliveries of material to the Barge Point site during Stage 2.

Stage 3

During Stage 3, approximately 446,984 tonne of rock and engineered fill will be delivered by B Double and Semi-Trailer for rock materials larger than 1 tonne to the Barge Point site for a further period of twelve months. A total of 12,653 deliveries will be made during this period with trucks operating for 10 hours a day for 6 days a week giving a delivery rate of 4.19 vehicles per hour.

Option 3 – Warburton/Bundock Street Haul Road and Barge Transport (Discounted Option)

Stage 1 – Bundock Street/Warburton Street Haul Route

It is proposed that approximately 580,439 tonne of rock will be delivered by truck and dog directly to the Project Site via Bundock Street/Warburton Street during the first twelve months of construction. It is expected that trucks will operate for six hours a day for six days a week at a frequency of 10.27 vehicle delivery movements each hour. This will give a total of 18,615 deliveries to the site via the town haul route.

Stage 2 – Barge Point Site Haul Route

A total of 621,125 tonne of rock, sand and engineered fill will be transported by B Double and Semi-Trailer for rock materials larger than 1 tonne to the Barge Point site for a period of twelve months. Trucks will deliver material at a rate of 6.94 vehicles per hour operating for 10 hours a day for 6 days a week. This gives a total of 20,960 deliveries of material to the Barge Point site during Stage 2.

Stage 3 – Barge Point Site Haul Route

During Stage 3, approximately 446,984 tonne of rock and engineered fill will be delivered by B Double and Semi-Trailer for rock materials larger than 1 tonne to the Barge Point site for a further period of twelve months. A total of 12,653 deliveries will be made during this period with trucks operating for 10 hours a day for 6 days a week giving a delivery rate of 4.19 vehicles per hour.

Material Stockpiles

Rock and sand material will be stockpiled within the Project Site for distribution to working cells. The locations of designated stockpile areas within the site are indicated on Methodology Drawing K203-QL00704-01.

Conclusion of Section 3.4

It is considered that the construction of the TOT Project can be undertaken without significant impacts on environmental values in accordance with the recommendations of specialist studies and investigations. These recommendations have been incorporated into the project EMP and will be implemented during construction.

3.5 Operations

The location and nature of the TOT Project and its future operation has been discussed in detail elsewhere in this Section of the EIS.

Environmentally Relevant Activities

The following future operations proposed to be undertaken within the Project Site are Environmentally Relevant Activities (ERA) as prescribed in the EP Act and prior to operation will require the relevant approval to be issued. Compliance with any conditions of approval during the operational phase will be in accordance with all normal EP Act provisions.

Activity	ERA No.	Description
Dredging	19	Capital dredging will be required within residential canals, access channels and the ocean terminal berth pocket to create the required depths for navigational access and maintenance dredging will be required to maintain these depths.
Stockpiling, loading or unloading goods in bulk	74	Loading and unloading of bulk provisions for cruise and naval vessels will be undertaken at the ocean terminal.
Marina	73	Marina berths will be provided within the Breakwater Cove precinct for marine vessels. Approval will be required for each marina containing more than 20 berths, including where appropriate sewage disposal for vessels utilising the marina.
Port	71	The ocean terminal will provide a designated berth for cruise ships and naval vessels. It is expected that this new area will be added to the existing Townsville Port Authority designated area.

It is not anticipated that ERA approvals will be required for the following activities as the quantities of materials handled or stored on the site will not trigger the requirement to obtain an environmental licence under the EP Act.

- Plant and equipment size and capacity used within the site;
- Quantities of chemicals to be stored and handled on site; and
- Solid and liquid wastes produced and disposed on site.

If the nature of these activities change during some future development operation, then other approvals may be required in accordance with the provisions of the EP Act.

Maintenance Dredging

Breakwater Cove Precinct – Artificial Waterways and Navigation Channels

Waterway Design Profiles

Details of the proposed artificial waterway and navigation channel profiles for the Breakwater Cove precinct are shown on Drawings K220-QL00704-03 Canal Sections and K223-QL00704-02 Access Channel provided in the Construction Methodology Report in Appendix 5. They are also located at the end of this Section. This includes details of design dredge depths to be maintained.

Anticipated Vessel and Ship Size

The design profile for these waterways has been adopted in accordance with the vessel draft required. The main access channel has been designed with consideration for super yacht access to the commercial marina for vessels up to 50m. Canals have been designed to provide access for private recreational vessels up to approximately 15m.

Expected Maintenance Dredging Requirements

Typical maintenance dredging plant

It is expected that maintenance dredging will be undertaken using trailing suction hopper dredge equipment. This equipment will be supplied and operated by a suitably qualified dredging contractor.

Expected frequency of maintenance dredging

Global Environmental Modelling Systems (GEMS) has undertaken an investigation of sedimentation rates to determine the project's requirements for maintenance dredging. It is located in Appendix 14.

Previous studies have shown that Cleveland Bay transports significant amounts of suspended sediments and the rate of sediment deposition in the Port of Townsville outer harbour is in the order of 10cm a month. The access channel to the Breakwater Cove precinct is much shallower and more exposed than the Port outer harbour and so a lower sedimentation rate is expected.

To assess the expected rate of sediment deposition in the access channel after completion of the project, a long term modelling study was undertaken with the GEMS 3D sediment transport model (SEDTRAK3D).

The results of this study showed a predicted build up in the access channel of 2- 3 cm per month, significantly less than that expected for the Port outer harbour. This result is due to the much higher energy environment of the shallower and more exposed access channel resulting in significantly more resuspension and movement of fine sediments.

These results suggest an annual accumulation in the range of 25 to 35 cm in the access channel which equates to approximately 15,000 m3 per annum. The access channel and waterways within the Breakwater Cove precinct will be surveyed annually and dredged as required to maintain required depths and to achieve water and sediment quality objectives as outlined in Section 4.7.

Dredging plume minimisation

In order to minimise migration of dredge plumes during dredging the follow control measures will be implemented:

- No dredging during periods of strong SE winds
- Use of silt curtains during dredging
- Turbidity monitoring at control and impact sites
- Cessation of dredging if monitoring detects impacts.

Water Quality Containment Release Criteria

The release criteria for water quality to be achieved during dredging are as follows:

- Investigation Level turbidity - above 110% of relative value
- Intervention Level turbidity - above 120% of relative value. In the event that these levels are exceeded during dredging, immediate actions must be taken in accordance with the Project EMP

Arrangements for long term maintenance pursuant to the Coastal Protection and Management Act 1995 place the responsibility for maintenance dredging with the Townsville City Council (TCC). By agreement between the Developer and the TCC, the Principal Body Corporate for Breakwater Cove is responsible for all costs associated with maintenance dredging. The Principal Body Corporate will provide for these costs by way of a levy on all of the beneficiaries of the waterways.

Maintenance dredging in the event of a cyclone

The Body Corporate will be responsible for monitoring of sedimentation within the Breakwater Cove precinct. As discussed in Section 3.7, these responsibilities will be commercially assigned to the Marina Facilities Lot Operator. This will include annual hydrographic survey of canals and access channel, which is proposed to include an extreme event-based monitoring survey to detect additional that may be required following extreme conditions.

Long-term (20 years) dredge material disposal

It is proposed that a trailing suction hopper dredge will be used for maintenance dredging within Breakwater Cove Precinct waterways. The dredge spoil material from these dredging activities can be disposed of to a number of optional disposal areas. These may include:

- An approved disposal site which will be separately investigated;
- Port of Townsville future reclamation area;
- Other future development sites requiring fill material;
- A licensed land based facility; or
- TCC licensed landfill site.

The use of disposal sites will be dependant on the specific nature of the dredge material which will be determined at the time of maintenance dredging.

A temporary spoil transfer site will be required to transfer dredge spoil material from the dredge hopper to road trucks. Negotiation of a standard commercial arrangement with the TPA for the use of a TPA berth (or TPA land) for the transfer will occur. An excavator may be used to transfer material from the dredge to the transfer site . Trucks will then transfer spoil material to the final disposal site to be located above tidal waters.

Any future land or sea based disposal sites will be subject to approvals to be obtained by The Body Corporate, on behalf of the Townsville City Council.

Noting the small amount of maintenance dredge material, it is not considered that a permanent dedicated land based disposal facility will be required and recycling option such as re-use of material as development fill will be considered.

Townsville Ocean Terminal Precinct – Berth Pocket and Swing Basin

Design Profiles

Details of the proposed ocean terminal berth pocket and swing basin dredge profiles for the TOT precinct are shown on the CGR Drawing HWH-001-003 contained in the Construction Methodology Report in Section 7, Appendix 5 and at the end of this Section 3. This includes details of the design dredge depth of -11.7CD as required by the Specification for the TOT Project from the State..

Anticipated Vessel and Ship Size

The design profile for the berth pocket is based on State requirements for maximum vessel sizes are described in Section 3.4.1.

Expected Maintenance Dredging Requirements

Expected frequency of maintenance dredging

The sedimentation rate within the TOT berth pocket and swing basin is expected to be similar to that currently experienced in the Port of Townsville inner harbour. In order to verify these requirements, Global Environmental Modelling Systems (GEMS) has undertaken an investigation of sedimentation rates using SEDTRAK3D modelling to determine the required frequency of maintenance dredging.

The results of this modelling indicate an expected average build up in the TOT Berthing Pocket of 8- 9 cm per month, or up to 1 metre per year. Average sedimentation in the outer harbour region was expected to be 11 cm per month, which compares favourably with other sedimentation studies undertaken within the Port.

The quantity of Maintenance dredging from the TOT Berth Pocket is manageable within the overall TPA dredging program.

It is expected that the TOT berthing area will be dredged each time the Port inner harbour is dredged. Given, the dimensions of the TOT berth pocket compared to the swing basin, it is expected that this will not significantly increase total dredging requirements of the Port.

Responsible Parties for Maintenance Dredging

The Port of Townsville is responsible for the maintenance and up-keep of Port facilities including maintenance of Townsville Ocean Terminal berth pocket and channel depths. As the TOT facility

is expected to become the responsibility of the Townsville Port Authority, the long-term maintenance dredging will be undertaken by the Port.

3.5.1 Operation of the Townsville Ocean Terminal Precinct

It is expected that operation of the TOT precinct will be the responsibility of the Townsville Port Authority (TPA) on behalf of the Queensland State Government. However, some non-core activities such as operation of kiosks and cafes may be contracted to external operators. The Proponents is under contractual obligation to provide the TOT Precinct facilities in accordance with certain specifications provide by the State. As such, the following details on the future operational requirements of the TOT Precinct are in accordance with those Specifications.

The TPA is a government owned corporation created in 1995 for management and operation of the Port of Townsville. The port itself has been operating since the construction of its first wharf in 1863. The port provides a regional gateway for import and export of bulk goods such as cement, fertiliser, nickel ore, copper, sugar, live cattle, concentrates and general cargo (TPA 2006b).

The TPA has identified opportunities for increased capital investment in the port and its facilities and provides support for regionally significant projects including the TOT project. During 2004/2005, the port received 38 naval vessels and 7 cruise ships (TPA 2005). The development of the TOT will provide improved facilities for these vessels and will enhance opportunities to increase commercial operations within the port.

Nature and Location of the TOT Precinct

The TOT Precinct will be located within the Port Western Breakwater as illustrated in Hyder Drawing No. K019. Design Drawings detailing the specifications of the terminal building and wharf structure have been prepared by Cullen Grummitt & Roe and are contained in the Construction Methodology Report.

The TOT Precinct will comprise the following primary elements:

- Dedicated berth for cruise ships and naval vessels;
- Wharf structure and terminal building; and
- Associated road works, car parking and infrastructure services.

Vehicular access is gained to the TOT Precinct via an extension of Entertainment Drive. Emergency access will be gained via the internal road system with full access provided for emergency vehicles to the wharf. Set down and holding areas are provided for buses and taxis adjacent to the terminal building entry.

Public car park spaces will be provided for 100 vehicles adjacent to the terminal building entry. There will also be spaces to the north of the building for official vehicle parking (12 spaces) and VIP/Hire Vehicle parking (20 spaces). Parking will be provided for tour and shuttle buses (10 spaces) or heavy vehicles (8 spaces). Ram-proof bollards will prevent entry of vehicles to the wharf secure area. Car parking and access arrangements are detailed on CGR Drawing HWH-001-002 a copy of which is at the end of this Section.

Plant and Equipment Used at the TOT

Existing port operational activities involve an extensive range of mobile cargo handling equipment. Equipment currently in use at the Port of Townsville include forklifts, tractors, cranes and front end loaders for bulk loading and unloading of ships (TPA 2003).

The equipment required for operation of the TOT for berthing of cruise ships and naval vessels will be similar to equipment currently in use at the Port of Townsville for loading and unloading these vessels. Currently passenger cruise ships are serviced by use of a conveyor system for

baggage and forklifts for loading and unloading supply pallets. It is proposed that trucks will service ships within a secure wharf area.

Navigation Details

Navigation buoys and beacons are located within Cleveland Bay to the east of Magnetic Island to facilitate navigation of marine vessels into and out of the port via the Sea Channel and Platypus Channel. These entrance channels have a combined length of 6.4 nautical miles, are 92m width and 11.7m depth (below LAT) and are marked by pairs of lighted beacons (TPA 2003).

The Port of Townsville entrance channels are within a compulsory pilotage area provided by Maritime Safety Queensland, which begins at the high water mark in line with the northern tip of Cape Cleveland and extends to the mainland shoreline. Marine vessels are accepted at two pilot boarding grounds adjacent to the channels depending on the draft of the vessel (MSQ 2006).

Security Arrangements

The Port of Townsville operates under a Maritime Security Plan approved by the Department of Transport and Regional Services (DoTARS) in 2004. This plan was prepared in accordance with the *Maritime Transport Security Act 2003* and outlines security measures and procedures applicable to all port facilities and to ships and persons entering the port (TPA 2006a).

Security measures including fencing of port areas and operation of a gatehouse and three boomgates at designated entry points have been adopted to control access to the port and port facilities. Ships at berth are protected by a ship's security exclusion zone and access is restricted to authorised personnel only. Closed circuit TV is operated by port security officers to monitor port operations and footage may be provided to Customs, Police or Maritime Safety Queensland as required (TPA 2006a).

All marine vessels entering the Port are required to report to the TPA prior to entry and are required to provide ship's security details including the International Ship and Port Facility Security (ISPS) Code compliance number. All persons entering the Port of Townsville are required to provide identification and demonstrate that they require access for official port business (TPA 2006a).

Security fencing will be provided around the TOT precinct to allow surveillance of access to the precinct and to restrict unauthorised access during visits by naval vessels. A 100m security exclusion zone is required while a naval vessel is at the TOT berth. This exclusion zone will be provided on landside by the precinct security fencing of a 3m high timber or concrete barrier and gatehouse controls and on waterside by provision of exclusion zone transition lighting and closed circuit TV camera surveillance.

Public access will be allowed during cruise ship visits however, a security exclusion zone of 30m will be maintained around vessels. This zone will be maintained by provision of ram-proof bollards to prevent vehicle access, guardhouse and security fencing around the wharf secure area and closed circuit TV camera surveillance. Passenger access to the wharf secure area will be controlled within the terminal building by Customs.

Quarantine

Quarantine arrangements at the TOT will be undertaken in accordance with the requirements of the Australian Quarantine Inspection Service (AQIS) to protect the health of Australian people, animals, plants and the marine environment. Cruise ships and naval vessels pose a quarantine disease risk due to products carried on board and the health of persons travelling from other destinations.

A pre-arrival report will be supplied to AQIS by a ship's Master 12 to 48 hours prior to arrival at the port. This report will provide information relating to the vessel's previous port of call prior to entering Australia, the health of crew and passengers, treatment and discharge of ballast water

and details of any cargo being carried on board. Cruise ships and navy vessels are required to provide additional information relating to the ships itinerary, crew and passenger movements, waste removal and details of any live plants and animals on board (AQIS 2007).

The ship's Master will be required to make an announcement to crew and passengers of quarantine controls and regulations under Australian laws prior to arrival at the port. All vessels entering Australian ports will be inspected by AQIS. Passengers will not be allowed to disembark until clearance is given by AQIS quarantine officers. All crew and passengers leaving the vessel (including day-trippers) will be required to complete an Australian Incoming Passenger Card and will be subject to AQIS and Customs screening on disembarking (AQIS 2007).

Passengers will not be allowed to carry food or water from the vessel and all waste products including animal waste, organic refuse and galley scraps will be stored, treated and disposed of in accordance with AQIS requirements. Live plants and animals (including Australian animals taken on board) will be reported to AQIS quarantine officers and will be subject to full quarantine requirements (AQIS 2007).

Waste Disposal

The TOT will provide shore-based facilities for receiving ship-generated waste to ensure compliance with MARPOL 73/78 (Convention for the Prevention of Pollution from Ships 1973 as modified by the Protocol of 1978). Sewage from vessels will be treated and disposed of as described in Section 4.4.

Ship Masters will be required to contact waste contractors not less than 24 hours prior to the ships arrival and provide information on the type and volume of waste to be discharged and the time and location of transfer of waste from the ship. The ship's master will be required to ensure that wastes have been adequately separated and contained on-board and that quarantine waste is segregated from other wastes.

General waste for disposal will be collected by an approved waste disposal contractor and transported for disposal off-site. Recyclable materials will be transferred to recycling receptacles upon arrival and collected by an approved recycling contractor. Quarantine waste will be subject to inspection by AQIS and collected by an AQIS approved collector. All quarantine waste in Townsville is currently buried under AQIS supervision. Details of waste management and disposal procedures are provided in Section 4.5.

