GAP RIDGE INDUSTRIAL ESTATE DEVELOPMENT PLAN

Prepared for: Shire of Roebourne on behalf of Landcorp
This Development Plan was prepared under the provisions of the Shire of Roebourne's Town Planning Scheme No 8.

LANDCORP

urbis

Gap Ridge Industrial Estate

Development Plan

Prepared for the Shire of Roebourne on behalf of LandCorp

May 2013

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TABLE OF MODIFICATIONS

Modification Number	Description of Modification	Date Endorsed by Council	Date endorse by WAPC
0	Original Adoption.	Adopted by Council Resolution No. 14990 on 15th February 2010	N/A
1	▪ Alterations to Table 4. ▪ Deletion of sub-station site. ▪ Allowance for a TWA on a limited a single site to be known as a Contractors Camp. ▪ Introduction of second service centre site (lot 1).	Council Resolution No.151856 on 24 October 2011	8 March 2012
2	▪ Removal of second service centre site (lot 1). ▪ Change in permissibility of Restaurant use on service centre site. ▪ Removal of Contractors Camp Site. ▪ Introduction of Noxious Use Sub-Precinct. ▪ Introduction of Drainage Reserve along eastern boundary. ▪ Consequential amendment to account for changes to Shire of Roebourne Town Planning Scheme No.8. ▪ Introduction of Statement of Intent for Service Centre Site. ▪ Introduction of Statement of Intent for Noxious Use Precinct. ▪ Change in permissibility of Noxious Uses in Table 4 within the General Industry Precinct. ▪ Updating of Staging details.	Council Resolution No.152498 on 20 May 2013	
3			
4			
5			
6			
7			
8			

CERTIFICATION OF AGREED DEVELOPMENT PLAN

IT IS CERTIFIED THAT THE GAP RIDGE INDUSTRIAL ESTATE DEVELOPMENT PLAN

WAS ADOPTED BY RESOLUTION OF

THE COUNCIL OF THE SHIRE OF ROEBOURNE ON

20/05/2013 (Res. 152498)

AND THE SEAL OF THE MUNICIPALITY WAS PURSUANT TO THE COUNCIL'S RESOLUTION HEREUNTO AFFIXED IN THE PRESENCE OF:

.....

Shire President, Shire of Roebourne

13.9.13 Date

.....

Chief Executive Officer, Shire of Roebourne

5/9/13 Date

SHIRE OF ROEBOURNE COMMON SEAL

AND BY THE WESTERN AUSTRALIAN PLANNING COMMISSION ON

19 November 2013

Signed for and on behalf of the

Western Australian Planning Commission

.....

an officer of the Commission duly authorised by the Commission pursuant to section ~~57~~ 24 of the ~~Western Australian Planning Commission Act 1985~~ Planning and Development Act 2005 for that purpose, in the presence of:

.....

M. Wiecka Witness

26 November 2013 Date

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1 PRELIMINARY

1.1 Introduction

This document shall be read in conjunction with the Gap Ridge Industrial Estate Development Plan Map. Pursuant to the provisions of the Shire of Roebourne Town Planning Scheme No.8, this document forms part of the Development Plan.

This Development Plan has been prepared for the land located in Gap Ridge, to the west of Seven Mile Creek, north of the land fill site and south of Dampier Highway. The site is currently zoned 'Industrial Development' and pursuant to clause 6.7.11 of the Shire of Roebourne Town Planning Scheme No. 8 (the Scheme), a Development Plan is required to be prepared over the site prior to considering a Subdivision or Development Application to guide development form.

1.2 Development Plan Area

The area to which this Development Plan applies is Lot 507 Dampier Highway and part Lot 300 Dampier Highway, as identified as the Development Plan Area in Figure 1.

1.3 Contents of the Development Plan

The Gap Ridge Development Plan is comprised of the following:

- The Development Plan Map (Attached at Appendix A); and
- The Development Plan Text

1.4 Objectives of the Development Plan

The objectives of the Development Plan are:

- To guide the future subdivision, development and use of the land within the Development Plan area;
- To provide for a range of industrial allotments from light industrial land uses to larger more expansive industrial activities, and in particular to provide for the logistics and laydown uses associated with offshore construction activities;
- To facilitate economic clustering by directing land use within the estate and creating individual precincts of complimentary uses;
- To establish a road layout and orientation to support heavy vehicle traffic and facilitate the future connection to Madigan Road to the east of the site by setting aside land for the "Karratha Western Bypass";
- To establish a drainage network that will provide for the effective hydraulic operation of the site and ensures suitable water quality prior to discharge into Seven Mile Creek; and
- To facilitate a well-designed and climatically appropriate landscape, responsive to local and site specific conditions.

