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## 1. AIM

The Council's aim is to ensure that a balance is achieved between the necessary supply of basic raw materials with protection of the natural environment including natural processes such as drainage and coastal erosion, and community interests such as cultural heritage, recreation, and residential amenity and to provide clarity to the community, proponents and other agencies on the City's values and expectations relating to basic raw materials extraction.

## 2. OBJECTIVES

The objectives of this policy are to:

- 1) Provide a robust framework within which to make informed decisions and comment on proposed extractive industry projects in the City of Karratha;
- 2) Establish procedures for the assessment of applications for extractive industries on freehold land within the City of Karratha;
- 3) Identify the criteria against which applications for extractive industries will be assessed;
- 4) Identify the criteria that will be used to inform Council's position on proposals for mining basic raw materials on Crown land within the City of Karratha;
- 5) Clarify for stakeholders the City's expectations with respect to proposals for basic raw materials extraction and all other proposals for mining within the City of Karratha.

## 3. PRINCIPLES

This Local Planning Policy (the Policy) is made pursuant to Part V, Clause 5.1 of Town Planning Scheme No. 8 (the Scheme).

Application of Policy:

- 1) This policy applies to all applications under the *Planning and Development Act 2005* for planning approval to extract basic raw materials on freehold land within the City of Karratha.
- 2) The policy will also be used to guide Council in forming a position on proposals under the *Mining Act 1978* for mining basic raw materials on other (non-freehold) land, including leasehold land, within the City of Karratha.

## 4. BACKGROUND AND COUNCIL POSITION

### 4.1. Background

'Basic raw materials' are primarily used in construction of land developments, buildings, and road infrastructure. They are different from the typically high value mining products produced in the Pilbara and elsewhere in that they are relatively high volume/low value and are consumed locally rather than exported. Transport costs, associated mainly with distance travelled, can be a significant influence on the end price paid by the consumer.

Because of the high prevalence in the Pilbara region of large mining operations and associated large infrastructure projects such as ports and railway lines, the domestic construction industry often has to compete with the large resource companies for basic raw materials for construction projects. The

quantities required for major projects can be enormous, resulting in low supply and inflated prices for local construction projects, such as housing.

The ready and affordable availability of basic raw materials to communities is essential for development of towns and community infrastructure, such as residential and commercial areas and buildings, roads, hospitals, schools, etc. Therefore it is important to understand where the basic raw materials are located, and whether there can be sufficient product available when needed.

In the past there have been issues with supply of basic raw materials for these applications, which led to a perception that there is a shortage of product within the City. It has now been established that there is plentiful product, but that timely access to the material is an issue, primarily as a result of:

- Large areas being quarantined by mining tenements that are not focused on the provision of construction materials for the general market;
- Time required to obtain approval for quarries.

In addition to the economic aspects of supply, there have been some conflicts between the mining of basic raw materials and other community values, in particular on residential amenity, on popular recreation areas, aboriginal heritage, and the environment.

Of particular concern has been sand mining of primary sand dunes along the coast, potential conflicts with beach users, and the potential impacts of mining on the important role that primary dunes perform in protecting inland areas from flooding.

The City is therefore aiming to ensure that a balance is achieved between the necessary supply of basic raw materials, with protection of the natural environment including natural processes such as drainage and coastal erosion, and community interests such as cultural heritage, recreation, and residential amenity.

Council will therefore consider closely any basic raw material mining or development that could potentially impact on access to and use and enjoyment of important public recreation spaces, particularly along the coastline.

#### Approval of Proposals to Extract Basic Raw Materials

Mining of basic raw materials requires approval under one of two principal Western Australian Acts of Parliament. These are the *Mining Act 1978 (as amended)* and the *Planning and Development Act 2005 (as amended)*.

The majority of minerals extraction (mining) is covered by the *Mining Act*. Some particularly significant projects are covered by State Agreement Acts. However the *Mining Act* definition of 'mineral' explicitly excludes any of the following if they occur on private land:

- (i) limestone, rock or gravel;
- (ii) shale, other than oil shale;
- (iii) sand, other than mineral sand, silica sand or garnet sand; or
- (iv) clay, other than kaolin, bentonite, attapulgite or montmorillonite.

The definition of 'mineral' also excludes 'soil' on any land. 'Soil' is not separately defined by the *Mining Act* so the common dictionary definition is assumed.

Any mining that occurs on Crown Land, including leased Crown Land (eg: pastoral leases) and Crown Land managed by others (eg: recreation reserves and National Parks) must be approved under the *Mining Act*. Approvals under other legislations such as the *Native Titles Act*, *Environmental Protection Act* and *Aboriginal Heritage Act* may also be required. These applications are managed by the Department of Minerals and Petroleum.

When on private (or freehold) land the mining of these materials is known as 'extractive industry' and is dealt with under the *Planning and Development Act*. These applications are managed by the City of Karratha.

Because the vast majority of land within the City of Karratha is Crown Land, it is highly probable that most proposals to mine basic raw materials will in fact be applications made under the *Mining Act*. This means that at best, the City will be a referral agency but will not be in a position to approve, refuse or require conditions to be applied to approvals.

The City of Karratha is required to be notified of any:

- > prospecting licence application (Form 21) on private land. This would not apply to prospecting for basic raw materials on private land as these are exempt from the *Mining Act* and because the vast majority of mining takes place on Crown land, the City is generally not aware of prospecting proposals;
- > mining lease applications on Crown Land managed by the City;
- > mining proposals.

The City will generally only receive a copy of the application form and must ask for any additional details, which in the case of a mining proposal may comprise many detailed reports including environmental investigations.

#### Approval Periods

One reason that the City is interested in mining approvals on both private and Crown land is that they are issued for very long periods of time.

An exploration licence is issued for five years with the opportunity for renewal without further consultation for a further five years and then two years, if the Department of Mines and Petroleum is satisfied that this is justified.

A Mining lease is issued for 21 years with the opportunity for renewal without further consultation for a further 21 years, and thereafter with the approval of the Minister responsible for Mining further terms not exceeding 21 years each.

In mid-2014 there were over 154 active and pending mining leases within the City of Karratha. The opportunity to influence these approvals will not arise again and some of them will remain valid for up to 20 more years, and could be renewed without further consultation after that.

The holder of an exploration or mining lease is under no obligation to extract minerals in which they have no commercial interest (which may include basic raw materials), nor to allow access to the lease areas to any other party who may wish to access those other minerals. It is a fact that already most of the Crown land in the City of Karratha is already being mined for minerals other than basic raw materials. This severely limits access to basic raw materials that might otherwise be in commercial quantities and relatively convenient locations.

#### **4.2. Council position**

The Council's position on extractive industry is that:

- Extractive industry should not take place in environmentally or culturally sensitive areas;
- Extractive industry should not result in a degraded quality of life for any resident or visitor in either the short or long term, whether through amenity or health impacts;
- Sensitive land uses should not be permitted to encroach on extractive industry operations such that they may be exposed to negative impacts;
- Consideration should be given to facilitating community or other benefits where possible, for example employment opportunities, access improvements, conservation or environmental protection or enhancement and provision of suitable infrastructure;
- Because the availability of basic raw materials is important to the economic well-being of the City, new development should not be permitted that would prevent the exploitation of viable deposits of basic raw material, unless removal of that material would result in unacceptable impacts on an existing or future community – for example, removal of sand from a site that will later require sand-fill to achieve a future planned use;

- Sufficient notice should be given of any project that will require such large quantities of any particular basic raw material that there is a risk of creating a significant local supply shortage, to enable approvals to be put in place for additional sources of that material for local consumption. To this end, the City will continue to engage relevant State Government agencies and project proponents to encourage such collaboration.

## 5. DEFINITIONS

Terminology used within this policy is defined as follows:

### **‘Basic Raw Materials’**

Basic raw materials are defined as sand, soil, limestone, hard rock, gravel, clay, and agricultural lime, except those types of clay excluded by the *Mining Act*.

### **‘Extractive Industry’** means:

An industry which involves the extraction, quarrying or removal of sand, gravel, clay, rock, limestone, soil, or similar material from the land, not excluded by the *Mining Act*, and includes the treatment and storage of those materials, or the manufacture of products from those materials on, or adjacent to, the land from which the materials are extracted.