Chemicals Stored within the TOT Precinct

A secured, bunded containment area will be provided within the site for storage and handling of chemicals and hazardous substances (including oil, fuel, grease and hydraulic fluids). A register will be maintained at the site of all chemicals and hazardous substances to be kept on-site including the Material Safety Data Sheets (MSDS) for each substance.

All chemicals and hazardous substances will be stored and handled in accordance with the requirements of the MSDS for the substance. All staff will be trained in the safe storage and handling requirements of chemicals and hazardous substances. A spill response kit will be kept on site in a clearly marked location with clear instructions for spill clean-up procedures. The management of chemicals and hazardous substances will be undertaken in accordance with the EMP provided in Section 5.

Community Use of TOT Facility

An investigation into the potential for use of the TOT facility for community and other commercial purposes was undertaken and general commercial uses are available within the FDA Scheme for the TOT Precinct, such purposes could include, but not limited to, functions, entertainment and a restaurant.

Use of the facility for other uses will be subject to the discretion of the Townsville Port Authority as the lawful operator in due course and is therefore not further considered by the Proponent.

3.5.2 Operation of the Breakwater Cove Precinct

Nature and Location of the Breakwater Cove Precinct

The Breakwater Cove Precinct will provide for a range of uses including multiple dwellings, office, park, restaurant, shop, landscaping and public utilities.

As discussed in Section 3.3, a Future Development Area (FDA) Scheme will be developed and approved under the *Breakwater Island Casino Agreement Amendment Act 2006*. Land use and development within the Breakwater Cove Precinct will be controlled by the FDA Scheme and will be governed by preparation of a Community Management Scheme.

The existing Northern Breakwater will be updated to create an open space area and to provide protection to the residential fingers of the Breakwater Cove Precinct and marina. The public open space area will be used as parkland and will provide significant views of Magnetic Island and the ocean horizon.

The new Strand Breakwater will be located generally to the west of the proposed residential development and adjacent to the marina channel entrance. The Strand Breakwater will provide protection to the Breakwater Cove waterways and the access navigation channel to the existing Townsville marina precinct. The Strand Breakwater will provide an extension to the Strand Public Foreshore area as a public access promenade including a paved surface for pedestrians and emergency vehicles.

The existing Port Western Breakwater is currently used as a public access trail for walking, exercise, jogging and fishing. Public access to this wall will not be available during the construction phase of the project and will be restricted to the public during the times of visitation by ships to the TOT Precinct. These open space uses will be provided by the new Strand Breakwater and the Northern Breakwater Parkland area.

Access to and from the Project Site

Several public and private transportation modes will be available to the Breakwater Cove Precinct. Vehicular access to the residential waterway peninsulas will be provided by conventional roadways. On-street parking will be provided for visitors to the site and private parking will be provided within the future residential properties.

Pedestrian footpaths and walkways will be provided on footpath areas and within open space zones. Bicycles routes will be accommodated by a combination of ongrade pathways and within road corridors.

The Breakwater Cove Precinct will be connected to Entertainment Drive by means of two way road. The main access road will be designed to cater adequately for pedestrians and on road cyclists. Internal roads will cater for public, private and service vehicles and will be designed to meet the relevant Australian road design standards.

Access to the new Strand Breakwater will be provided via the Mariners Drive precinct. Access will be restricted to pedestrians, cyclists and maintenance/emergency vehicles only. This access will be adequately lit during the hours of darkness.

Resident Safety and Security

The site layout has been designed with consideration of Crime Prevention through Environmental Design Principles (CPTED) applied to buildings, car parks, open space and landscaped areas to facilitate a safe environment for residents and visitors to the site. CPTED strategies are

incorporated into the design and development to provide an environment in and around the site that allows for casual surveillance and access management.

The site design and entrance statement creates a social connection with The Strand and Townsville City in order to deter crime. A periodic review of the buildings and associated facilities will be undertaken during operation of the site having regard to the following safety and security factors:

- Maximising clear sightlines and appropriate lighting of public areas to provide opportunities for casual surveillance;
- Minimising entrapment spots and isolation of public areas including car parks and open space areas;
- Location of compatible activities together to avoid isolation of public uses and placement of activity generators to promote casual surveillance; and
- Use of signage and barriers to clearly define ownership and intended uses.

Liaison with the Queensland Police Service and relevant emergency service agencies will be undertaken from time to time in relation to crime prevention.

Water Quality within Canals

Waterway canals will provide access for private recreational vessels, jetties, and pontoons and access for moorings of visiting super yachts within the Breakwater Cove Precinct. These canals will be dredged to generally to a depth of -2.5m LAT. The marina access channel will be dredged to a depth of approximately -3.5m LAT to provide marine vessel access to the new waterway canals and the existing Townsville marina.

An assessment of flushing rates within artificial waterways has been undertaken by GEMS. An analysis of these results and the expected water quality objectives is provided in Section 4.6.

Mitigation of Impacts from the TOT on the Breakwater Cove Precinct

As will be discussed in Sections 4.8, 4.9 and 4.10 the potential impacts of noise, air quality and visual amenity between the TOT Precinct and the Breakwater Cove Precinct can be reasonably mitigated.

3.6 Rehabilitation and Decommissioning

Rehabilitation

Options, strategies and methods for progressive and final rehabilitation of all environmental values disturbed during the construction of the TOT project are detailed in the Nature Conservation Report in Section 7 Appendix 19 and are outlined in Section 4.11.2 of this EIS.

Final levels of land platforms within the TOT Project Site following site reclamation works are discussed in Section 3.4.1.

Decommissioning

A number of temporary structures used in construction of the TOT and Breakwater Cove Precincts will require removal from the Project Site at the completion of construction works and prior to commissioning of the project.

Removal of Temporary Works

At the completion of site construction works, temporary buildings used as offices and other facilities will be demobilised off site. At the completion of construction works and once the site is secure for public access, fencing material will be demobilised off site. It is expected that these materials will be returned to suppliers for reuse and will not require disposal.

Disconnection of all temporary services such as sewer connections and water supply that are connected to live Citiwater facilities will be undertaken with licensed personnel to Citiwater requirements or the connections will be closed off directly by Citiwater. Electricity and telecommunications will be disconnected by suitably qualified personnel.

Rock material removed from temporary bunds and barge landing sites (if created) will be reused within the site in final profiling of breakwaters. In the event Option 2 Haul Route is utilized, the upgraded barge landing facility may be left in place for future use by the owners of the Barge Landing Point at the completion of site construction works.

The Construction Project Manager will supervise decommissioning and removal of all temporary structures and materials which will be undertaken within 2 weeks of completion of construction works.

Removal of Plant and Equipment

The removal of plant and equipment from the Project Site will be the responsibility of the contractors who own or have hired such equipment. The Construction Project Manager will supervise removal of plant and equipment which will be undertaken within 2 weeks of completion of construction works.

Temporary Stockpile Site

Negotiations have been undertaken with the owner of the commercial site for possible temporary stockpiling of rock and sand fill material for the period of construction. Materials delivered by overland truck via Boundary Road in the event Option 2 of the haulage route option is undertaken will be stored temporarily within this site and removed to the Project Site by barge. The barge landing facility at this site will require upgrade for delivery of construction materials to the Project Site therefore post use, the site will not need to be rehabilitated.

Waste Disposal

It is expected that the majority of structures and materials will be either demobilised and returned to suppliers or manufacturers or reused within the site. Any structures or materials that cannot be reused will be removed to an approved recycling facility or landfill site for disposal as described in the Waste Management report.

Stabilisation of Affected Areas

Methods to ensure that areas affected by construction of the TOT Project are stabilised and rehabilitated to an acceptable standard are provided the Nature Conservation Study in Appendix 19 and are outlined in Section 4.11.2 of the EIS.

3.7 Land Tenure

The location of the Project Site and access has been discussed in Sections 3.1 and 3.2 previously.

Discussion of the Project Site in terms of environmental sensitive areas such as National Park, World Heritage Areas, Habitat Protection Zones and other statutory boundaries is undertaken in Section 4.11.

The location of all key construction elements is illustrated within Section 3.4 and all services infrastructure provision is detailed in Section 4.4.

The Project Site is in an isolated location at present and will be fully bunded for separation from the surrounding marine environment.

There is no additional land to be used for mitigation purposes such as requirements of environmental off sets, access routes, dedicated land based dredge disposal sites or construction purposes. The defined terms of the "Future Development Area under BICA Act, however do lawfully allow the Proponent to access adjoining State waters for construction purposes if necessary .

Major Stages and tenure applications under the BICA Act

Following completion of the Environmental Impact Statement and the relevant approvals at State and Federal levels, the State may then apply to be granted a term lease pursuant to the *Land Act 1994* to facilitate development of the Project Site pursuant to the BICA Act.

Through a series of tenure arrangements and transactions the Proponent will control the Project Site through the construction and development stages of both the TOT Precinct and the Breakwater Cove Precinct.

The treatment of native title issues has been canvassed in Section 4.12 and an ILUA has been agreed with the Traditional owners and registered.

Tenure details of the TOT Precinct

Upon the practical completion of the TOT Precinct facilities, the Proponent will hand over the facility to the State.

It is expected that the State will then provide appropriate tenure to the Townsville Port Authority to operate the facility, which will presumably incorporate a mixture of freehold and leasehold interests.

Tenure Details of the Breakwater Cove Precinct

Once the Future Development Area Land Platforms have been created, the Proponent may make an application to the State for the surrender of the Term Lease over the Breakwater Cove Precinct (in whole or in part), pursuant to the terms of the Lease and for the provision of freehold title.

Once converted to freehold this land will be designated into several components for future management as follows:

- The majority of the land will form part of a layered arrangement pursuant to the *Body Corporate and Community Management Act* (BCCM) involving a Principal Scheme and several Subsidiary Schemes in accordance with the provisions of various Port Protection Measures;
- Parkland outside of the Principal Scheme;
- Public roads; and
- A Car park.

The remaining areas of the Breakwater Cove Precinct will include:

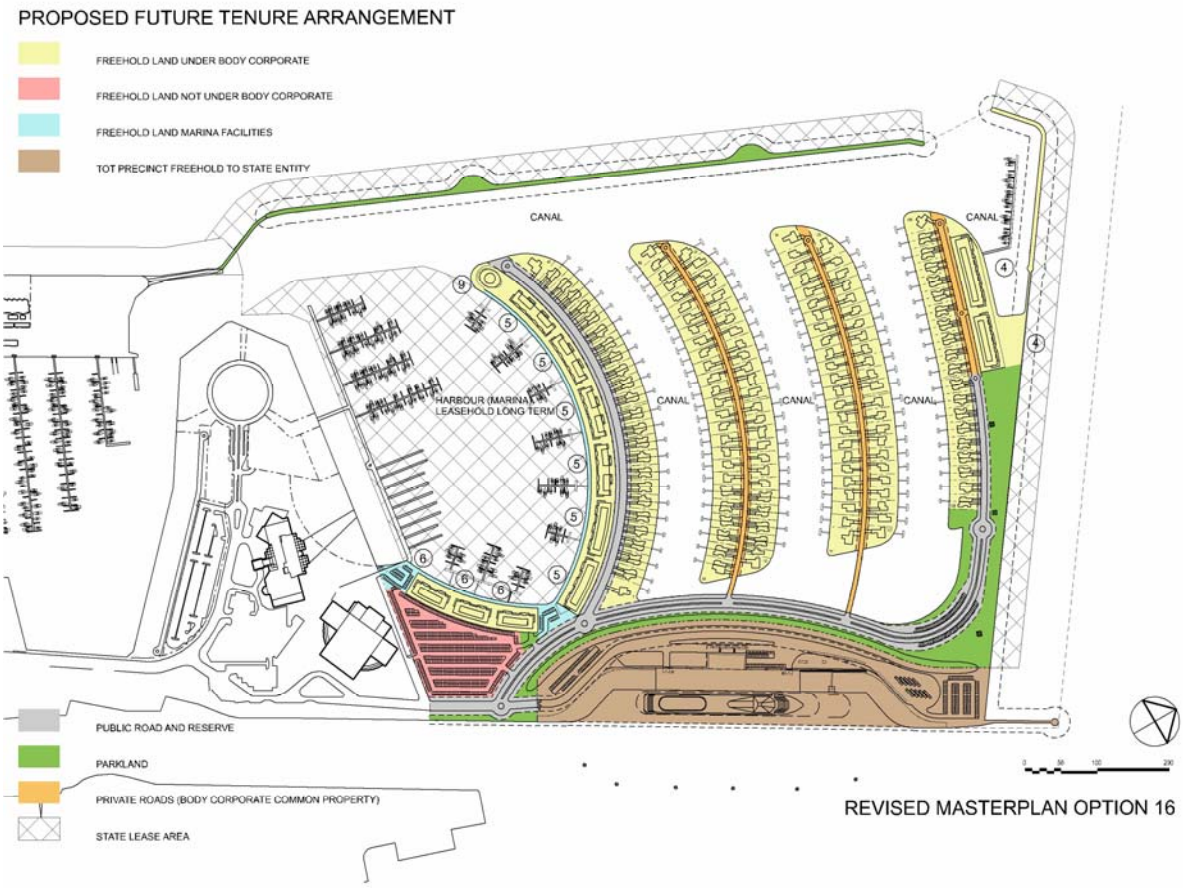
- Waterways[3] (other than the Commercial Marina Basin) created as a result of carrying out the reclamation works, which will become Unallocated State Land and form the Canals;
- The Commercial Marina Basin; and
- The Breakwaters.

Initially the area that will comprise the Commercial Marina Basin will be firstly designated as canal as part of the freeholding of the Breakwater Cove residential fingers. It is proposed that a State Lease for the Commercial Marina Basin will then be issued, subject to controlling legislation.

These different areas are depicted in Plate 3.7.1, and further information on each area, including maintenance obligations, is detailed after the below diagram.

[3] BICA Section 68 (5) For the purposes of subsection (4)(e), *waterway* means that part of the Future Development Area which, upon completion of the proposed northern breakwater and each residential land platform (and freehold title being subsequently granted for each land platform), is inundated by tidal water and includes the inundated areas between land platforms, the previous access channel providing access to the Marina Basin and the revetments and breakwaters confining or containing the waterway (surveyed to the outer top edge of the land platforms so that the edge forms the boundary of the abutting freehold land and to the inner top edge of that side of the northern breakwater which faces the access channel).

Plate 3.7.1 Proposed Future Tenure Arrangement

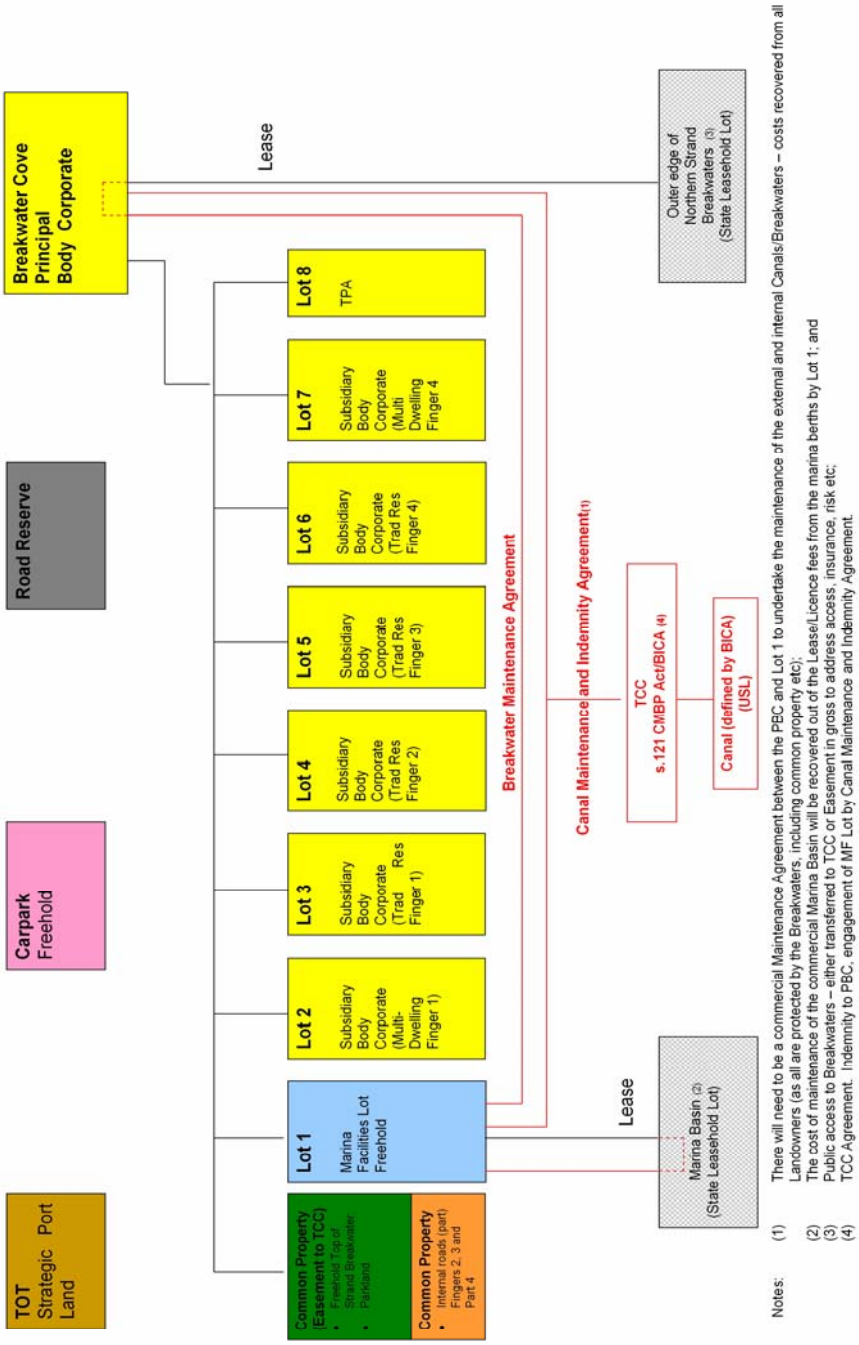


Reconfiguration of the Project Site into these land use areas is undertaken pursuant to the FDA Scheme, discussed in Section 3.3.