1.5 Operation

This Development Plan is to be immediately in operation following its formal adoption by the relevant approval authority. The plan will remain in operation until the estate is fully developed, or until such time as an amendment to the scheme is undertaken, rezoning the subject site to the application industrial zones.

1.6 Definitions

"LandCorp" means the Western Australian Land Authority

"Scheme" means the Shire of Roebourne's Town Planning Scheme No 8

"Commission" or "WAPC" means the Western Australian Planning Commission

"Shire" or "Local Government" means the Shire of Roebourne

"Site", "Subject land" or "Estate" means the land within the development plan area.

1.7 Development

Development requirements within the Industrial Precinct A and B will be in accordance with the requirement of the Industry zone of the Scheme, and any relevant Local Planning Policy and other relevant requirements.

Design Guidelines will be applicable to development within the Gap Ridge Estate and adopted as planning policy by the Shire of Roebourne. LandCorp will enforce the Design Guidelines, and other contractual matters prior to submission of individual Development Applications to the Shire of Roebourne for Planning Approval. The Design Guidelines complement rather than change scheme requirements, however, should any discrepancy occur the requirements of the Scheme (and this Development Plan) shall prevail.

2 DETAIL

2.1 Introduction

There is strong underlying and anticipated additional demand for industrial land in the Pilbara Region and the North-West of Australia generally. Major oil, gas and mining projects are driving this demand and in response LandCorp is seeking to create a new light and general industrial estate to cater for expanding industry and job creation in the Karratha region. The existing Karratha Industrial Estate is close to capacity and unable to expand due to geographical and environmental constraints. The new estate will offer easy access to Karratha and Dampier Port with the amenity of a modern industrial area, providing a diverse range of lot sizes to cater for a variety of industrial uses operating at a range of development intensities.

The Development Plan outlines the key design principles for the Gap Ridge Industrial Estate and compliance with the scheme requirements in accordance with clause 6.7.12 of the Shire of Roebourne *Town Planning Scheme No. 8*.

2.1.1 Development Plan Area

There are two lots affected by the Development Plan area, as outlined in the table below.

TABLE 1 – SUBJECT SITE

Lot	Plan	Area	Owner	Primary Interest Holder
Part 300	P46449	196.1ha	Unallocated Crown Land	State of WA
507	P62739	62.814ha	Unallocated Crown Land	State of WA

The site also includes the existing Seven Mile Road (also known as Rubbish Tip Road) reserve which has an area of approximately 8 hectares.

The proposed Development Plan area is outlined below. It can be seen that it encapsulates the whole of lot 507, and only the north western portion of lot 300.

FIGURE 1 – DEVELOPMENT PLAN AREA

Source: Landgate

The site occupies a total of 267.59 hectares and is located several kilometres west of the Karratha town centre. The lot is irregular in shape, with the site narrowing from south to north. The lot boundary follows the curvature of Seven Mile Road therefore contributing to this irregular shape.

The site is flat in nature, with no notable topographical features. It slopes generally from the west to the east towards Seven Mile Creek.

FIGURE 2 – AERIAL PHOTOGRAPH

Source: Urbis

2.1.2 Location and Existing Uses

The proposed estate is located within an undeveloped area that is dominated by utilities and services.

TABLE 2 – SURROUNDING DEVELOPMENT

Direction	Immediately Adjacent	Further
North	Zoned Rural Land – primarily vacant with an aquaculture facility.	Karratha Airport (3 km)
East	Zoned Rural Land and Seven Mile Creek	Sewer Treatment Plant (1.5 km)
South	Rubbish Tip	Rural Land (2 km)
West	Railway sidings	Rural Land (1 km)

2.1.3 Heritage

Indigenous Heritage

LandCorp conducted heritage surveys with Aboriginal Groups in consultation with Department of Indigenous Affairs (DIA), which included the determined native title holders, the Ngarluma People. Heritage surveys were conducted separately on Part Lot 300 and Lot 507. One significant site was found on Lot 300, and a Section 18 to 'Approve use of the Land for the Purpose of Industry' was issued by the Minister for Indigenous Affairs. No significant sites were found on Lot 507 and DIA confirmed a Section 18 is not required for this land.