### **‘Private Land’** means:

Land held in freehold title by any person or entity.

**‘Crown Land’** has the same definition as that in the *Mining Act*, which is presently:

All land except -

- (a) land that has been reserved for or dedicated to any public purpose other than -
  - (i) land reserved for mining or commons;
  - (ii) land reserved and designated for public utility for any purpose under the Land Administration Act 1997;
- (b) land that has been lawfully granted or contracted to be granted in fee simple by or on behalf of the Crown;
- (c) land that is subject to any lease granted by or on behalf of the Crown other than -
  - (i) a pastoral lease within the meaning of the Land Administration Act 1997, or a lease otherwise granted for grazing purposes only; or
  - (ii) a lease for timber purposes; or
  - (iii) a lease of Crown land for the use and benefit of the Aboriginal inhabitants;
- (d) land that is a townsite within the meaning of the *Land Administration Act 1997*.

### **‘Commonwealth Land’** means:

- (a) land in respect of which the Commonwealth holds a freehold or leasehold interest; or
- (b) land that is otherwise vested in or held by the Commonwealth or vested in or held by an officer or person on behalf of the Commonwealth.

### **‘Soil’** means:

That portion of the earth's surface in which plants grow; a well-developed system of inorganic and organic material and of living organisms. <sup>1</sup>

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<sup>1</sup> *Macquarie Dictionary*

## 6. APPLICATION PROCEDURE

### 6.1. Procedure for applications made under the Mining Act

The complete procedure for the making and determination of mining lease applications under the *Mining Act* can be obtained from the Department of Mines and Petroleum website. Figure 1 is a diagrammatic summary of the process for both Crown land and private land. Figure 2 provides more information in diagrammatic form of the process under the *Mining Act*, indicating where referrals are made and/or other legislation also applies (eg: Native Title Act, Environmental Protection Act, Aboriginal Heritage Act, Wildlife Protection Act, Rights in Water and Irrigation Act).

The City is formally notified of any application made on Crown land that it manages, and maintains a working relationship with the local office of the Department of Mines and Petroleum. However, to ensure that it is aware of all applications made within the City of Karratha, the City will put in place procedures to regularly check the Department of Mines and Petroleum website for notice of new applications that have been lodged with the Mining Registrar.

If the City becomes aware of an application for a mining lease that meets the criteria outlined in section 8.2 of this policy, it will request sufficient information about the proposal from the Department of Mines and Petroleum and/or the applicant in order to satisfy itself about the potential impacts of the application.

The City will be guided by this policy to guide its assessment of proposed mining leases.

If the City has concerns about the proposal that are not satisfied by the information provided, a notice of objection will be prepared and lodged with the Mining Registrar as required by the *Mining Act*. If it is satisfied by the information provided that its concerns are addressed, it will take no further action.

It should be noted that applications for mining leases under the *Mining Act* are required to provide a Mining Proposal which includes documentation on the current environment and potential environmental and social impacts. These proposals are typically very comprehensive and are likely to contain any information that the City may need to assess whether or not the proposal is likely to be of concern. Therefore in the first instance, if a proposal does meet the criteria in section 8.2, a copy of the proposal will be requested. If further information is required, the City will request that it be provided, however the City is still required to comply with statutory time limits for making an objection.

If the City has concerns about the potential impacts of the application but does not receive the information it requires to satisfy itself about those impacts before a notice of objection must be lodged, then the City may elect to lodge a notice of objection before the closing date for submissions. The City will then seek to complete its assessment of the information and subsequently either withdraw its objection or lodge further information on the grounds of its objection and proceed to a hearing at the Warden's Court.

If an application does not meet the criteria outlined in section 8.2, the City will take no further action.

The City will keep a record of its actions/determinations in relation to each mining lease application that it reviews.

### 6.2. Procedure for extractive industry applications

An application for approval of an Extractive Industry must be made in accordance with the Planning Scheme and the requirements of this Policy, and any other applicable policies, such as Policy DP 19 – Storm Surge Risk Policy.

The City may elect to or may be required to refer any application to the Environmental Protection Authority for advice prior to determining the proposal.

It should be noted that if the value of the application exceeds a value of \$10 million, the City will be obliged to refer the application to the Pilbara Joint Development Assessment Panel (JDAP) for determination, as required by the *Planning and Development Act* and the *Planning and Development (Development Assessment Panels) Regulations* (DAP Regulations).

- 1) It is strongly advised that the City of Karratha Development Services department be consulted prior to finalising any application for planning approval for an extractive industry under the Scheme, in order to confirm the information required to accompany the application.

- 2) The number of copies of plans as required by the Scheme and the DAP Regulations, if applicable, along with supporting documents as required by the City, should be lodged with the City along with the applicable application fee/s.
- 3) The City will advertise the application for public comment for 21 days if the application is located:
  - a. Within, or within one kilometer of any townsite or aboriginal community;
  - b. Within, or within one kilometer of any proposed urban expansion area as identified in the local planning strategy.
- 4) The City will refer the application to any agency that may have an interest in the potential impacts of the proposal, or to which the City is obliged by legislation to refer the application. This could include, inter alia, the Environmental Protection Authority, Department of Water, Main Roads WA, representative Aboriginal groups and/or community associations.
- 5) City officers will consider the provisions of this policy along with any comments and/or recommendations received from referral agencies and the public and prepare a report and recommendation for consideration by Council and/or the Pilbara JDAP (as appropriate).
- 6) The proposal will be determined by Council or the Pilbara JDAP. If the applicant is unhappy with the determination, a right of review may exist under the *Planning and Development Act*.