Principal Scheme Land

Diagram 3.7.1 below conveniently depicts the proposed layered arrangement for the scheme land, and the body corporate interaction and involvement with other tenure types such as the Canals and Breakwaters.

Diagram 3.7.1 - CMS Structure



The community management statement for the scheme land will provide for matters such as:

- Staging of the development in the manner as outlined in this EIS, whilst also catering for sufficient flexibility required in projects of this nature;
- By Laws preventing the pollution of the canals or damaging of common areas;

- The implementation of the Port Protection Measures detailed in Section 2.2 of this EIS.

The usual caretaking agreements would be entered into by the body corporate so as to ensure that the common property is maintained to an appropriate standard.

Parklands outside of the Scheme land

It is envisaged that the parklands detailed in Diagram 3.7.1 will be transferred to the Townsville City Council as a Freehold Lot. The Townsville City Council would be responsible for insurance and maintenance obligations associated with this land.

Ownership by the Townsville City Council will ensure ongoing public access.

Through this process there will be a need to ensure that the Parklands are actually maintained to a standard suitable for the Proponent, however it is noted that the Parklands in these precincts are expected to be maintained to a high standard similar to the adjoining Strand Area.

Roadways

Internal roadways identified in Plate 3.7.1 on fingers two (2), three (3) and part of four (4) are to be internal roads of the Principal Scheme forming Common Property and maintained by the relevant Body Corporate, i.e. the relevant Subsidiary Body Corporate.

Roadways on fingers one (1), part of four (4) and the connecting roadway are to be local authority roads subject to usual maintenance obligations involving the Townsville City Council.

Car park

The car park area will be a freehold lot outside of the scheme land. The commercial use of this land does not lend itself to being part of what is essentially a residential community titles scheme.

The maintenance obligation of this lot will rest with the registered proprietor.

Canals

The waterways once constructed are surrendered and become Unallocated State Land - Canal, subject to the provisions of the *Coastal Protection and Management Act 1991*. Section 121[4] of that Act places an obligation for maintenance on the Townsville City Council.

Plate 3.7.2 below identifies a boundary section between the canal and the freehold land finger.

However, the Proponent has entered into a Development Agreement[5] with the Townsville City Council and has agreed to indemnify the Townsville City Council for any maintenance obligations associated with the "waterways".

[4] 121 Maintenance of Canals
(1) A local government must maintain and keep clean each—
(a) canal in its area; and
(b) access channel for a canal mentioned in paragraph (a),whether or not the access channel is in its area.
(2) Subsection (1) does not apply to—
(a) a canal, other than an access channel for the canal, constructed under the *Integrated Resort Development Act 1987*; or
(b) a canal constructed under the *Sanctuary Cove Resort Act 1985*.

[5] Section 5 Indemnity and Maintenance
5.1 It is acknowledged by all Parties that this clause 5 and the Maintenance Obligation is conditional upon the Trustee (or its nominee – the Proponent) being issued all required approvals pursuant to Part IX, Division 3 of the Replacement Agreement to construct the Future Development Area Land Platforms.
5.2 The Trustee and The Proponent (as the case may be pursuant to clause 6) must indemnify Council against the Maintenance Obligation by:
5.2.1 the Trustee for the Proponent performing the Maintenance Obligation imposed on the Council; or

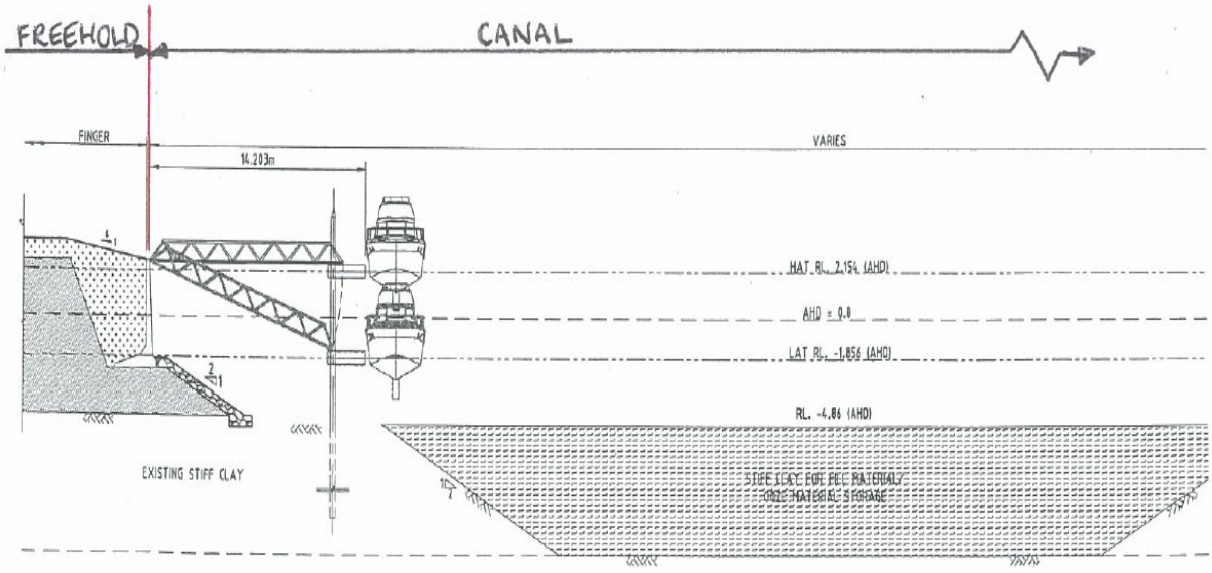
5.2.2 the Trustee or the Proponent reimbursing Council for any cost it may incur as a direct results of Council performing the obligation; or 5.2.3 as otherwise agreed in writing.

As is indicated in Diagram 3.7.1, the Proponent will enter into an agreement with the Townsville City Council and the owner of the Freehold Marina Facilities Lot (Canal Maintenance and Indemnity Agreement) whereby it is acknowledged that:

- Townsville City Council are obliged to maintain the Canal under the *Coastal Protection and Management Act*;
- The Proponent is obliged to indemnify Townsville City Council in relation to the maintenance obligations of the Canal;
- The Proponent will engage the owner of the Freehold Marina Facilities Lot to undertake maintenance works; and
- The Proponent will procure the Body Corporate of the Principal Scheme (once established) to enter into a further Canal Maintenance and Indemnity Agreement with the Townsville City Council and the owner of the Freehold Marina Facilities Lot, whereby the Body Corporate of the Principal Scheme will indemnify the Townsville City Council for any maintenance costs associated with the Canal.

To avoid any future argument that the Canal Maintenance and Indemnity Agreement with the Principal Scheme Body Corporate may be ultra-vires, (on the basis that it may be outside the powers of the Body Corporate pursuant to the BCCM Act), a fall back position detailed in the Canal Maintenance and Indemnity Agreement will provide an acknowledgment by the Principal Scheme Body Corporate of Townsville City Council's entitlement to levy a special rate or charge for Lots in this development pursuant to Section 971[6] the *Local Government Act*.

Plate 3.7.2 – Tenure of Canals/Land platforms



[6] **S971 Special rates and charges –** ***Local Government Act 1993***
(1) A local government may make and levy a special rate or charge on rateable land if—
(a) the rate or charge is for a service, facility or activity; and
(b) in the local government's opinion.
(i) the land, or the occupier of the land, has or will specially benefit from, or has or will have special access to, the service, facility or activity; or
(ii) the occupier of the land, or the use made or to be made of the land, has, or will, specially contribute to the need for the service, facility or activity.

Commercial Marina Basin

As identified on Plate 3.7.1 the Commercial Marina Basin will be outside of the Canal area, and will be the subject of a new State Lease in favour of the owner of the Freehold Marina Facilities Lot. The State Lease would address issues of:

- Land tenure;
- Any maintenance obligations; and
- Linkage of ownership with the adjoining Freehold Marina Facilities Lot

At all times ownership of the Commercial Marina Basin will be tied to the Freehold Marine Facilities Lot.

Freehold Marina Facilities Lot

The Freehold Marine Facilities lot is specifically designed to contain all required Marine Facilities Uses (as per the FDA Scheme) berth car parking and permanent public access to the waterfront. It is identified on Plate 3.7.1.

It is proposed that there would be a tie in between the Commercial Marina leases such that the owner of the Freehold Marina Facilities Lot could not assign parts of their enterprise without the Commercial Marina Basin and the Canal Maintenance and Indemnity Agreement. This will ensure that there is always one central entity responsible for the maintenance obligations of the:

- Commercial Marina;
- Canals; and
- Part of the Breakwaters

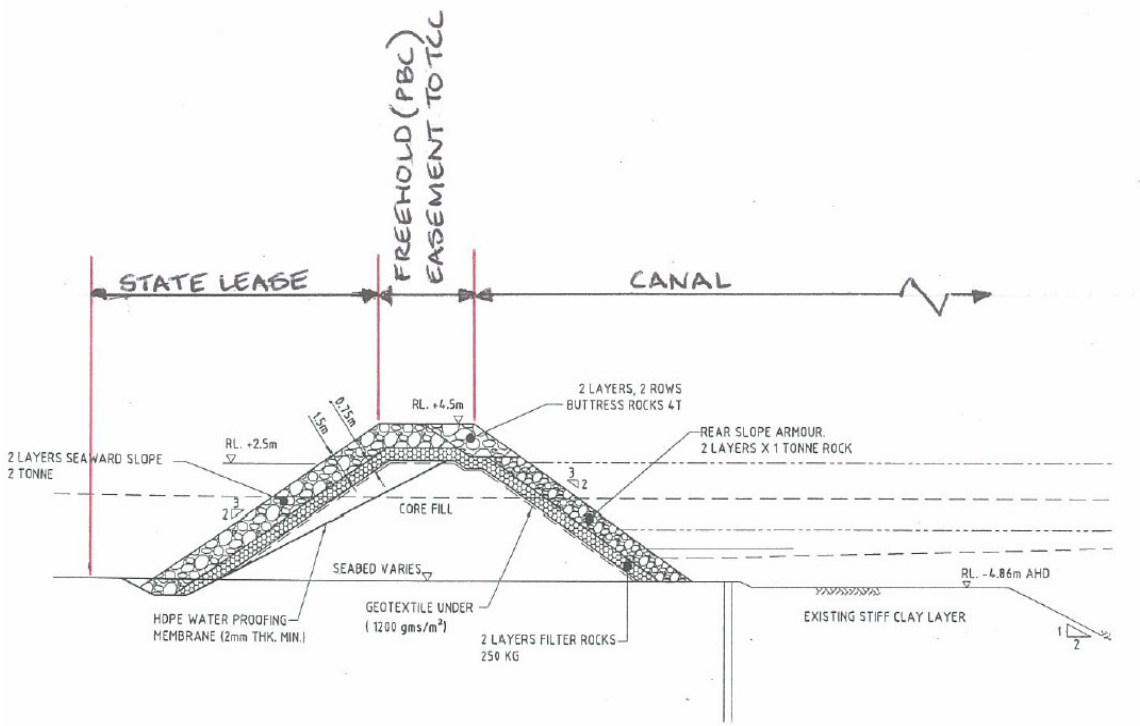
The costs of any maintenance would therefore be paid by the marina users and the Principal Scheme Body Corporate members respectively.

Breakwaters

Plate 3.7.3 below details the land tenure arrangements involving the Breakwaters as follows:

- The outer edge of the Breakwater - State Leases. Note: The Breakwater will be owned by the Principal Body Corporate with the State Lease provided for support (at the seabed) for the Breakwater and an area along the Breakwater for access for maintenance purposes;
- The Level section at the top of the Breakwater (i.e. the walkways) – Freehold; and
- Top of the Breakwater to the inner water edge and beyond – Canal.

Plate 3.7.3 – Tenure arrangements for Breakwaters



The State Lease would be granted in favour of the Body Corporate for the Principal Scheme and become a Body Corporate asset. This State Lease would address items such as:

- Maintenance; and
- Ownership link to the adjoining Freehold Scheme Land.

The Principal Scheme Body Corporate would then in turn enter into a Maintenance Agreement with the owner of the Freehold Marina Facilities Lot in similar terms to the Canal Maintenance and Indemnity Agreement.

The Freehold component of the walkways is part of the Principal Scheme and forms Common Property of that Scheme. In addition to that there would be an easement in gross in favour of the Council to allow public access over the walkways. This easement document would also provide for matters such as:

- Maintenance; and
- Insurance costs and the like which would be the responsibility of the Townsville City Council.

Whatever arrangements are in place for the Mariner's Peninsula development public access routes would also need to be adopted for the Strand Breakwater freehold section to ensure consistency.

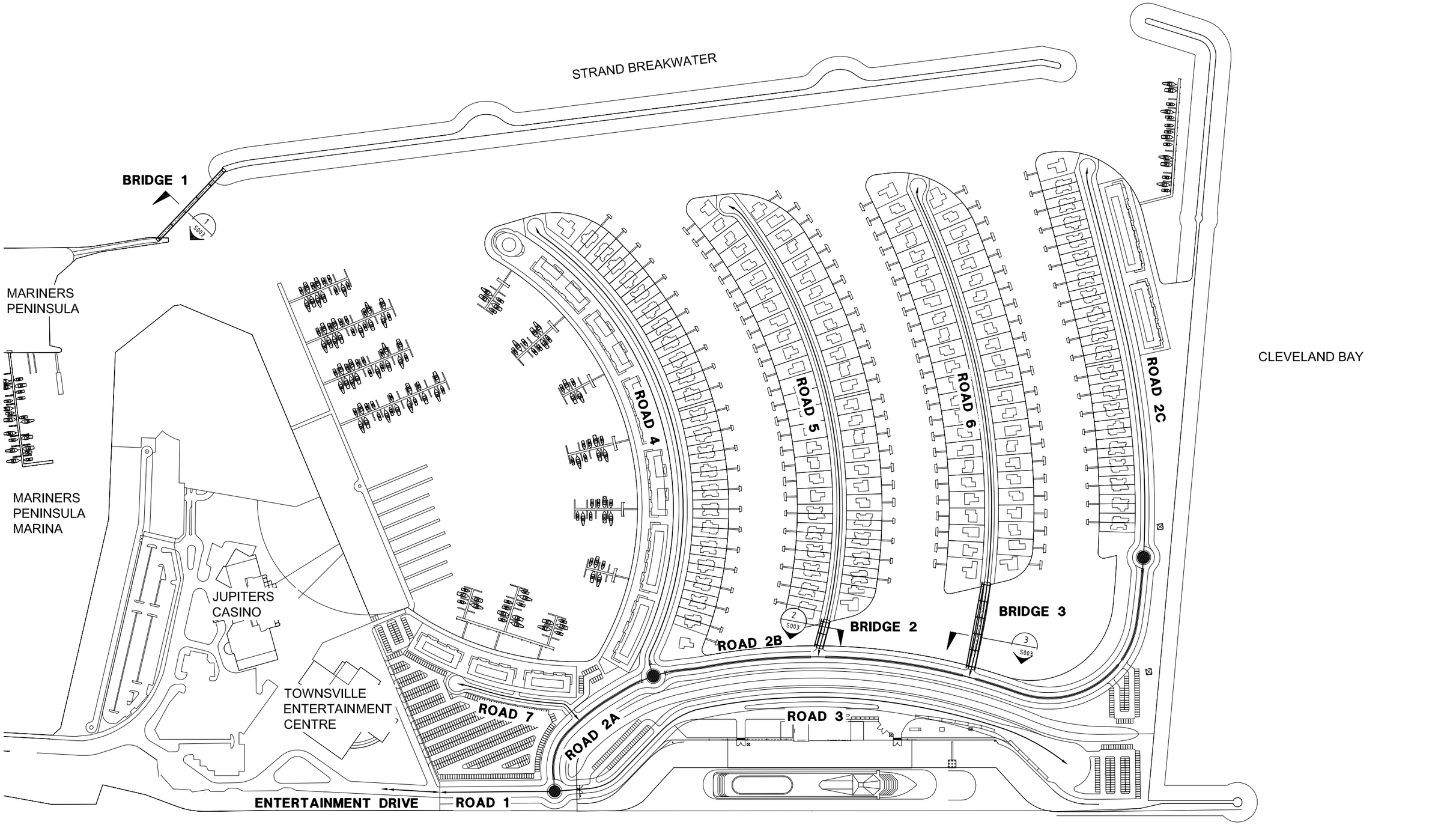
The Canal would be treated in the same manner as detailed above in relation to Canal Tenure

Statement of Maintenance obligations

The maintenance obligation for the Townsville City Council and the State in relation to the various tenures as proposed are as follows:

AREA	COUNCIL	STATE
Scheme land	Nil	Nil
Parkland outside Scheme land	Responsible	Responsible
Roadways (excluding internal)	Responsible	Nil
Car Park	Nil	Nil
Canal	Nil*	Nil*
Commercial Marina	Nil	Nil*
Breakwaters		
State Lease Section	Nil	Nil*
Freehold Section	Responsible in part*	Nil*
Canal Section	Nil*	Nil*

** Subject to the terms of the Canal Maintenance and Indemnity agreement and various State Lease and Easement documentation*.