European Heritage

There are no European heritage listings in the Development Plan area.

2.1.4 Environment

Landform

The Pilbara landscape consists of vast red sandy loam spinifex plains with iconic mounts, flat top butts, weathered messe layered rock edges and ephemeral stony creek beds.

The subject site is part of an upper coastal plain and sits adjacent a stony tree lined creek, Seven Mile Creek, that experiences periodical water flows and broader flooding on a less infrequent basis.

Topography

The site is relatively flat with an elevation of between +10 and +18 metres AHD and appears to be in its natural state, with no evidence of previous bulk earthworks. However, there is evidence of road drainage line excavation draining towards the northern boundary creek line and shallow soil scrapes scattered throughout the subject possibly used for road construction.

The average slope across the site is approximately 0.3%, from the highest point at the south-west to the lowest point in the north-east.

Climate

Karratha rainfall is generally low and quite variable. Annual totals vary from 250-450mm and it is not uncommon for many years without significant rainfall to occur. Most of the summer rain comes from scattered thunderstorms and the occasional tropical cyclone. A secondary peak in the monthly rainfall occurs as a result of rainfall caused by tropical cloud bands which intermittently affect the area mostly in

May and June. Thunderstorms average 15-20 near the coast. Almost all storms occur in the summer (wet season).

On the coast is there some relief to the summer heat provided by sea breezes. The maximum temperature range in summer is 35-39°C. Several days with 45°C maximum temperatures occur each year. Winter maximum temperatures are mild/warm with temperatures in the 23-27°C range in the south grading to 25-30°C in the north (ref: www.bom.gov.au).

Vegetation

There are no known endangered, protected or vulnerable species of flora or fauna in the development plan area. The site is sparsely vegetated with pockets of arid low lying shrubs.

Spinifex and Kangaroo Grass is scattered across the site with a more even spread to the western boundary. Much of the vegetation will be removed as part of the subdivision works, however there is an opportunity to retain a healthy buffer of Themeda triandra - Kangaroo Grass and Triodia epactia - Soft Spinifex, Triodia intermedia - Lobed Spinifex, at this western edge. In addition, native seed is proposed to be collected from this native grassed buffer and along the treed creek line where Eucalyptus camaldulensis/victrix, Melaleuca sp. can be used for future re-vegetation in the development.

Earthworks will be required to be undertaken primarily to achieve minimum flood immunity levels and to control overland flow of stormwater to direct it into the drainage network.

Soils

The soils within the site are a stony red sandy loam with little organic matter. Further away from the creek line the land gains elevation and here the soils become more shallow and rocky.

2.2 Relationship with Scheme

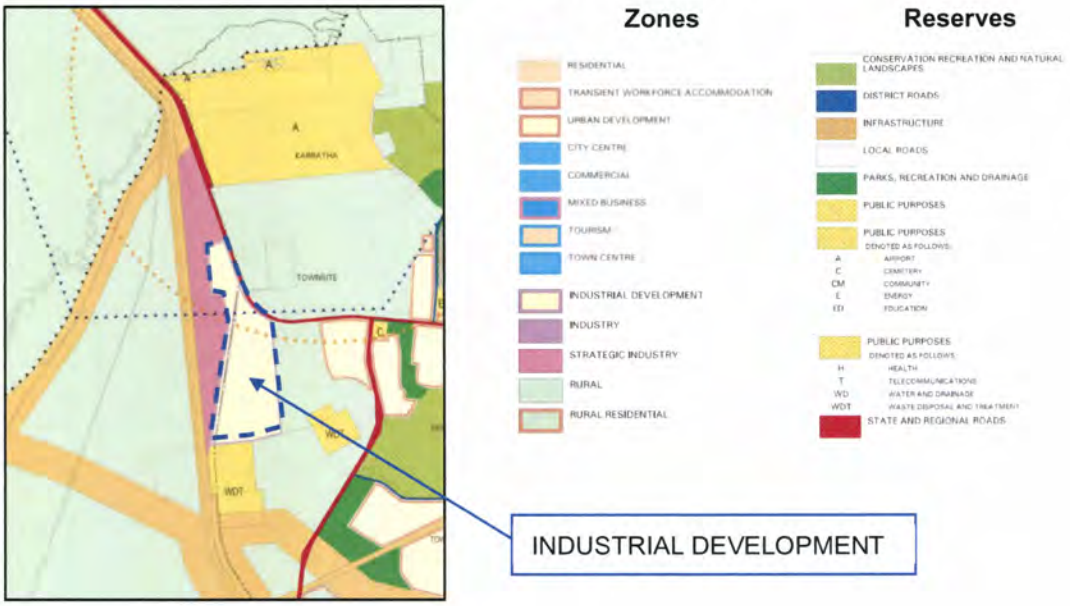
The Shire of Roebourne *Town Planning Scheme No. 8* (the Scheme) provides the statutory basis for the planning of Karratha and its surrounds.