Figure 1 Summary of determination process

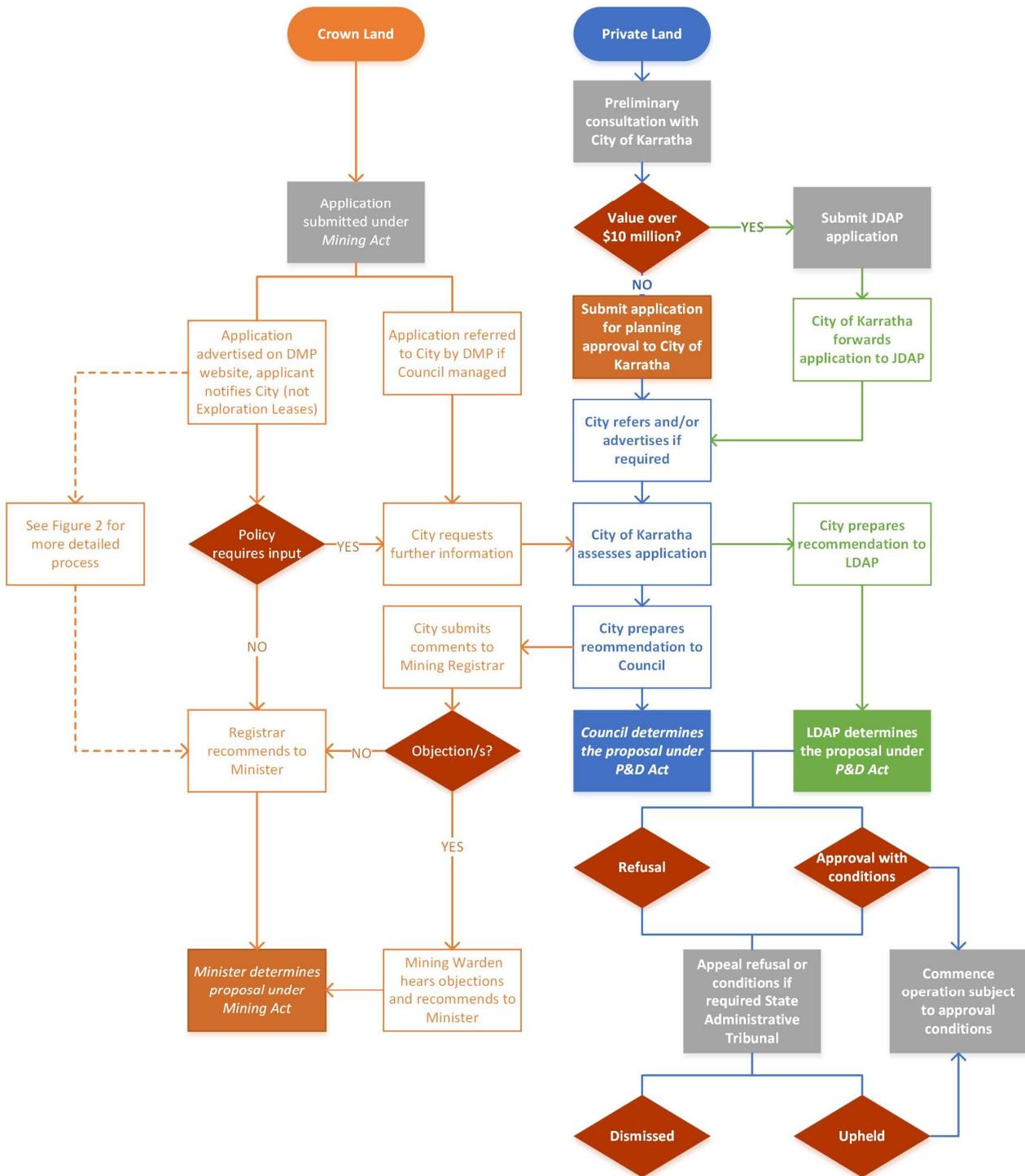
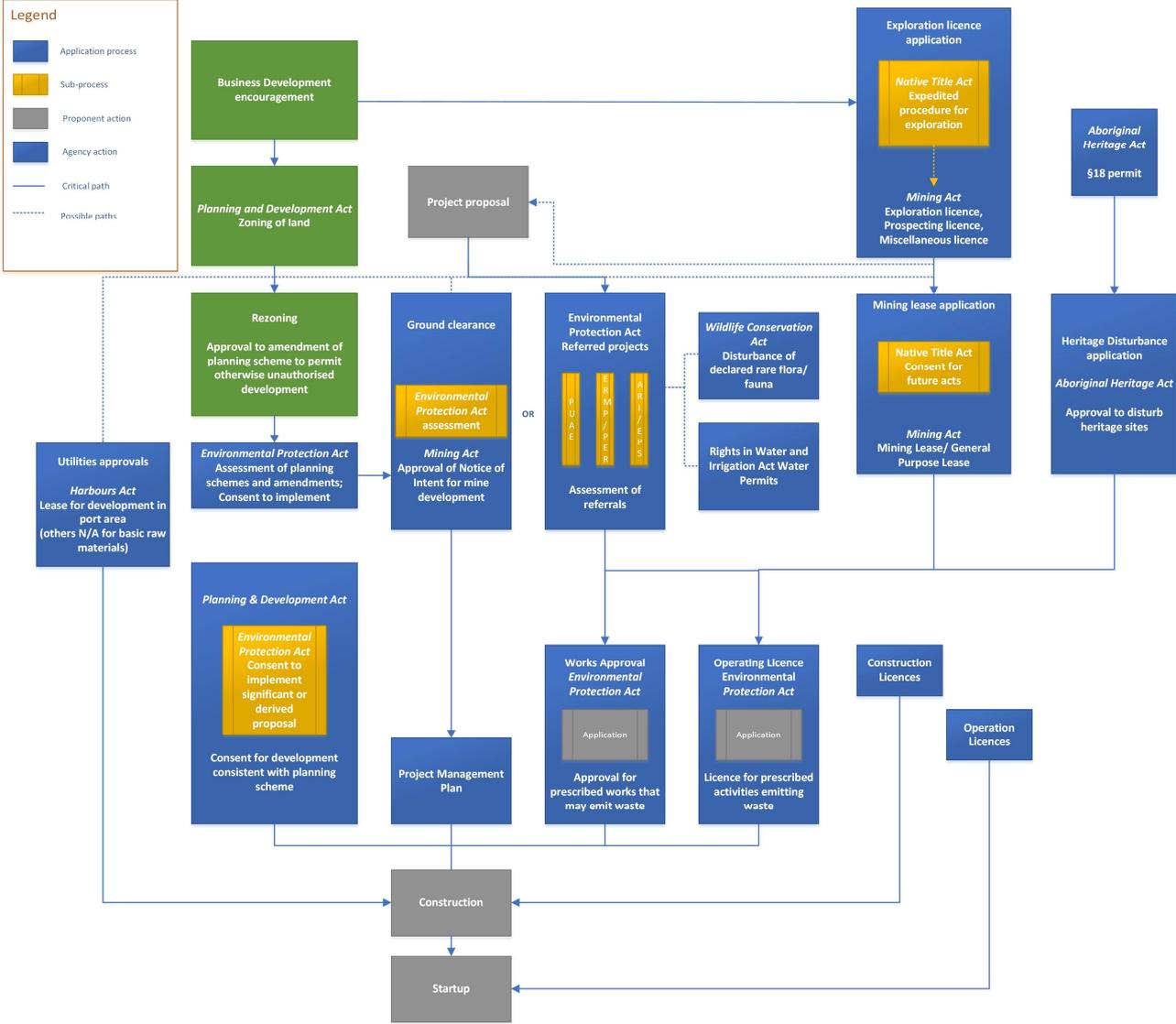


Figure 2 Summary of key mining approvals



## 7. APPLICATION REQUIREMENTS ON PRIVATE LAND

On private land, the *Mining Act* requirements for preparation of a Mining Proposal do not apply, so the City must make clear its own requirements.

In addition to the information requirements specified by the Scheme, each application for an Extractive Industry made under the Scheme must be accompanied by the following information. The City may, on a case-by-case basis, waive or modify any of these information requirements if it considers that this can be justified by the nature or scale of the proposal:

- 1) A plan showing:
  - a) the existing and proposed land contours based on the Australian Height Datum and plotted at one metre contour intervals
  - b) the land on which the excavation site is to be located;
  - c) the external surface dimensions of the land;
  - d) the location and depth of existing and proposed excavation of the land;
  - e) the location of existing and proposed thoroughfares or other means of vehicle access to and egress from the land and to public thoroughfares in the vicinity of the land;
  - f) the location of buildings, treatment plant, tanks and other improvements and developments existing on or proposed in respect of the land;
  - g) the location of existing power lines, telephone cables and any associated poles or pylons, sewers, pipelines, reserves, bridges, railway lines and registered grants of easement or other encumbrances over, on, under or adjacent to or in the vicinity of the land;
  - h) the location of all existing dams, watercourses (whether permanent or ephemeral), drains, waterholes, or sumps on or adjacent to the land;
  - i) the location and description of existing and proposed fences, gates and warning signs around the land; and
  - j) the location of the areas proposed to be used for stockpiling excavated material, treated material, overburden and soil storage on the land and elsewhere.
- 2) Three (3) copies of a works and excavation programme containing:
  - a) the nature and estimated duration of the proposed excavation for which the applications applies;
  - b) the stages and the timing of the stages in which it is proposed to carry out the excavation;
  - c) details of the methods to be employed in the proposed excavation and a description of any on-site processing works;
  - d) details of the depth and extent of the existing and proposed excavation of the site;
  - e) an estimate of the depth of and description of the nature and quantity of the overburden to be removed;
  - f) a description of the methods by which existing vegetation is to be cleared and topsoil and overburden removed or stockpiled;
  - g) a description of the means of access to the excavation site and the types of thoroughfares to be constructed, and evidence that this can be achieved;
  - h) details of the proposed number and size of trucks entering and leaving the site each day and the route or routes to be taken by those vehicles;
  - i) a description of any proposed buildings, water supply, treatment plant, tanks and other improvements;
  - j) details of drainage conditions applicable to the land and methods by which the excavation site is to be kept drained;