Issue	Description	Date
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Scale (Sections):

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Architect: BUCHAN GROUP

Filename: K204-QL00704-01-BREAKWATER LAYOUT.DWG

Client: Townsville Ocean Terminal

Status: PRELIMINARY — NOT TO BE USED FOR CONSTRUCTION

Approved

R.E.P.Q No :

Scales	AS SHOWN	Current Issue Signatures	
		Author J.H.	
Original Size	A1	Designer S.D.	
Height Datum	A.H.D	Reviewer -	
Grid	LOCAL	© Copyright reserved	

Project: TOWNSVILLE OCEAN TERMINAL PROJECT

Title: PRELIMINARY BRIDGE LAYOUT

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Drawing No.	Project No.	Issue
S001	QL00704	01

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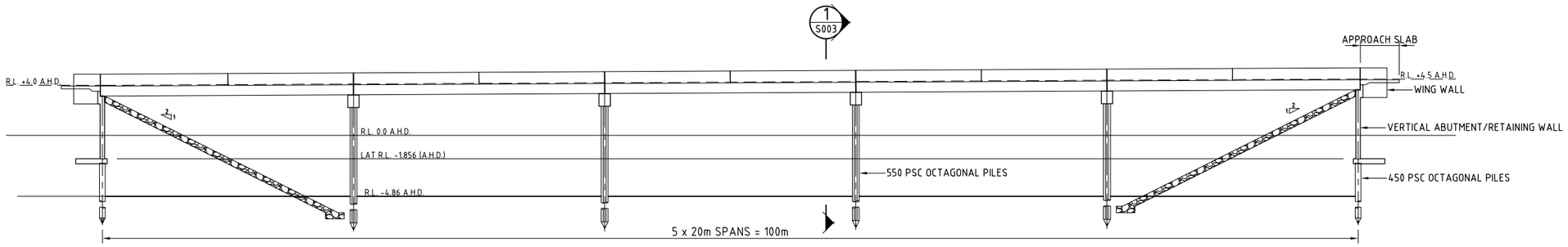

BRIDGE 1 – THE STRAND BREAKWATER

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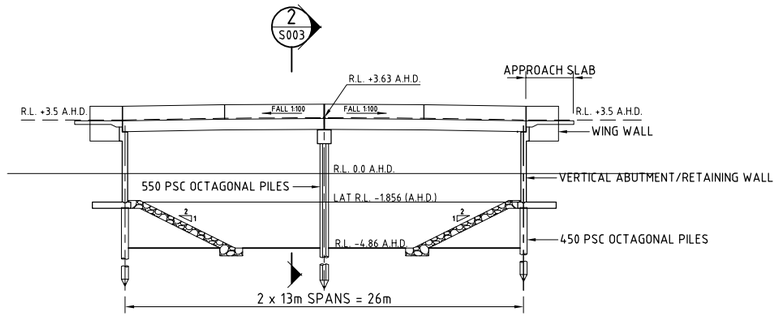

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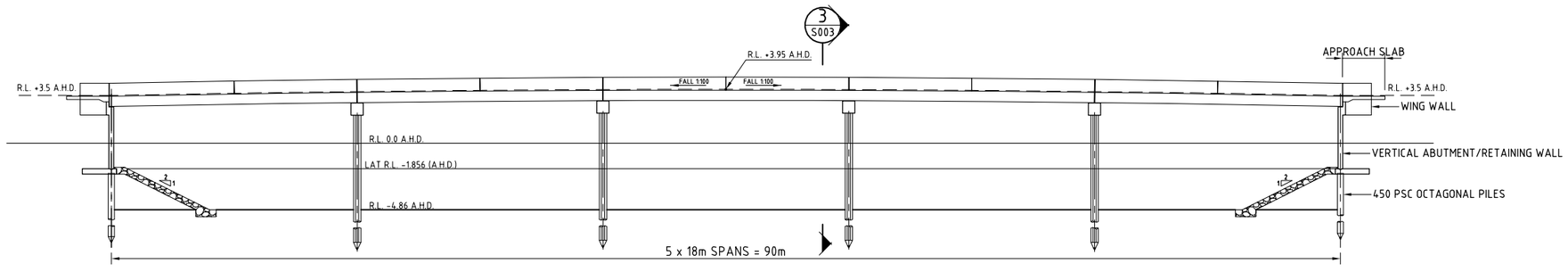

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Client: Townsville Ocean Terminal

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Author J.H.

Designer S.D.

Reviewer -

Project: TOWNSVILLE OCEAN TERMINAL PROJECT

Title: PRELIMINARY BRIDGE ELEVATIONS

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Drawing No. S002 — Project No. QL00704 — Issue 01

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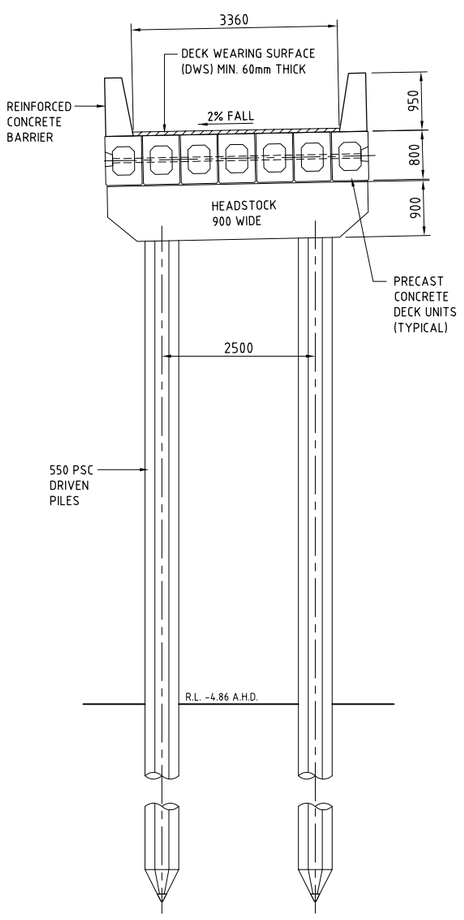

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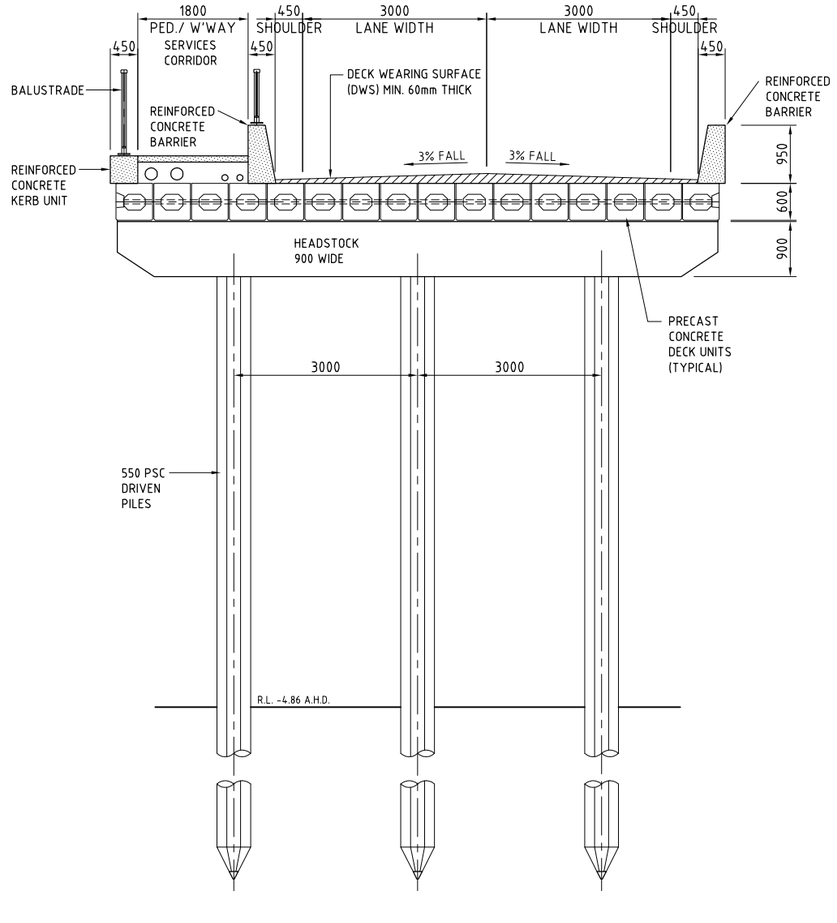

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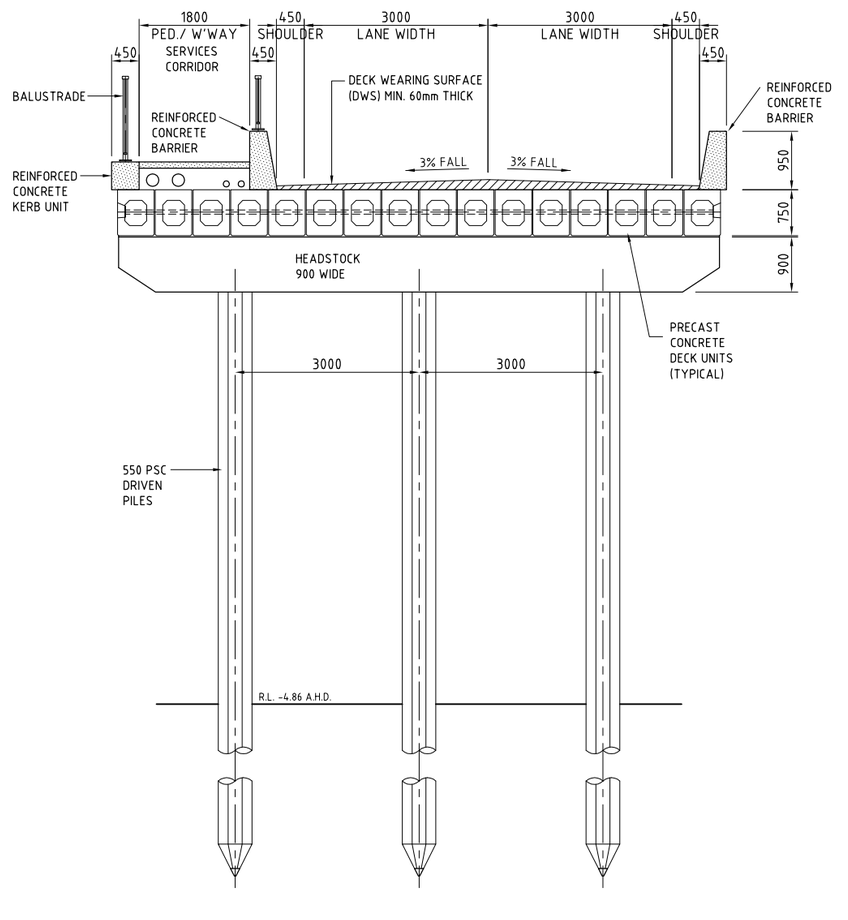

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01	ORIGINAL ISSUE	31.07.2007

100mm on Original

Scale (Plan)

Scale (Sections)

Surveyor: BRAZIER MOTTI

Architect: BUCHAN GROUP

Filename: K204-QL00704-01-BREAKWATER LAYOUT.DWG

Client: Townsville Ocean Terminal

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION

Approved

R.E.P.Q No :

Scales	1:200	Current Issue Signatures	
		Author J.H.	
Original Size	A1	Designer S.D.	
Height Datum	A.H.D	Reviewer -	
Grid	LOCAL	© Copyright reserved	

Project: TOWNSVILLE OCEAN TERMINAL PROJECT

Title: PRELIMINARY BRIDGE CROSS SECTIONS

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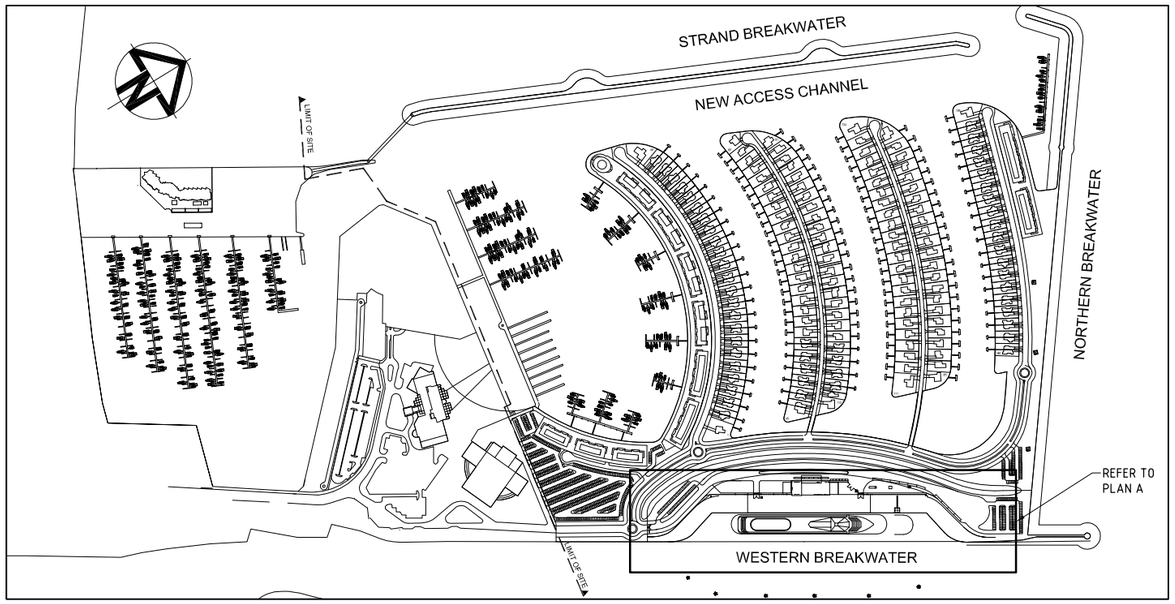
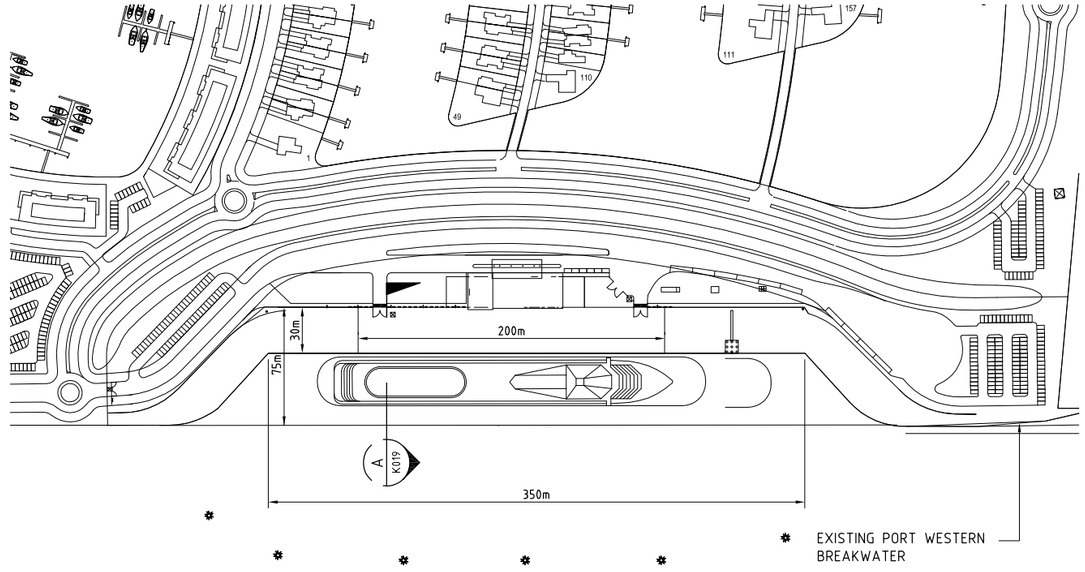
Drawing No.	Project No.	Issue
S003	QL00704	01

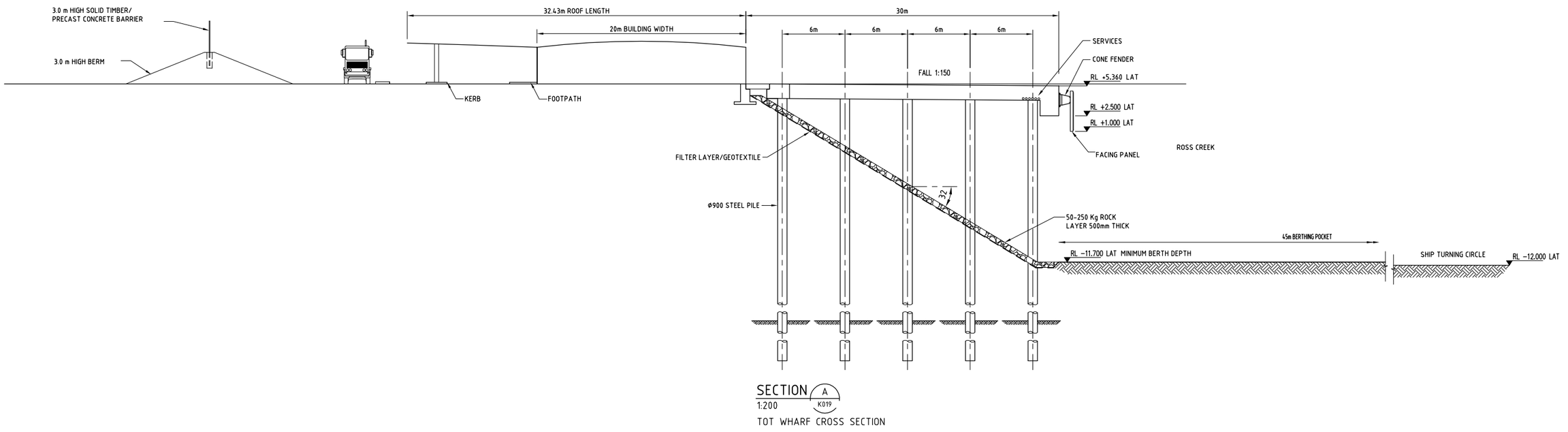
13/Sep/2007 3:24 PM F:\QL00704\E-CAD\C-Civil\B-Sketches\K204-QL00704-01-BREAKWATER LAYOUT.dwg V1



KEY PLAN
1:5000



PLAN A K019
1:2000



SECTION A K019
1:200
TOT WHARF CROSS SECTION

Issue	Description	Date
03	NEW LAYOUT	27.04.2007
02	AMENDED TOT PRECINCT	06.02.2007
01	ORIGINAL ISSUE	02.01.2007

100mm on Original

Scale (Plan): AS SHOWN
Scale (Sections): AS SHOWN

Surveyor: BRAZIER MOTTI
Architect: BUCHAN GROUP
Filename: K220-221-QL00704-01.DWG

Client: Townsville Ocean Terminal

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Approved
R.E.P.Q No :

Scales	AS SHOWN	Current Issue Signatures	
		Author P.S.M	
Original Size	A1	Designer R.M	
Height Datum	A.H.D	Reviewer L.J.O	
Grid	LOCAL	© Copyright reserved	

Project: TOWNSVILLE OCEAN TERMINAL PROJECT

Title: TOT PRECINCT DETAILS

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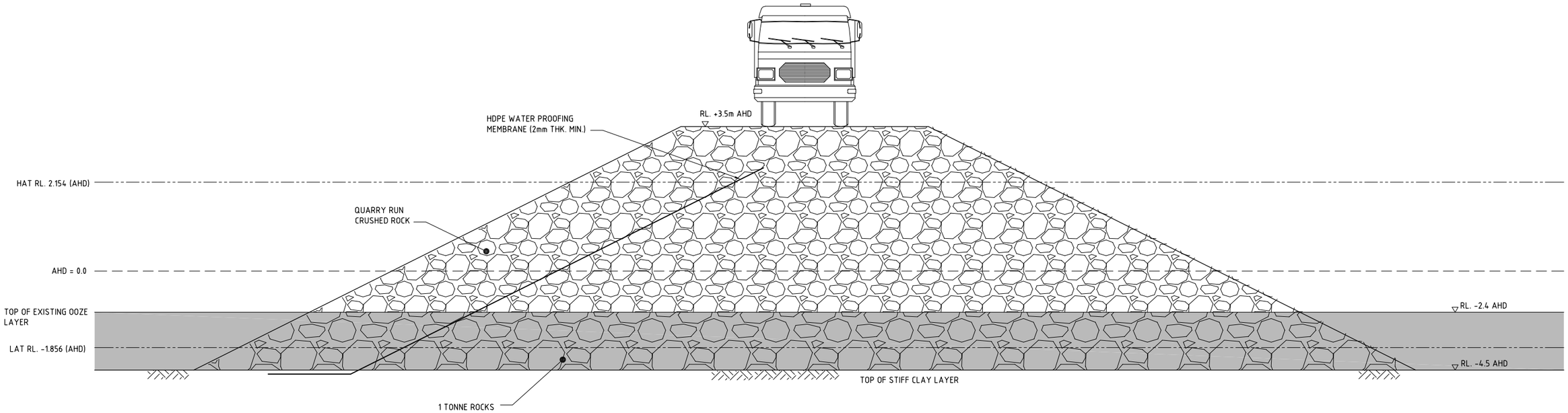
Drawing No.	Project No.	Issue
K019	QL00704	03

13/Sep/2007 5:11 PM F:\QL00704\E-CAD\C-Civil\B-Sketches\K220-221-QL00704-01.dwg V1



TYPICAL HAUL ROAD CONSTRUCTION BUND DETAIL
SCALE 1:50

Issue	Description	Date
01	ORIGINAL ISSUE	10.05.2007

100mm on Original

Scale (Plan): AS SHOWN
Scale (Sections): AS SHOWN
Surveyor: BRAZIER MOTTI
Architect: BUCHAN GROUP
Filename: K218-QL00704-01- ROCK HAUL ROAD.DWG
Client: Townsville Ocean Terminal

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION
Approved
R.E.P.Q No :
Scales: AS SHOWN
Current Issue Signatures
Author P.S.M
Original Size: A1
Designer R.M
Height Datum: A.H.D
Reviewer L.J.O
Grid: LOCAL

Project: TOWNSVILLE OCEAN TERMINAL PROJECT
Title: TYPICAL HAUL ROAD CONSTRUCTION BUND

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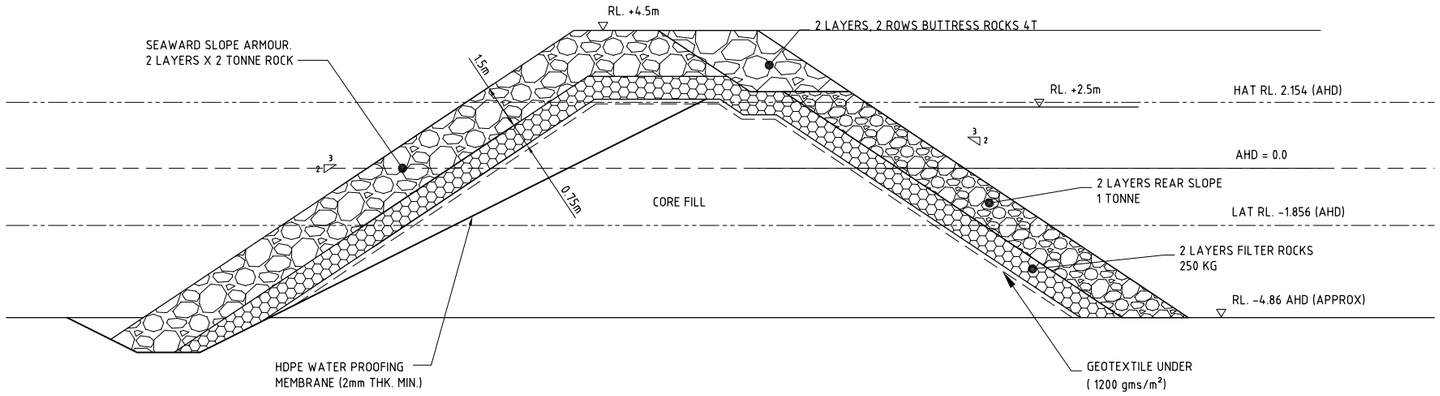
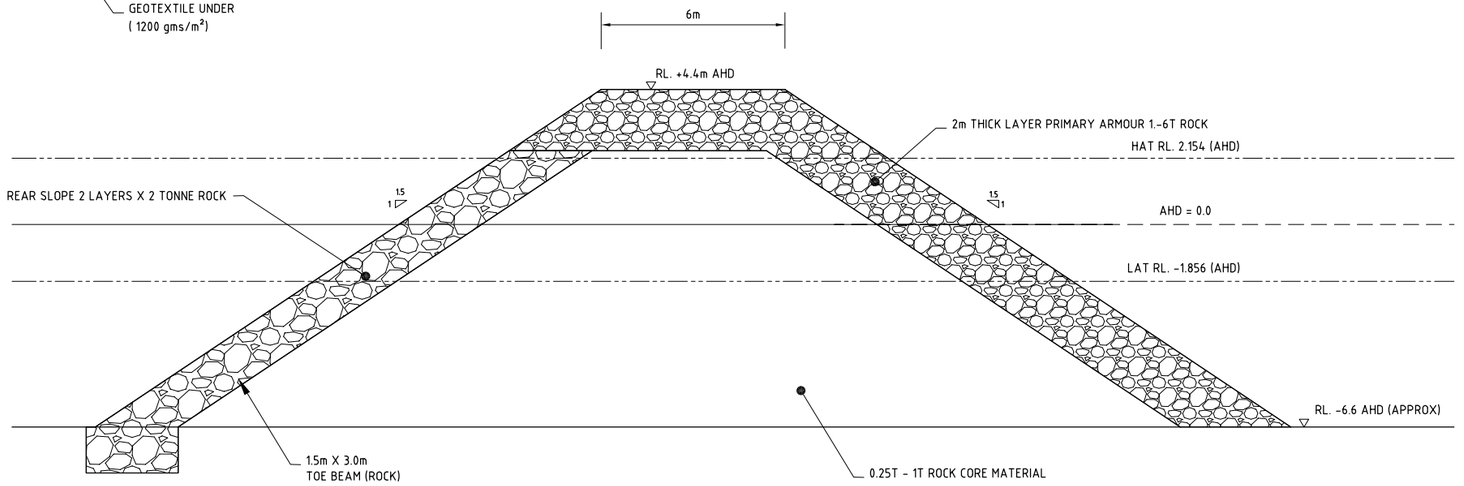
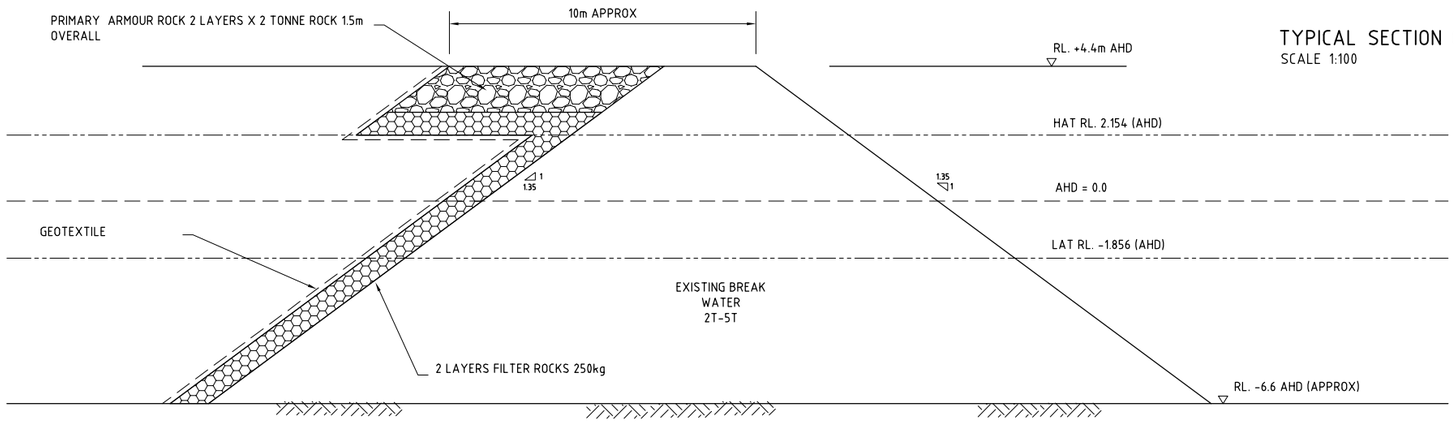
Drawing No. K218 — Project No. QL00704 — Issue 01

13/Sep/2007 5:08 PM F:\QL00704\E-CAD\C-Civil\B-Sketches\K218-QL00704-01- ROCK HAUL ROAD.dwg V1



TYPICAL SECTION OF THE STRAND BREAKWATER
SCALE 1:100





TYPICAL SECTION OF NORTHERN BREAKWATER EXTENSION
SCALE 1:100

TYPICAL SECTION OF EXISTING NORTHERN BREAKWATER UPGRADE
SCALE 1:100

Issue	Description	Date
01	ORIGINAL ISSUE	02.08.2007

100mm on Original

Scale (Plan): AS SHOWN
Scale (Sections): AS SHOWN
Surveyor: BRAZIER MOTTI
Architect: BUCHAN GROUP
Filename: K219-QL00704-01- BREAKWATER SECTIONS.DWG
Client: Townsville Ocean Terminal

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION
Approved
R.E.P.Q No :
Scales: AS SHOWN
Current Issue Signatures
Author P.S.M
Original Size: A1
Designer R.M
Height Datum: A.H.D
Reviewer L.J.O
Grid: LOCAL

Project: TOWNSVILLE OCEAN TERMINAL PROJECT
Title: BREAKWATER SECTIONS

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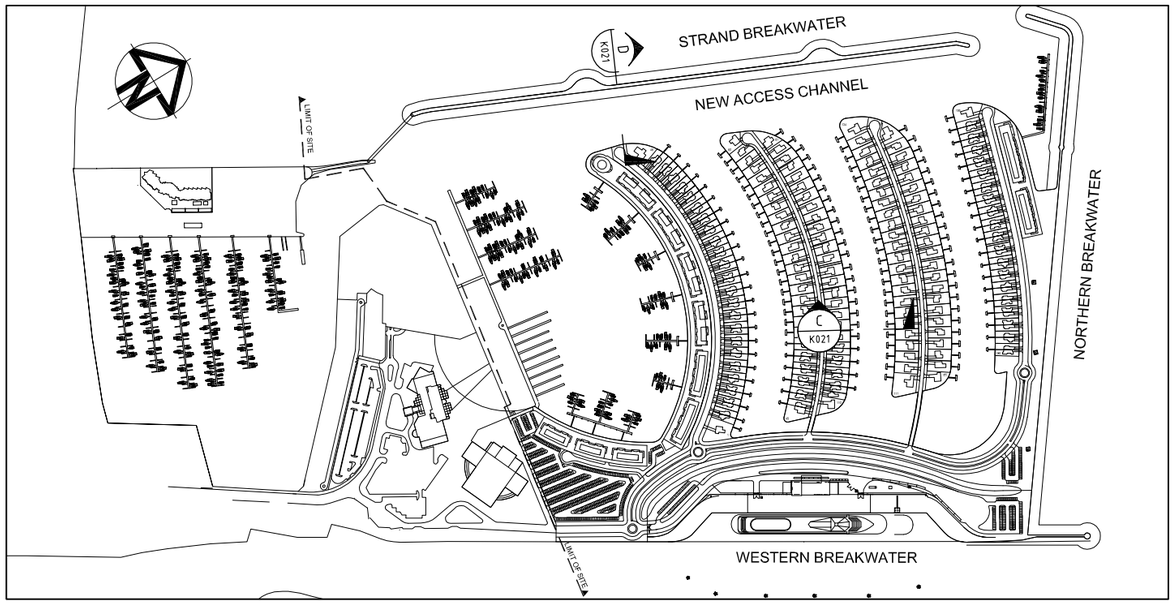
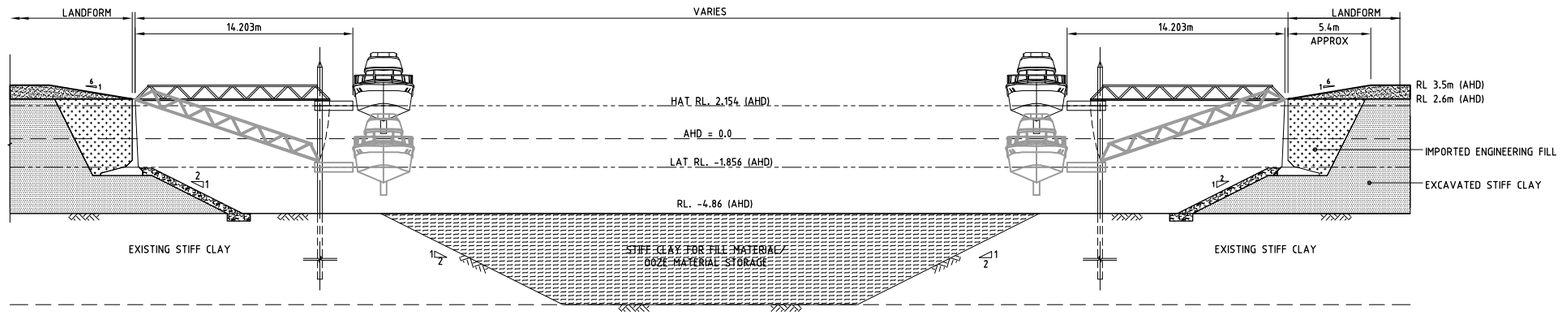
Drawing No. K219 — Project No. QL00704 — Issue 04

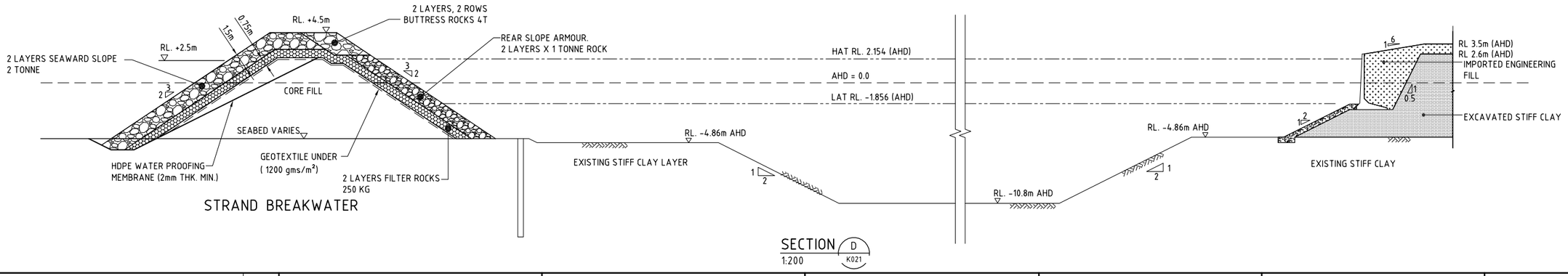
13/Sep/2007 5:09 PM F:\QL00704\E-CAD\C-Civil\B-Sketches\K219-QL00704-01- BREAKWATER SECTIONS.dwg V1