- k) a description of the measures to be taken to minimise sand drift, dust nuisance, erosion, watercourse siltation and dangers to the general public;
  - l) where extraction is proposed within the floodplain of a creek line, within a drinking water protection area, within the wellhead protection zone for a drinking water abstraction borehole or below the groundwater table, a detailed description of the water environment and measures to be taken to ensure that the proposed extraction can be mitigated to ensure the impact to surrounding users is appropriate to the level of risk associated with the activity occurring;
  - m) a description of the measures to be taken to comply with the *Environmental Protection (Noise) Regulations 1997*;
  - n) a description of the existing site environment and a report prepared by a suitably qualified industry consultant on the anticipated effect that the proposed excavation will have on the environment in the vicinity of the land, including any potential impacts on surface water, groundwater, and the coast, including a description of any proposed mitigation measures;
  - o) a description of the measures to be taken to minimise the destruction of existing vegetation; and
  - p) a description of the measures to be taken in screening the excavation site, or otherwise minimising adverse visual impacts, from nearby thoroughfares or other areas.
- 3) Three (3) copies of a rehabilitation and decommissioning programme indicating:
- a) the objectives of the programme, having due regard to the nature of the surrounding area and the proposed end-use of the excavation site;
  - b) whether restoration and reinstatement of the excavation site is to be undertaken progressively or upon completion of excavation operations;
  - c) the method by which topsoil is to be replaced and revegetated;
  - d) the numbers and types of trees and shrubs to be planted and any other landscaping features to be developed;
  - e) how rehabilitated areas are to be maintained;
  - f) the programme for the removal of buildings, plant, waste and final site clean-up; and
  - g) how any face is to be made safe and batters sloped;
  - h) evidence that a datum peg has been established on the land related to a point approved by the City of Karratha on the surface of a constructed public thoroughfare or such other land in the vicinity;
  - i) a certificate from a licensed surveyor certifying:
    - i. the extent of any existing excavation on the proposed excavation site; and
    - ii. the correctness of the plan referred to in paragraph 1)a) and the datum peg and related point referred to in paragraph h);
  - j) any other information that the City of Karratha may reasonably require; and
  - k) copies of any geotechnical information relating to the excavation site.

## 8. POLICY PROVISIONS

### 8.1. City of Karratha position on mining and extractive industry applications

- a. The approval of new or expanded mines or quarries and associated activities on beaches or primary dune systems or any land system identified as being 'highly unstable' (refer to Appendix A) is not supported, unless it can be demonstrated:
  - i. that the dune or beach in question is accreting; and/or
  - ii. is not an important defence against inundation of property or infrastructure; and/or

- iii. does not contain important environmental, community, cultural or recreational assets; and
  - iv. rehabilitation can be achieved that will either improve or not diminish any coastal protection function.
- b. The approval of new or expanded mines or quarries and associated activities within creeklines is not supported, unless it can be demonstrated that the removal of sediment will not negatively impact the ability of the coastline to protect coastal and inland communities and infrastructure.
- c. The approval of new or expanded mines or quarries and associated activities on or within one kilometre of any recreation and/or tourist node is not supported unless it can be demonstrated that:
- i. safe public access to and enjoyment of the recreational and/or tourism activity at the location can be maintained during the life of the quarry;
  - ii. rehabilitation can be achieved that will either improve or not diminish any pre-existing recreation or tourist value at the location.
- d. The approval of new or expanded mines or quarries and associated activities within one kilometre of any urban area or Aboriginal community will not be supported unless it can be demonstrated that:
- i. No emissions such as noise, dust, smell, vibrations or fumes will reach or affect the urban area or community during normal operating conditions;
  - ii. Impacts of vehicle movements associated with the operation will be managed so as not to negatively impact on any urban area or community.
- e. The approval of new or expanded mines or quarries and associated activities in or within one kilometre of any area identified as 'development investigation area', 'urban expansion area' or 'industrial expansion' in the City of Karratha local planning strategy will not be supported unless it can be demonstrated that the proposed extractive industry will not prejudice the future development of the land for the intended purpose by its operation or its proposed rehabilitation;
- f. The approval of new or expanded mines or quarries and associated activities within one kilometre of any identified aboriginal heritage site will not be supported unless it can be demonstrated that the proposal has been referred to the relevant aboriginal custodians for comment.
- g. The approval of new or expanded mines or quarries and associated activities within the floodplain of a creek line, within a drinking water protection area, within the wellhead protection zone for a drinking water abstraction borehole, or below the groundwater table, will not be supported unless it can be demonstrated that mine operation, management, and rehabilitation will not result in a worsening of risk to any community or infrastructure assets through the diversion of surface water flow, or to the quality of any groundwater.
- h. The City of Karratha will seek to achieve or maintain formal public access to areas of scenic and/or recreational value if a mine or quarry proposal is likely to affect existing public access, whether formal or informal.
- i. The City of Karratha may seek to establish a management reserve or another method of protection for areas that it identifies as being sensitive to the potential impacts of mining or quarrying activity.

## **8.2. When the City will comment on mining lease applications on Crown land**

The City will request the Department of Mines and Petroleum to refer to it for comment any applications for mining lease applications made on Crown land that are not managed by the City when the application is located:

- a. on a beach or primary dune system, or any land system identified as being 'highly unstable' (refer to Appendix A);
- b. within a creekline;

- c. on or within one kilometer of a recreation or tourist node, and in particular:
- Balla Balla;
  - Cleaverville;
  - Settlers Beach, Cossack;
  - Dampier;
  - Fortescue River;
  - Gnoorea Point;
  - Hearsons Cove;
  - Karratha Back Beach;
  - Point Samson area; and
  - Wickham Back Beach.
- d. within one kilometer of any urban area or Aboriginal community.
- e. within the floodplain of a creek line, within a drinking water protection area, within the wellhead protection zone for a drinking water abstraction borehole, or below the groundwater table.
- f. is located in any other area that the City has reason to consider would be sensitive to mining impacts for environmental, social, cultural or recreation reasons.

The City will apply the same considerations to formulating its comments on these applications as it will in assessing applications made under the Scheme, or on Crown land managed by the City (refer to section 8.1).

### **8.3. Development other than extractive industry within basic raw material resource areas**

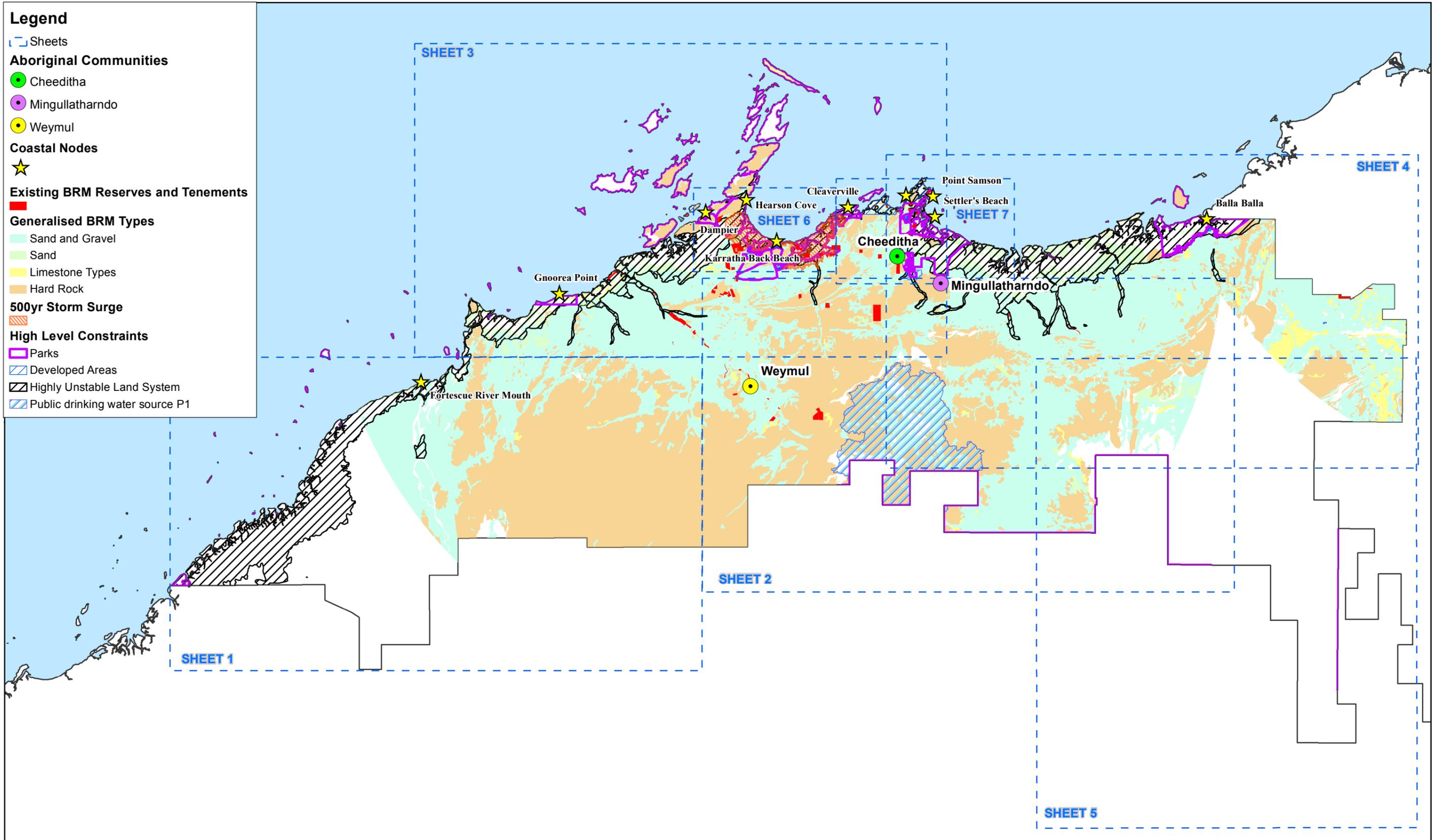
- a. New urban or industrial development should not proceed before it has been established whether or not the site of the proposed development contains significant quantities of basic raw materials, and if so, whether removal of that resource prior to development is possible.
- b. This requirement implies that the presence or otherwise of basic raw materials must be taken into account in the preparation of strategic plans and structure plans.