KEY PLAN
1:5000



SECTION C
1:200



SECTION D
1:200

Issue	Description	Date
01	ORIGINAL ISSUE	02.08.2007

100mm on Original

Scale (Plan): AS SHOWN
Scale (Sections): AS SHOWN
Surveyor: BRAZIER MOTTI
Architect: BUCHAN GROUP
Filename: K220-221-QL00704-01.DWG
Client: Townsville Ocean Terminal

Status: **PRELIMINARY** NOT TO BE USED FOR CONSTRUCTION
Approved
R.E.P.Q No :
Scales: AS SHOWN
Original Size: A1
Height Datum: A.H.D
Grid: LOCAL
Current Issue Signatures
Author P.S.M
Designer R.M
Reviewer L.J.O

Project: TOWNSVILLE OCEAN TERMINAL PROJECT
Title: TYPICAL CANAL SECTIONS

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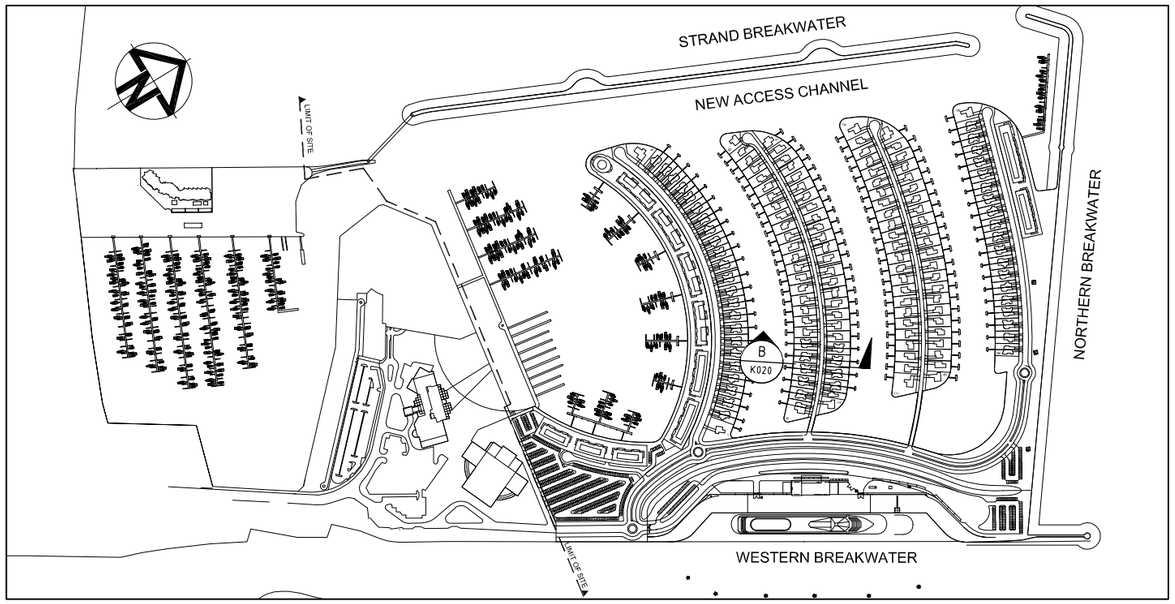
Drawing No. K220 — Project No. QL00704 — Issue 01

13/Sep/2007 5:10 PM F:\QL00704\E-CAD\C-Civil\B-Sketches\K220-221-QL00704-01.dwg V1



KEY PLAN
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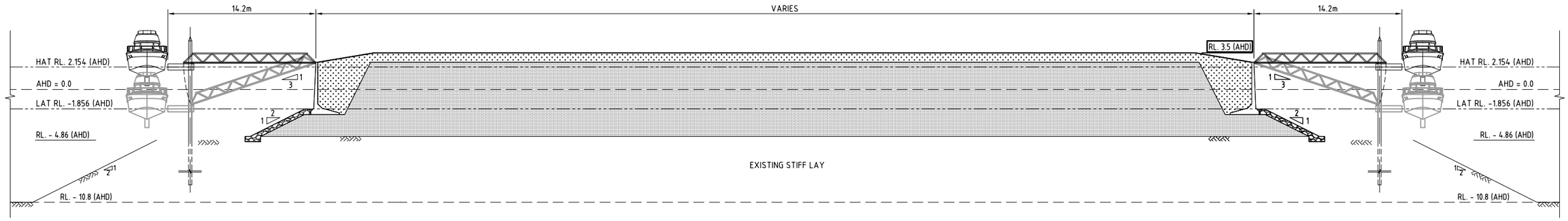

SECTION B K020
1:200
TYPICAL LANDFORM CROSS SECTION

Issue	Description	Date
01	ORIGINAL ISSUE	02.08.07

100mm on Original

Scale (Plan): AS SHOWN
Scale (Sections): AS SHOWN
Surveyor: BRAZIER MOTTI
Architect: BUCHAN GROUP
Filename: K220-221-QL00704-01.DWG
Client: Townsville Ocean Terminal

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION
Approved
R.E.P.Q No :

		Current Issue Signatures	
Scales	AS SHOWN	Author P.S.M	
Original Size	A1	Designer R.M	
Height Datum	A.H.D	Reviewer L.J.O	
Grid	LOCAL	© Copyright reserved	

Project: TOWNSVILLE OCEAN TERMINAL PROJECT
Title: TYPICAL LANDFORM SECTIONS

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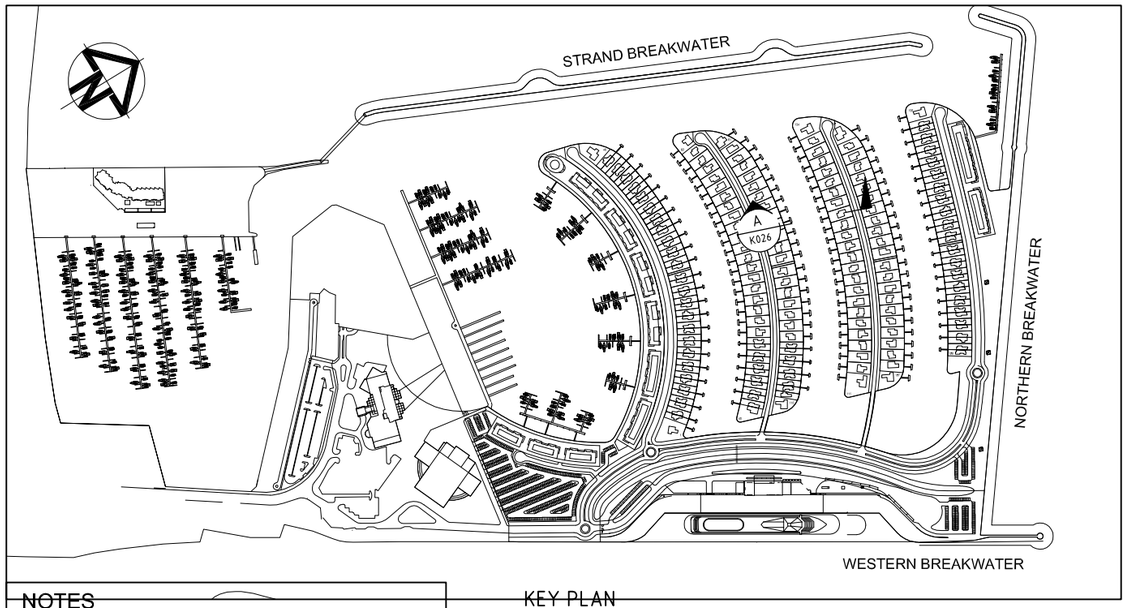
Drawing No.	Project No.	Issue
K221	QL00704	01

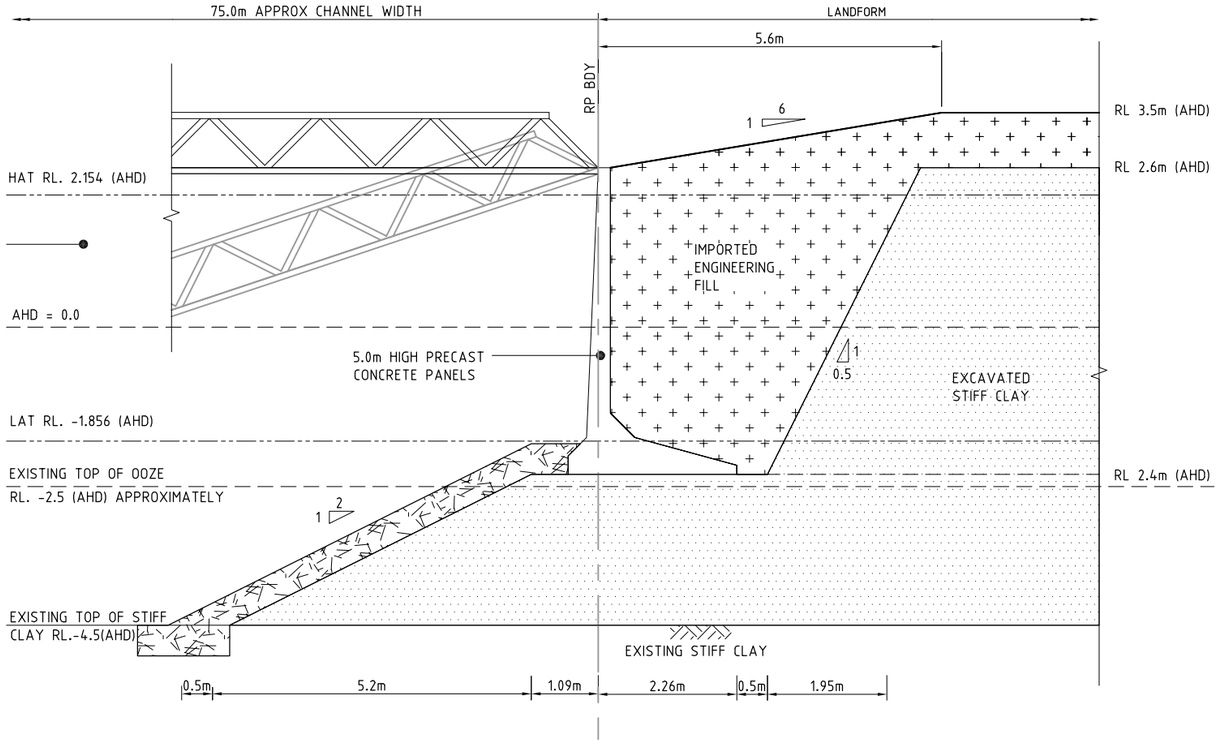
13/Sep/2007 5:10 PM F:\QL00704\E-CAD\C-Civil\B-Sketches\K220-221-QL00704-01.dwg V1



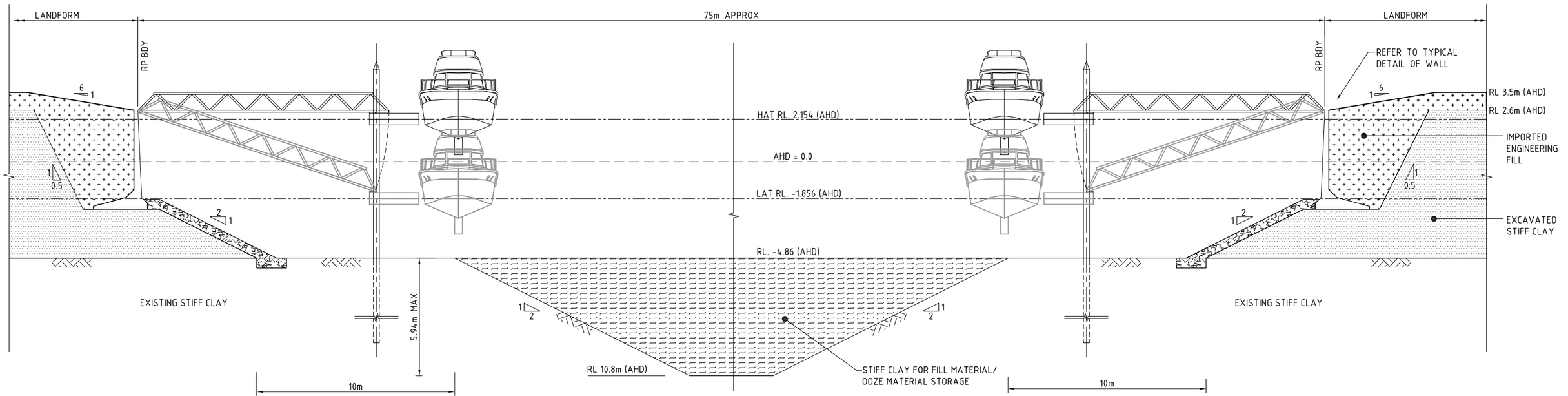
KEY PLAN
1:5000

NOTES

1. THE MAXIMUM SLOPE OF A GANGWAY & TREADPLATE FOR PRIVATE PONTOONS WITH NO PUBLIC ACCESS SHALL NOT EXCEED 1:3 AS PER AS 3962-2001
2. GANGWAY TO BE IN ACCORDANCE WITH AS 1657
3. WALKING SURFACE TO BE FINISHED IN ACCORDANCE WITH AS 4586



TYPICAL DETAIL OF WALL
1:50



TYPICAL CANAL SECTION A 26
1:100

Issue	Description	Date
01	ORIGINAL ISSUE	02.08.2007

100mm on Original

Scale (Plan): AS SHOWN
Scale (Sections): AS SHOWN
Surveyor: BRAZIER MOTTI
Architect: BUCHAN GROUP
Filename: K222-QL00704-05 TYPICAL LANDFORM INTERFACE CANAL.DWG
Client: Townsville Ocean Terminal

Status: **PRELIMINARY** NOT TO BE USED FOR CONSTRUCTION
Approved
R.E.P.Q No :
Scales: AS SHOWN
Original Size: A1
Height Datum: A.H.D
Grid: LOCAL
Current Issue Signatures
Author R.M
Designer R.M
Reviewer L.J.O

Project: TOWNSVILLE OCEAN TERMINAL PROJECT
Title: TYPICAL LANDFORM INTERFACE OF CANAL PROFILE

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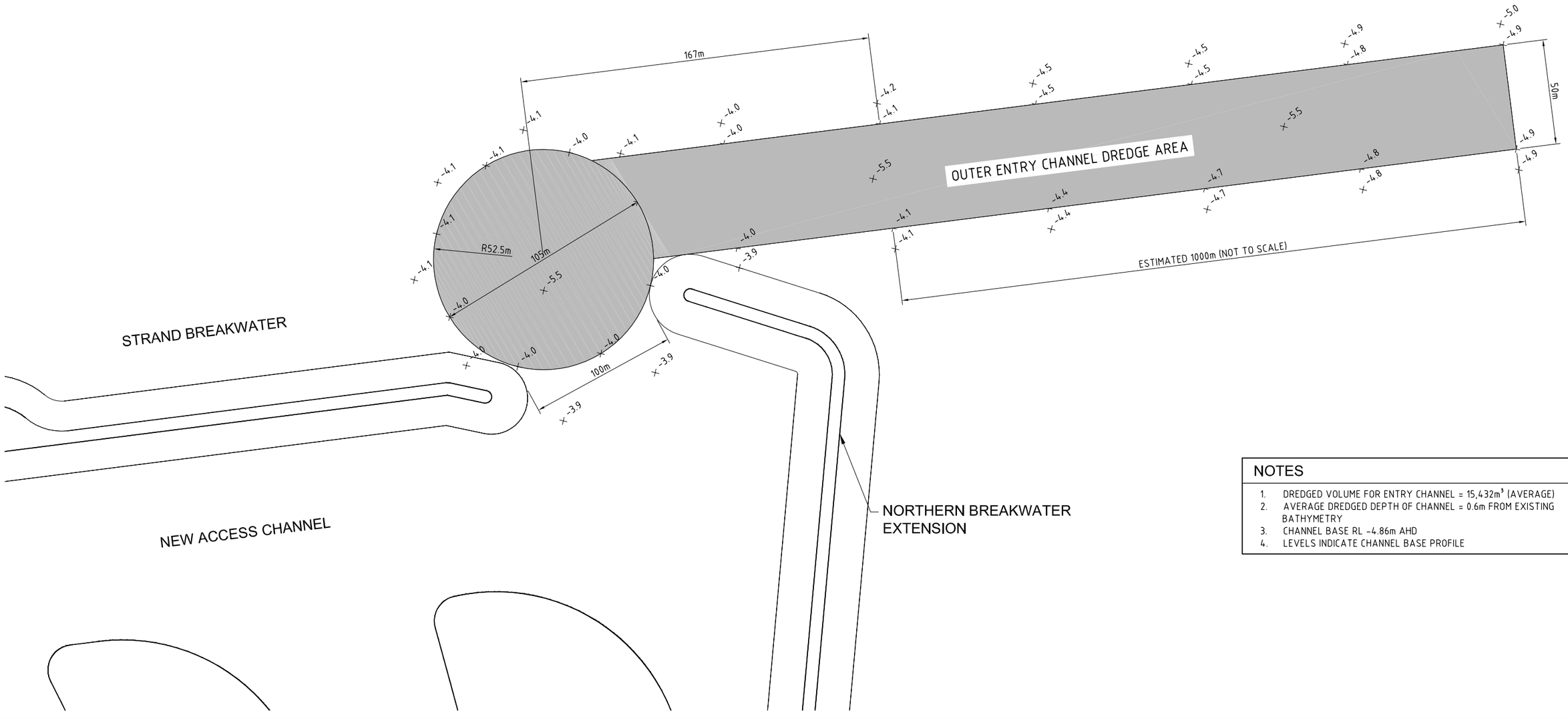
Web: www.hyderconsulting.com

Drawing No. K222 — Project No. QL00704 — Issue 01

13/Sep/2007 5:12 PM F:\QL00704\E-CAD\C-Civil\B-Sketches\K222-QL00704-05 TYPICAL LANDFORM INTERFACE CANAL.dwg V1



NOTES

1. DREDGED VOLUME FOR ENTRY CHANNEL = 15,432m³ (AVERAGE)
2. AVERAGE DREDGED DEPTH OF CHANNEL = 0.6m FROM EXISTING BATHYMETRY
3. CHANNEL BASE RL -4.86m AHD
4. LEVELS INDICATE CHANNEL BASE PROFILE

Issue	Description	Date
02	AMENDED ENTRY CHANNEL	13.09.2007
01	ORIGINAL ISSUE	27.07.2007

100mm on Original

Scale (Plan)

Scale (Sections)

Surveyor: BRAZIER MOTTI

Architect: BUCHAN GROUP

Filename: K223-QL00704-01- DREDGE AREA.DWG

Client: Townsville Ocean Terminal

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION

Approved

R.E.P.Q No :

Scales	1:1000 @ A1 1:2000 @ A3	Current Issue Signatures	
		Author B.W	
Original Size	A1	Designer R.J.M	
Height Datum	AHD	Reviewer J.S	
Grid	LOCAL	© Copyright reserved	

Project: TOWNSVILLE OCEAN TERMINAL PROJECT

Title: PROPOSED OUTER ENTRY CHANNEL DREDGE AREA

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Drawing No.	Project No.	Issue
K223	QL00704	02

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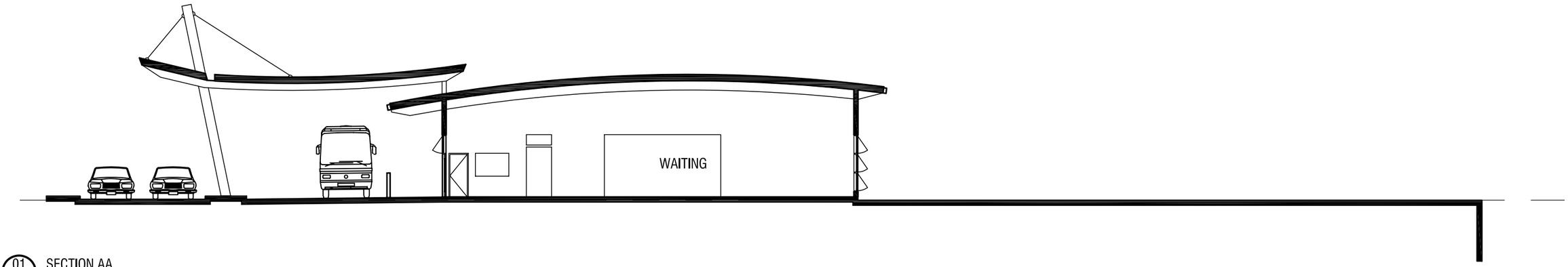
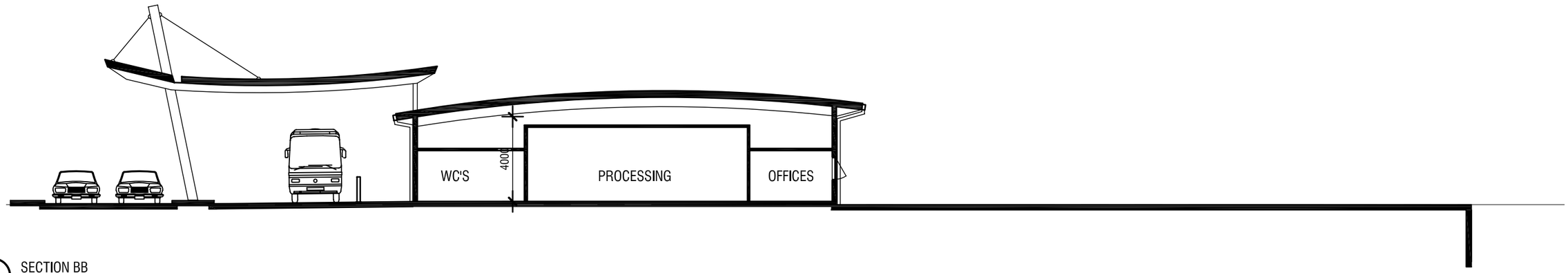
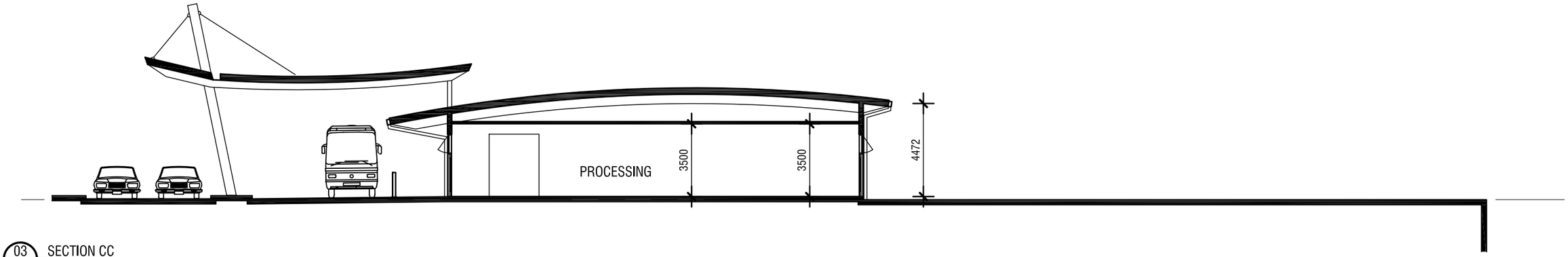


01 SECTION AA
SCALE 1:200



02 SECTION BB
SCALE 1:200



03 SECTION CC
SCALE 1:200

issue	date	description	ints	auth
A	04.07.07	FIRST ISSUE	NC	NC
B	11.07.07	ROOF POP UP REMOVED WAITING ONLY HIGH CEILING	NC	NC
C	18.07.07	REDUCED SCALE FOR COST PLAN	NC	NC
D	27.07.07	REDUCED PORTE COCHERE	NC	NC

issue	date	description	ints	auth

0 10m

Townsville Ocean Terminal

City Pacific Limited

THE BUCHAN GROUP
GOLD COAST
Malone Buchan Laird & Bawden Pty Ltd
A.B.N. 56 069 344 614
architecture | masterplanning | Interiors | graphics
Level 2 , Waterside West Building
Holden Place, Bundall, Gold Coast, QLD 4217
t +61 7 **55740344** **f** +61 7 55740231

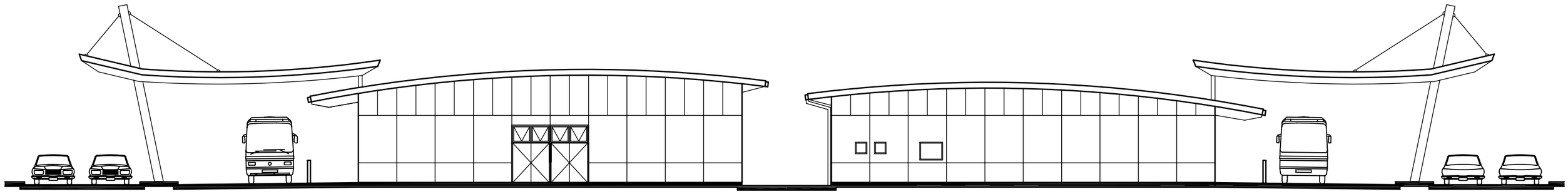
project
PROPOSED OCEAN TERMINAL
TOWNSVILLE
SECTIONS

purpose
FOR INFORMATION

scale 1:200 @ A3 **date** JUNE 2007

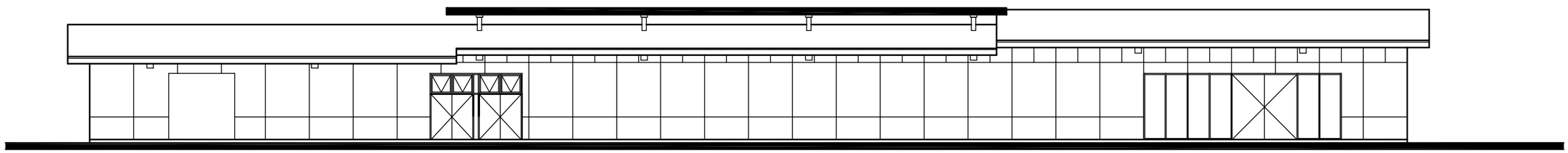
project no 707052

dwg no SKa3-11 **issue** D

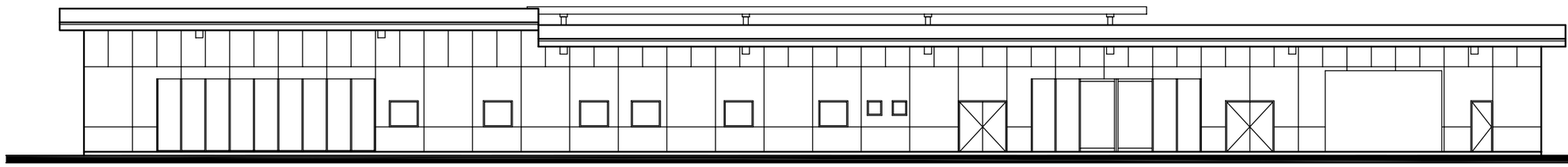


01 SOUTH ELEVATION
SCALE 1:200

02 NORTH ELEVATION
SCALE 1:200



03 WEST ELEVATION
SCALE 1:200



04 EAST ELEVATION
SCALE 1:200

issue	date	description	ints	auth
A	02.07.07	FIRST ISSUE	NC	NC
B	11.07.07	ROOF POP UP REMOVED	NC	NC
C	18.07.07	REDUCED SCALE FOR COST PLAN	NC	NC
D	27.07.07	REDUCED PORTE COCHERE	NC	NC

issue	date	description	ints	auth

0 10m

Townsville Ocean Terminal

City Pacific Limited

THE BUCHAN GROUP
GOLD COAST
Malone Buchan Laird & Bawden Pty Ltd
A.B.N. 56 069 344 614
architecture | masterplanning | Interiors | graphics
Level 2 , Waterside West Building
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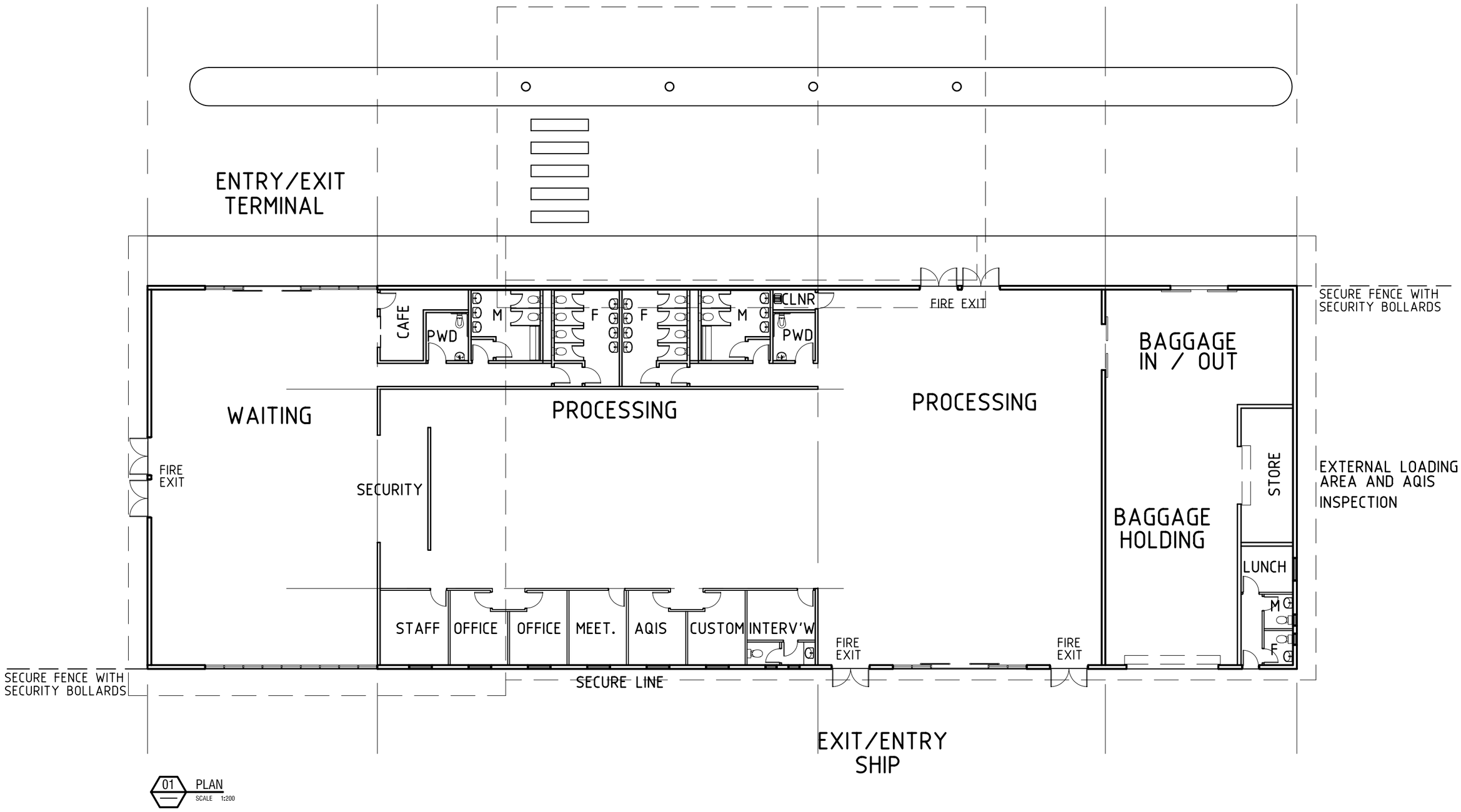
project
PROPOSED OCEAN TERMINAL
TOWNSVILLE
ELEVATIONS

purpose
FOR INFORMATION

scale 1:200 @ A3 **date** JUNE 2007

project no 707052

dwg no SKa3- 10 **issue** D



01 PLAN
SCALE 1:200

issue	date	description	ints	auth
A	08.08.07	FIRST ISSUE	NC	NC

issue	date	description	ints	auth

0 10m

Townsville Ocean Terminal

City Pacific Limited

THE BUCHAN GROUP
GOLD COAST
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architecture | masterplanning | interiors | graphics
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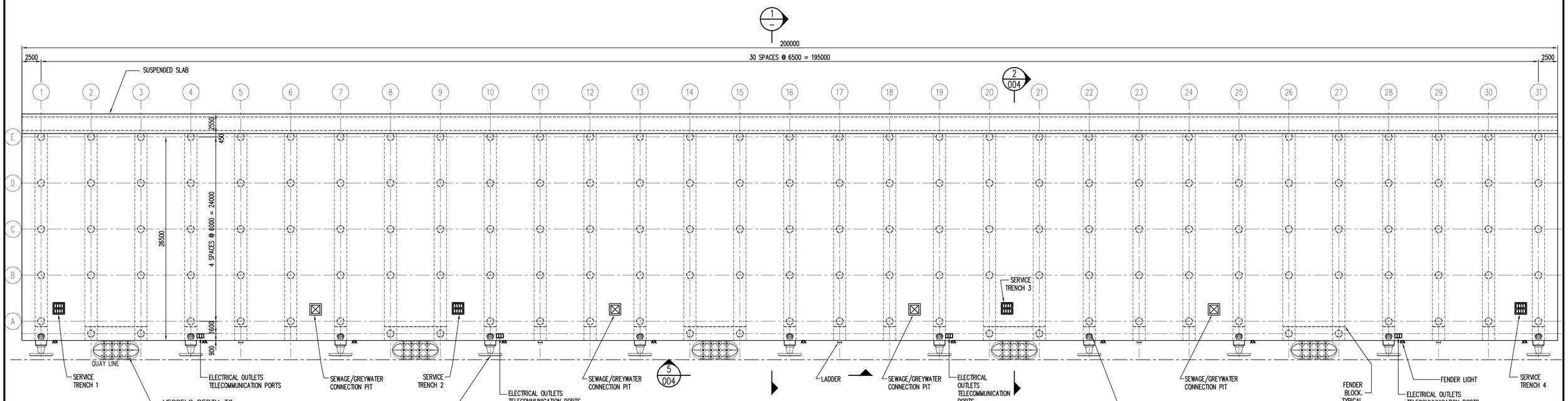
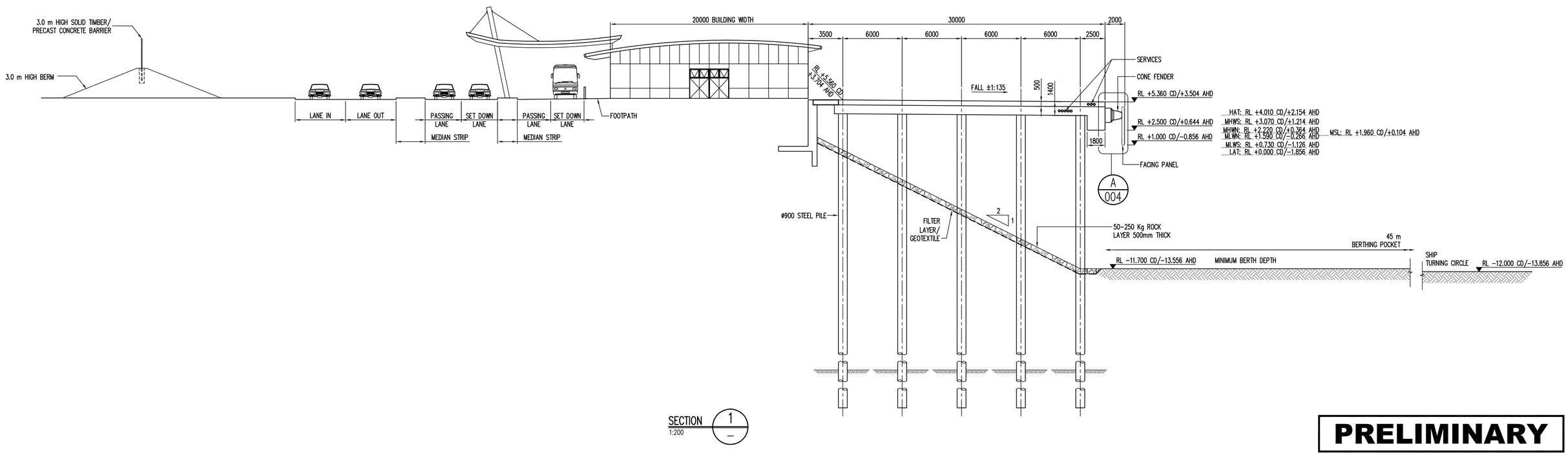
project
PROPOSED OCEAN TERMINAL
TOWNSVILLE
TRANSIT PORT option
BASE PLAN