## **9. REFERENCES TO RELATED DOCUMENTS**

- Application for Planning Approval Form
- Development Services Fees and Charges Information Sheet BS-0005
- Shire of Roebourne Town Planning Scheme No.8
- Environmental Protection (Noise) Regulations 1997

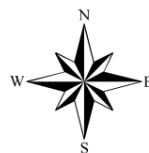
This appendix contains the Regionally Significant Supply Map.

- Overall index map
- Sheets 1 – 7



1:800,000 Scale at A3

Kilometres

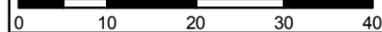


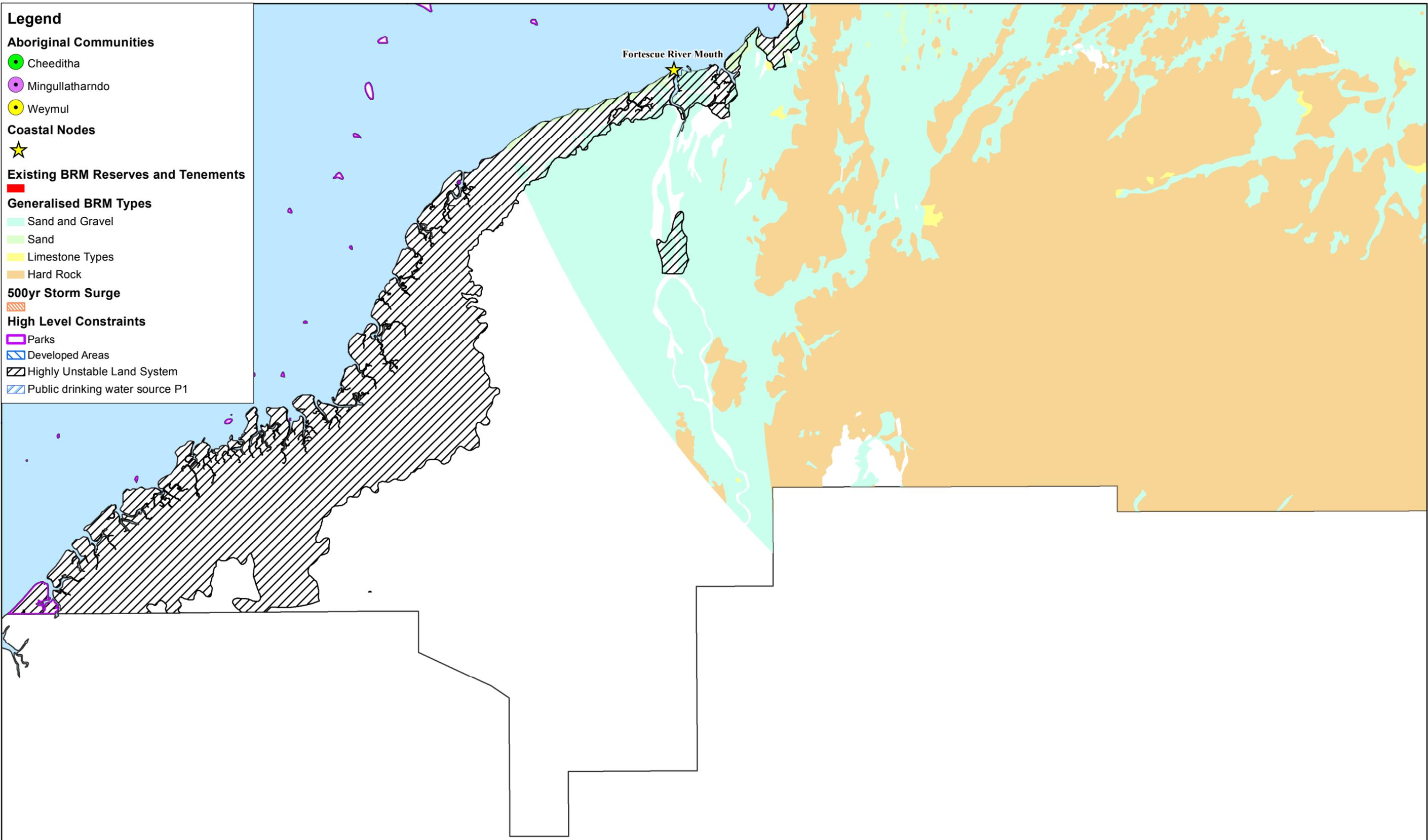
# Regionally Significant Basic Raw Materials

MAP SET 9

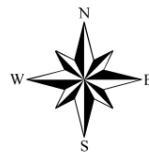


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 Project: P15004 BRM Policy  
 Map: Regionally\_Significant\_All\_Sheets.mxd 01





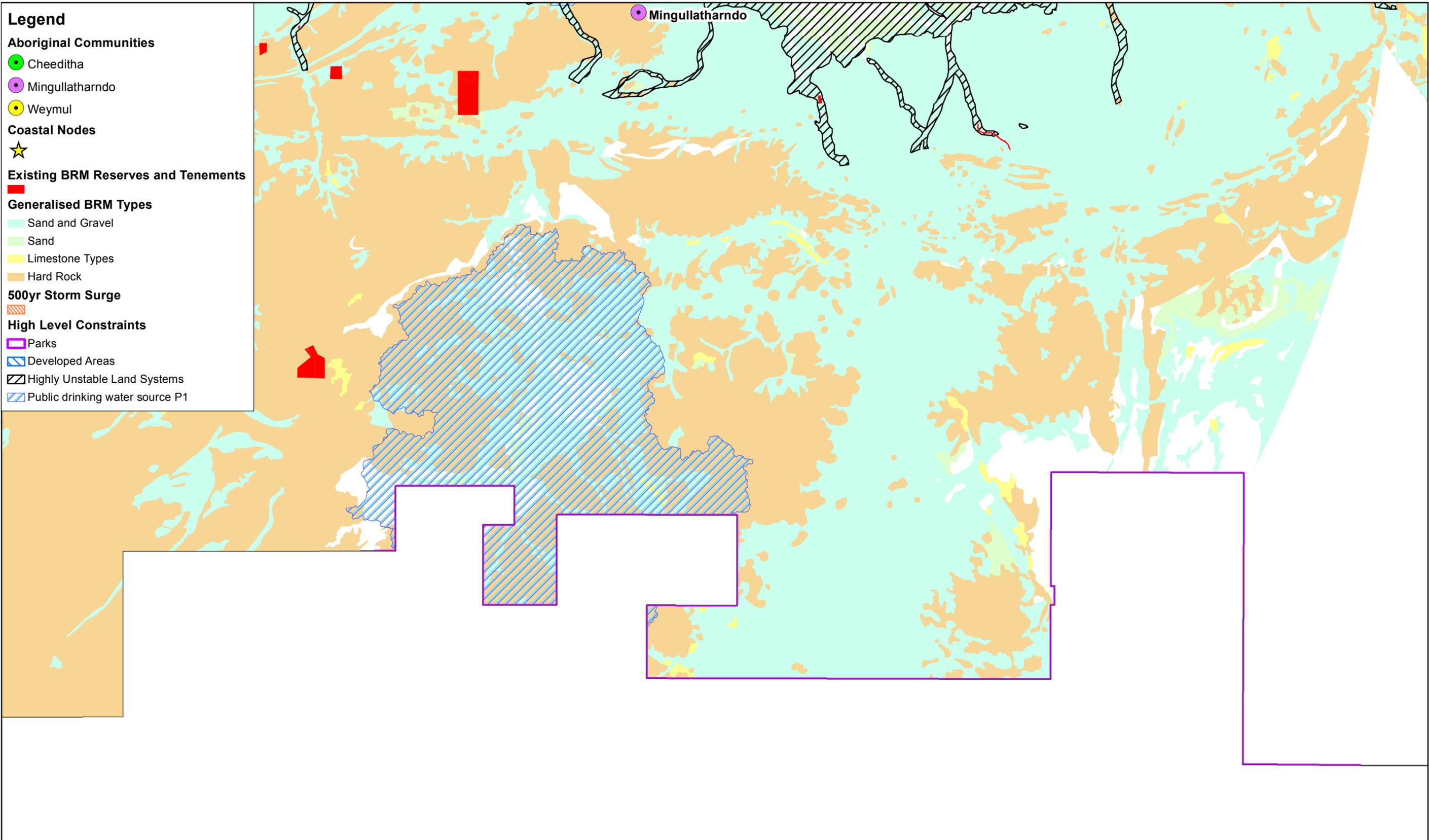
- Legend**
- Aboriginal Communities**
    - Cheeditha
    - Mingullatharndo
    - Weymul
  - Coastal Nodes**
    - ★
  - Existing BRM Reserves and Tenements**
    -
  - Generalised BRM Types**
    - Sand and Gravel
    - Sand
    - Limestone Types
    - Hard Rock
  - 500yr Storm Surge**
    -
  - High Level Constraints**
    - Parks
    - Developed Areas
    - Highly Unstable Land System
    - Public drinking water source P1