purpose
FOR INFORMATION

scale 1:200 @ A3 **date** JUNE 2007
project no 707052
dwg no SKa3-12 **issue** A



WHARF DECK PLAN
1:250



SECTION 1
1:200

PRELIMINARY

GENERAL NOTES

Rev'n	Description	Date
6	ADDITIONAL SEWERAGE CONNECTION PITS ADDED	21.08.07
5	REVISED TO SUIT CLIENT'S COMMENTS	08.08.07
4	WHARF GEOMETRY REVISED	07.08.07
3	REVISED CONCEPT DESIGN	23.01.07
2	REVISED CONCEPT DESIGN	16.01.07
1	CONCEPT DESIGN	18.10.06

Designed	AF
Approved	CAG
Drawn	FGV
Date	23.01.07
Checked	TK
Scale	AS SHOWN

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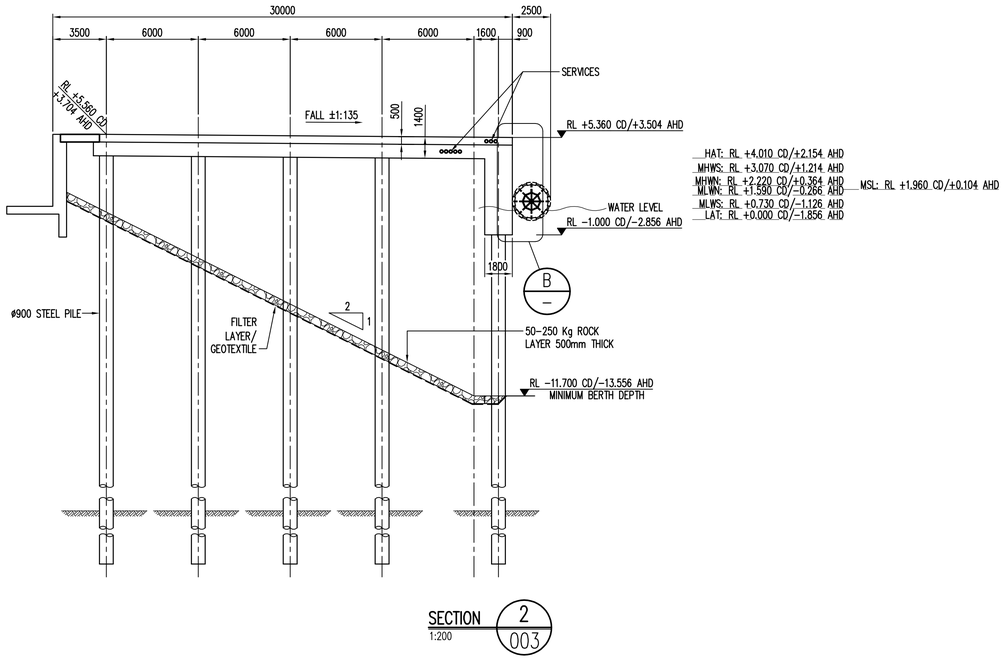
Internet: www.cgrgroup.com

Client: CITY PACIFIC LIMITED

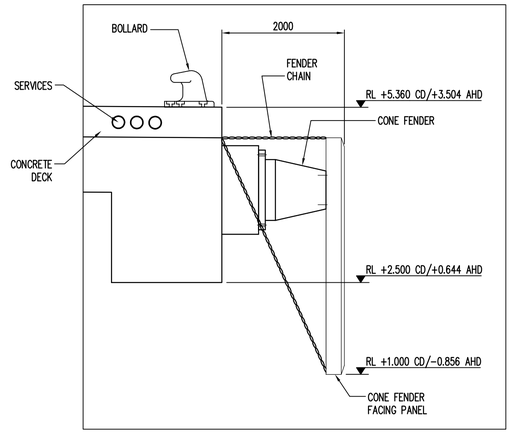
Project: TOWNSVILLE OCEAN TERMINAL

Discipline/Title: WHARF DECK DETAIL & SECTION

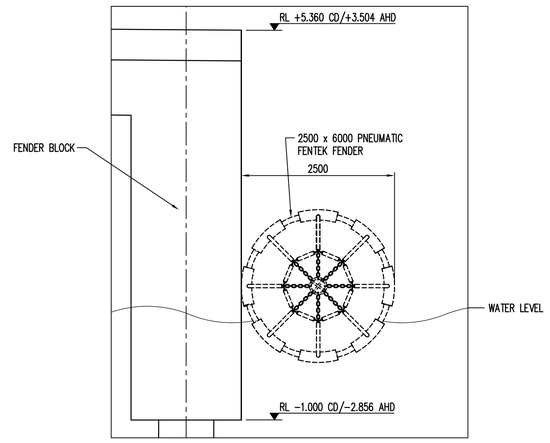
Sheet	Drawing number	Revision
A1	HWH–001–003	6



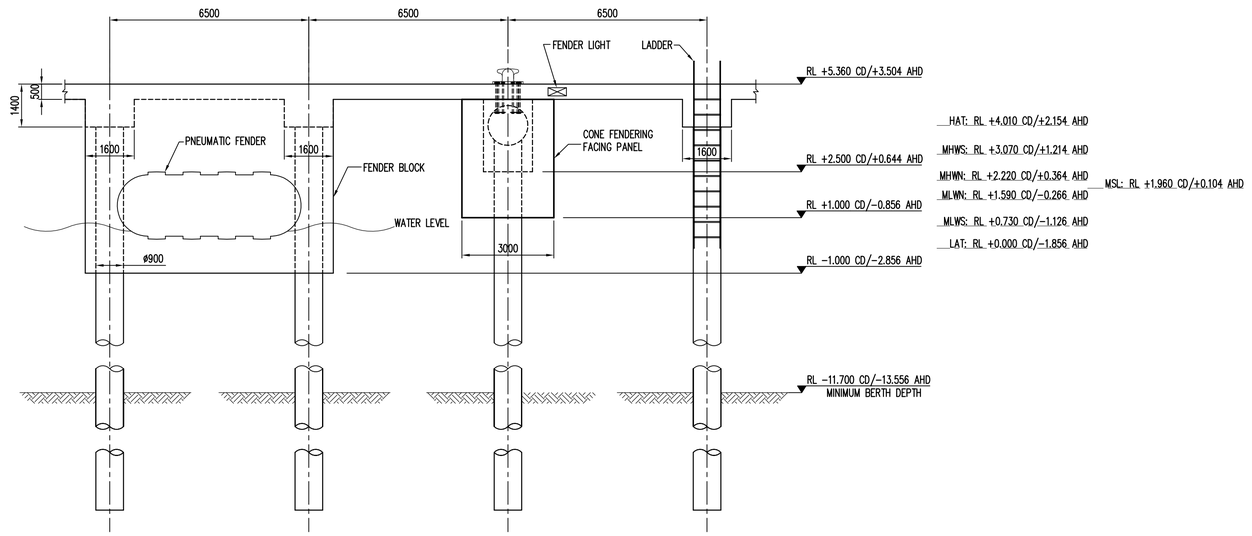
SECTION 2 / 003
1:200



DETAIL A / 003
1:50



DETAIL B / —
1:50



ELEVATION 5 / 003
1:100

PRELIMINARY

GENERAL NOTES

Rev'n	Description	Date
5	REVISED TO SUIT CLIENT'S COMMENTS	08.08.07
4	WHARF GEOMETRY REVISED	07.08.07
3	REVISED CONCEPT DESIGN	22.01.07
2	REVISED CONCEPT DESIGN	16.01.07
1	CONCEPT DESIGN	18.10.06

Designed: AF	Approved: CAG
Drawn: FGV	Date: 22.01.07
Checked: TK	Scale: AS SHOWN

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Client: CITY PACIFIC LIMITED

Project: TOWNSVILLE OCEAN TERMINAL

Discipline/Title: WHARF DECK SECTIONS

Sheet	Drawing number	Revision
A1	HWH−001−004	5

664
EP2106

639
EP2106

795
CP846293

CONVENTION
CENTRE

100
RP840355

ENTERTAINMENT DRIVE

ROSS CREEK

448
SP126597

449
SP126597

450
SP126597

1

49

110

111

157

158

122m

MOORING
BOLLARD

TERMINAL

WHARF

30m

CRUISE SHIP

BRESTING
DOLPHIN

MOORING
BOLLARD

EXISTING WESTERN PORT
BREAK WATER

39m

55.245m

215.496m

38.64m

CENTRE LINE OF
"PLATYPUS CHANNEL"

DREDGED BERTH BASIN

A
SK#4

260m

300m

SWING BASIN

NOTE:
SUBJECT TO EIS ASSESSMENT
AND FINAL DESIGN

TOWNSVILLE
OCEAN TERMINAL

Hyder Consulting
WEATHERED HOWE
Hyder Weathered Howe

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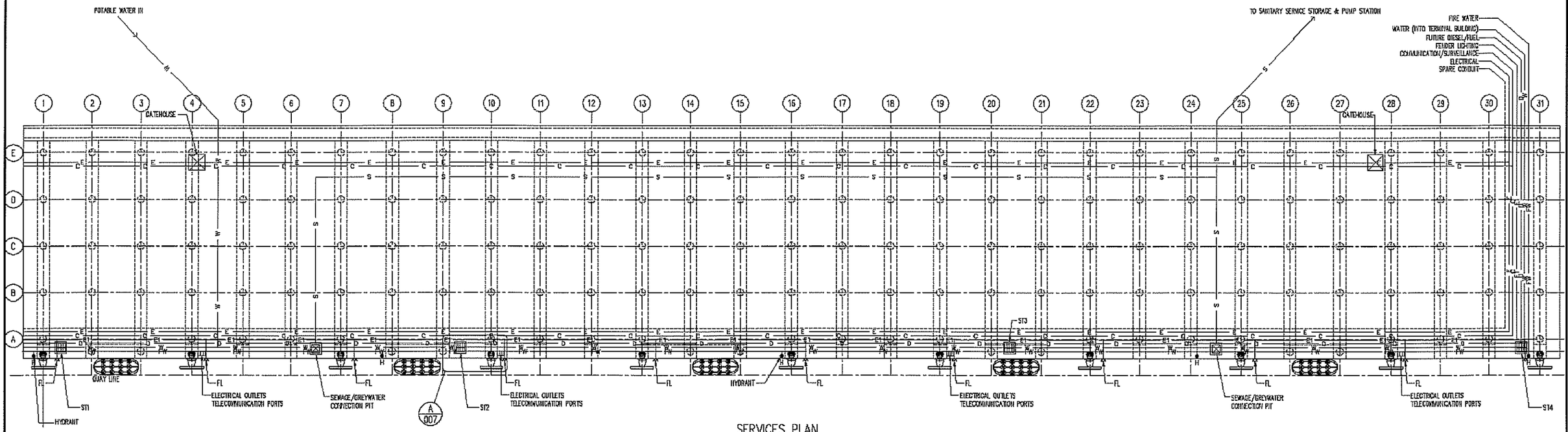
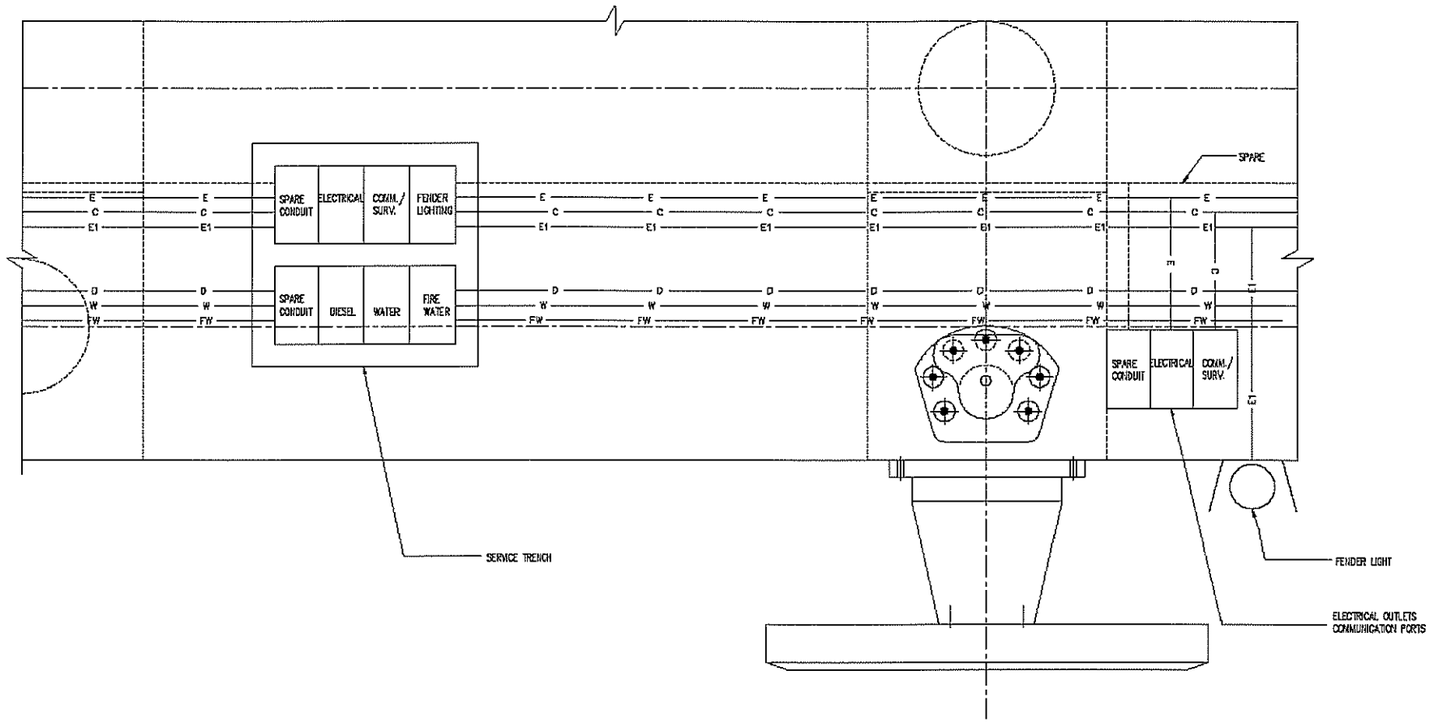
TOWNSVILLE OCEAN TERMINAL - MASTER PLAN
PLAN VIEW

NOV 2005

DRAWING NUMBER	REVISION
QL00017-SK-02	C



SERVICES PLAN



DETAIL A 007 1:20

PRELIMINARY

GENERAL NOTES

W	POTABLE WATER	S	SULLAGE FROM SHIP
E	ELECTRICITY		
C	COMMUNICATIONS		
D	FUTURE DIESEL/FUEL		
E1	FENDER LIGHTS ELECTRICITY		
FW	FIRE WATER		
LT	LIGHT TOWER		
FL	FENDER LIGHT		
ST	SERVICE TRENCH		

Rev/n	Description	Date
2	REVISED CONCEPT DESIGN	23.01.07
1	PRELIMINARY ISSUE	16.01.07

Designed: TK	Approved: CAG
Drawn: LJA	Date: 23.01.07
Checked: TK	Scale: 1:250 U.N.O.

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Client: CITY PACIFIC LIMITED

Project: TOWNSVILLE OCEAN TERMINAL

Discipline/Title: SERVICES PLAN FOR WHARF

Sheet	Drawing number	Revision
A1	HWH-001-007	2