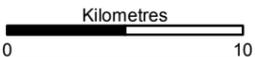
## Regionally Significant Basic Raw Materials

MAP SET 9  
SHEET 1





1:300,000 Scale at A3



# Regionally Significant Basic Raw Materials

MAP SET 9  
SHEET 2



Map Produced by CARDNO  
Date: 17-08-2015  
Coordinate System: GDA 1994 MGA Zone 50  
Project: P15004 BRM Policy  
Map: Regionally\_Significant\_Sheet\_02.mxd 01

**Legend**

**Aboriginal Communities**

- Cheeditha
- Mingullatharndo
- Weymul

**Coastal Nodes**

- ★

**Existing BRM Reserves and Tenements**

- 

**Generalised BRM Types**

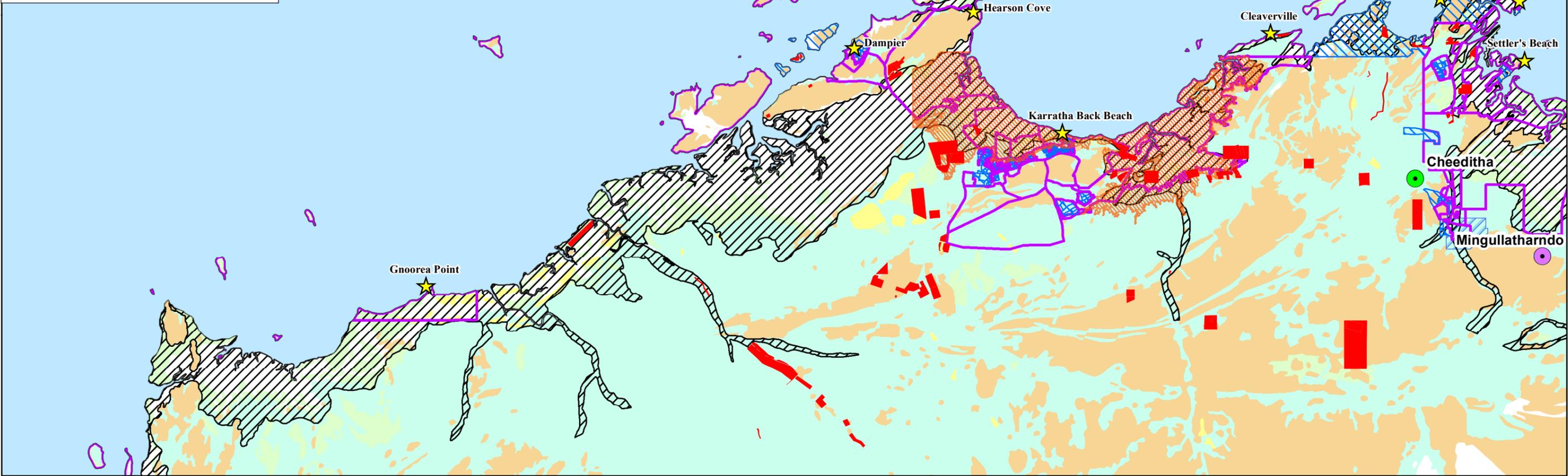
- Sand and Gravel
- Sand
- Limestone Types
- Hard Rock

**500yr Storm Surge**

- 

**High Level Constraints**

- Parks
- Developed Areas
- Highly Unstable Land System
- Public drinking water source P1

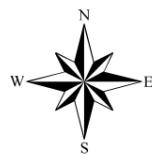


City of  
**Karratha**

**1:300,000 Scale at A3**

Kilometres

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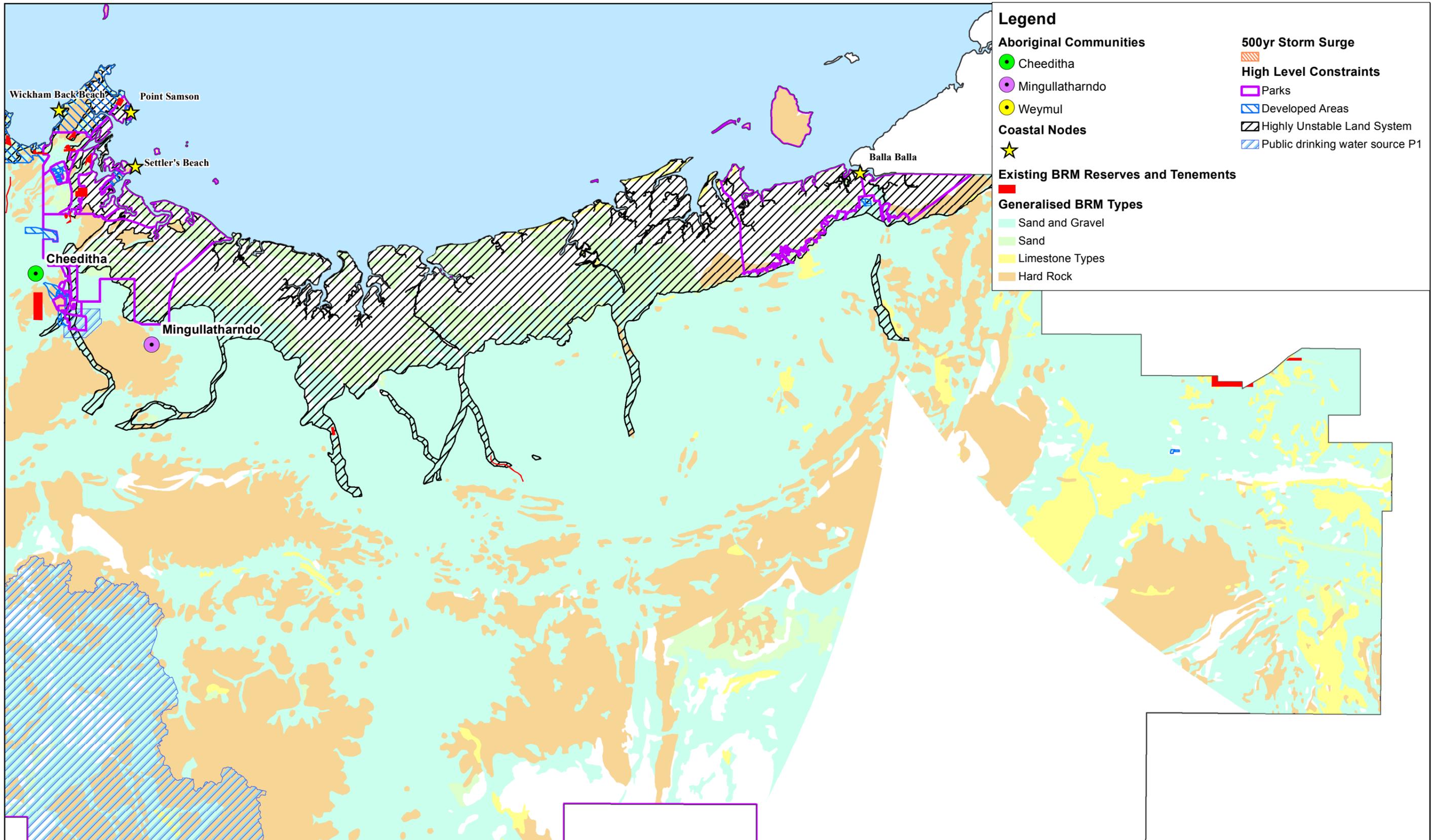


## Regionally Significant Basic Raw Materials

MAP SET 9  
SHEET 3



Map Produced by CARDNO  
Date: 17-08-2015  
Coordinate System: GDA 1994 MGA Zone 50  
Project: P15004 BRM Policy  
Map: Regionally\_Significant\_Sheet\_03.mxd 01



**Legend**

- Aboriginal Communities**
  - Cheeditha
  - Mingullatharndo
  - Weymul
- Coastal Nodes**
  - ★
- Existing BRM Reserves and Tenements**
  -
- Generalised BRM Types**
  - Sand and Gravel
  - Sand
  - Limestone Types
  - Hard Rock
- 500yr Storm Surge**
  -
- High Level Constraints**
  - Parks
  - Developed Areas
  - Highly Unstable Land System
  - Public drinking water source P1

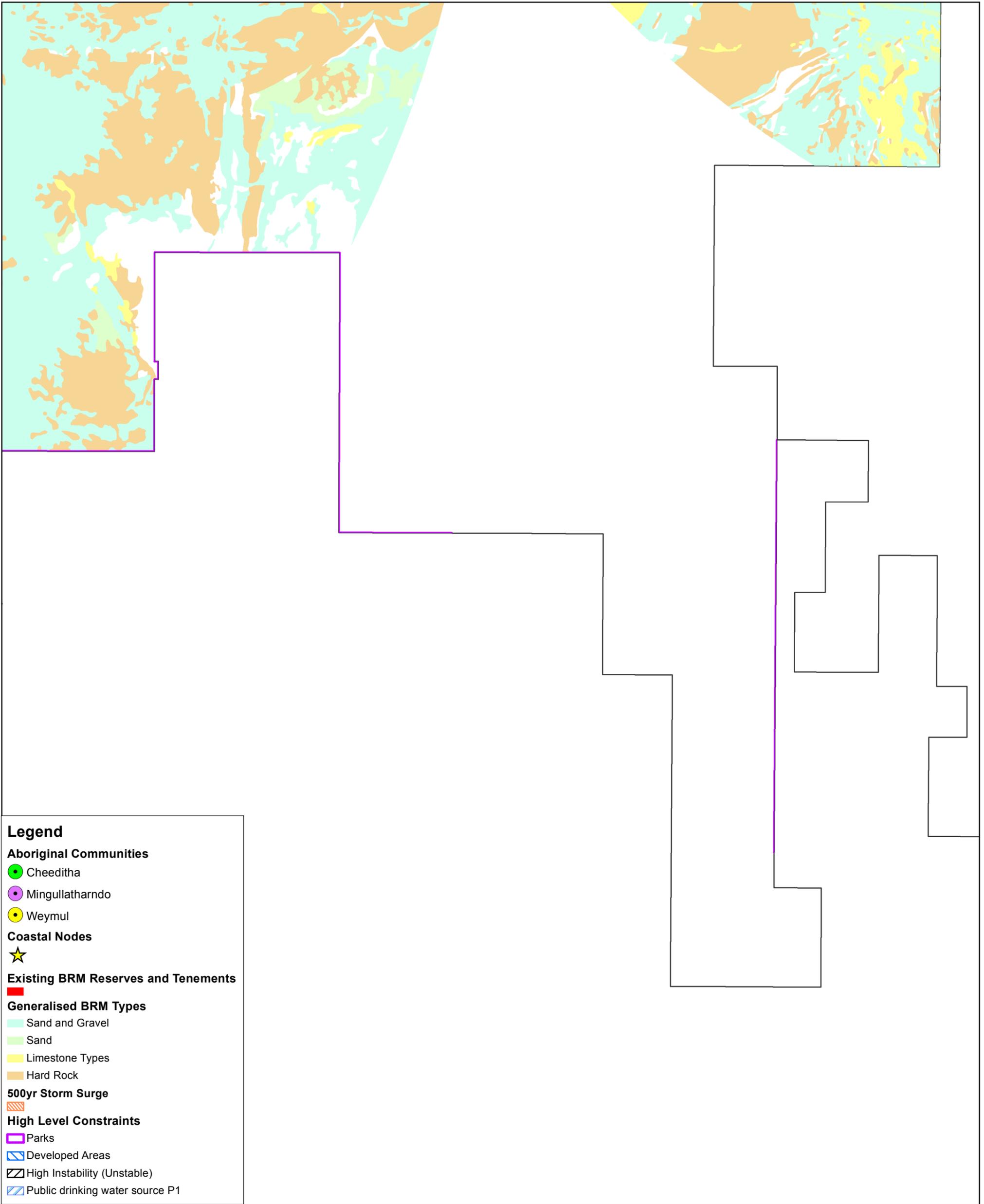


**Regionally Significant  
Basic Raw Materials**

MAP SET 9  
SHEET 4



Map Produced by CARDNO  
Date: 17-08-2015  
Coordinate System: GDA 1994 MGA Zone 50  
Project: P15004 BRM Policy  
Map: Regionally\_Significant\_Sheet\_04.mxd 01



**Legend**

**Aboriginal Communities**

- Cheeditha
- Mingullatharndo
- Weymul

**Coastal Nodes**

- ★

**Existing BRM Reserves and Tenements**

- 

**Generalised BRM Types**

- Sand and Gravel
- Sand
- Limestone Types
- Hard Rock

**500yr Storm Surge**

- 

**High Level Constraints**

- Parks
- Developed Areas
- High Instability (Unstable)
- Public drinking water source P1

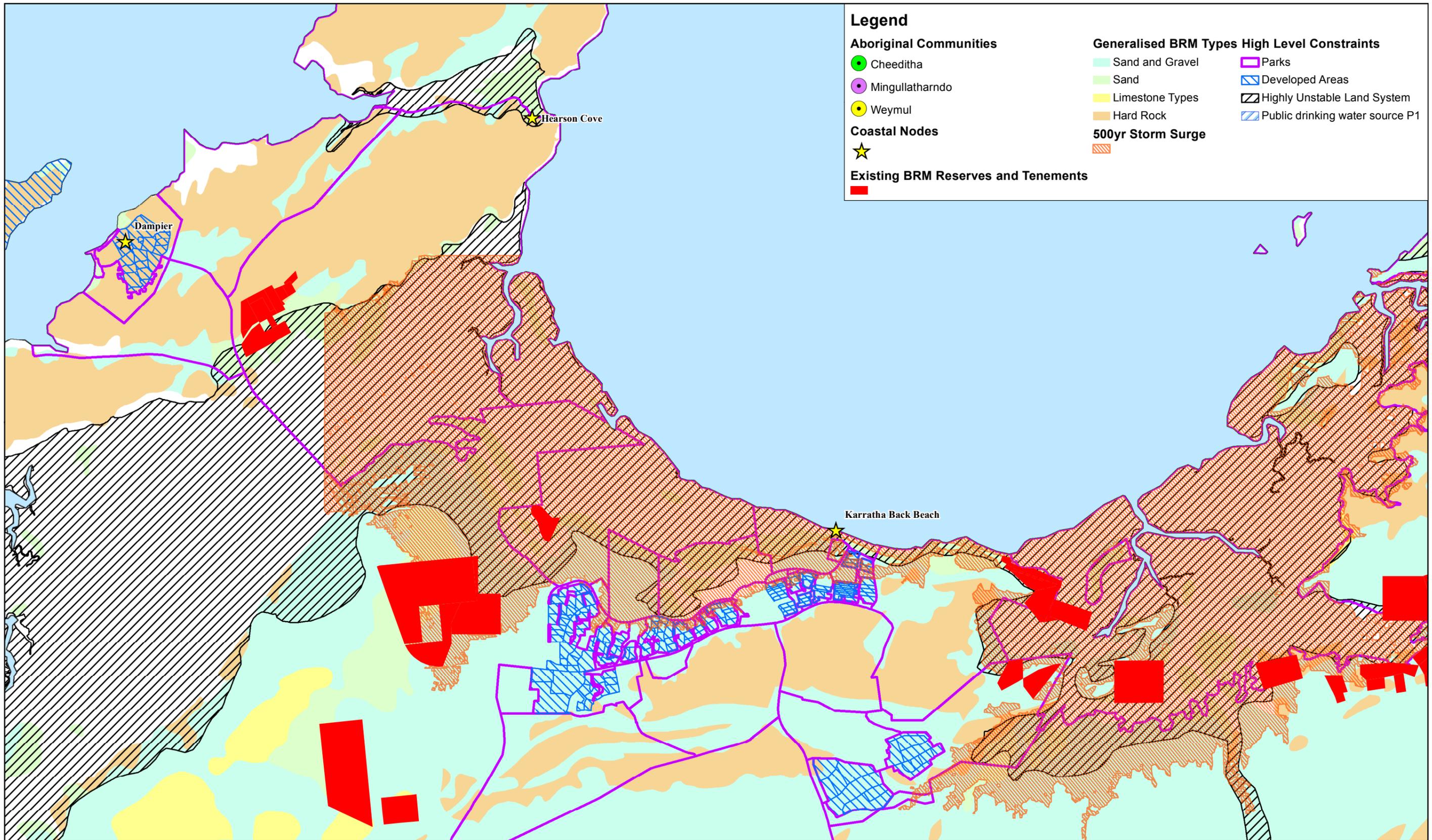


**Regionally Significant  
Basic Raw Materials**

MAP SET 9  
SHEET 5



Map Produced by CARDNO  
Date: 17-08-2015  
Coordinate System: GDA 1994 MGA Zone 50  
Project: P15004 BRM Policy  
Map: Regionally\_Significant\_Sheet\_05.mxd 01



**Legend**

**Aboriginal Communities**

- Cheeditha
- Mingullatharndo
- Weymul

**Coastal Nodes**



**Existing BRM Reserves and Tenements**



**Generalised BRM Types High Level Constraints**

- Sand and Gravel
- Sand
- Limestone Types
- Hard Rock
- Parks
- Developed Areas
- Highly Unstable Land System
- Public drinking water source P1

**500yr Storm Surge**

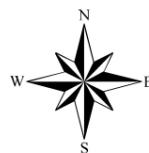


**Regionally Significant Basic Raw Materials**

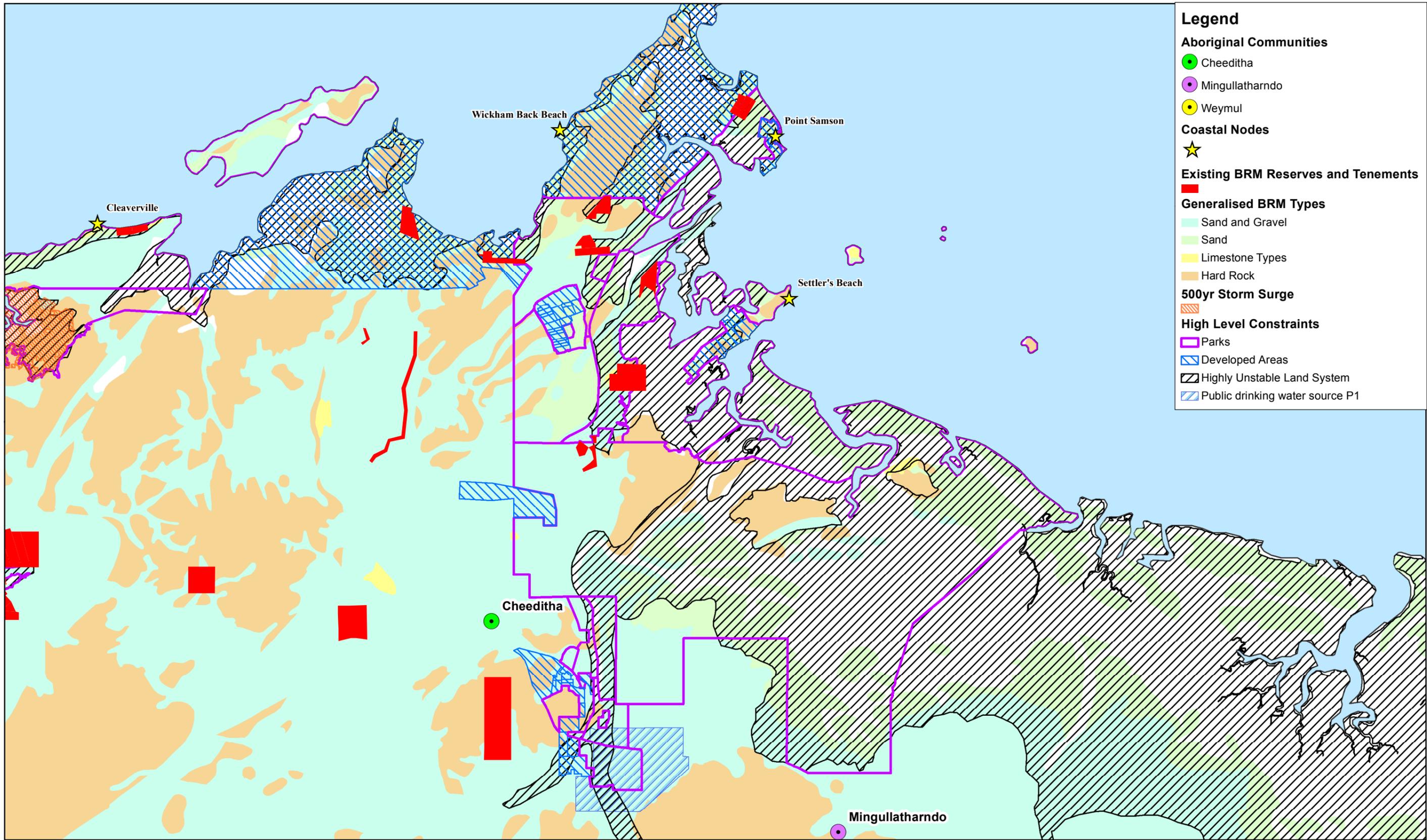
MAP SET 9  
SHEET 6



1:80,000 Scale at A3  
Kilometres



Map Produced by CARDNO  
Date: 17-08-2015  
Coordinate System: GDA 1994 MGA Zone 50  
Project: P15004 BRM Policy  
Map: Regionally\_Significant\_Sheet\_06.mxd 01



**Legend**

**Aboriginal Communities**

- Cheeditha
- Mingullatharndo
- Weymul

**Coastal Nodes**

- ★

**Existing BRM Reserves and Tenements**

- 

**Generalised BRM Types**

- Sand and Gravel
- Sand
- Limestone Types
- Hard Rock

**500yr Storm Surge**

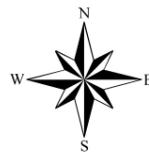
- 

**High Level Constraints**

- Parks
- Developed Areas
- Highly Unstable Land System
- Public drinking water source P1

City of  
**Karratha**

**1:100,000 Scale at A3**  
Kilometres



**Regionally Significant  
Basic Raw Materials**

MAP SET 9  
SHEET 7



Map Produced by CARDNO  
Date: 17-08-2015  
Coordinate System: GDA 1994 MGA Zone 50  
Project: P15004 BRM Policy  
Map: Regionally\_Significant\_Sheet\_07.mxd 01