The Development Plan area, under both lots, is zoned for 'Industrial Development'.

The purpose of the 'Industrial Development' zone is to:

> *'provide areas for future industrial estate development where development can occur, in accordance with an endorsed Development Plan, prior to amending the Scheme to incorporate detailed zones and reservations for particular lots'.*

FIGURE 3 – SHIRE OF ROEBOURNE TOWN PLANNING SCHEME NO. 8 (EXCERPT)



Source: WAPC

2.2.1 General Aims of the Scheme

The general aims of the Scheme are to:

a) facilitate community input into planning for the appropriate balance between economic and social development, conservation of the natural environment, and improvements in lifestyle and amenity;

b) respond to and implement strategic planning directions for the Shire by facilitating development in accordance with development objectives for precincts of the Shire;

c) define the uses and types of development to be permitted on land within the Scheme Area; and

d) control and regulate the development of land, erection and demolition of buildings and the carrying out of works.

The development acts to further the general objectives of the scheme and does not compromise any of the objectives.

2.2.2 Karratha Precinct Development Objectives

The Shire of Roebourne has specific objectives for the different precincts identified within the Development Objectives Precinct Map, which indicate the Council's preferred land use and development outcomes for these specific areas. The precincts therefore provide additional guidance for the Council when determining applications for planning approval. The subject site is included with the Karratha Precinct, which includes the greater Karratha Area from North-West Coastal Highway to Nickol Bay.

There are a number of objectives set under clause 5.9 of the Scheme that set high level objectives for the development growth of the region, and are used to guide Council decision making. The key objectives that have particular relevance for the site are set out below:

I. facilitate the continued growth of Karratha as the regional centre of the West Pilbara;

II. develop Karratha as the tourist entry for the West Pilbara built upon and taking into account the levels of commercial travellers associated with resource developments;

III. retain the Karratha Industrial Estate as the regional service industry centre whilst improving its presentation as part of the entry statement to Karratha.

The development acts to further the Karratha Precinct Development Objectives of the scheme and does not compromise any of the objectives.

2.2.3 Industrial Development Zone

The 'Industrial Development' zoning is used to identify land for future industrial estate development. The zone does not permit any uses to occur until an endorsed Development Plan is adopted over the site. The Scheme defers to this Development Plan for the purpose of determining land use permissibility.

Appendix 8 of the scheme sets out the matters for inclusion within a Development Plan, specifically:

i. landform, topography, landscape, vegetation and soils of the area
ii. location, existing roads, land uses an surrounding land uses and features
iii. legal considerations, ownership, title description, area and encumbrances
iv. existing and proposed services and infrastructure including reticulated or other potable water supply, sewerage, energy, communications, drainage and catchment considerations
v. existing places and features of Aboriginal and non-Aboriginal heritage and/or cultural significance, including natural landscapes, flora and fauna in addition to built structures and other modified environments
vi. road layouts and traffic assessments, communal and incidental parking areas, pedestrian/cycle network/underpasses, including impacts on the surrounding movement network
vii. public open space and recreation provision, environmental protection areas, and relationships to natural features
viii. assessment of the impact of the proposal on the natural environment, including management of potential effluent, emissions and other forms of pollution
ix. comprehensive drainage systems for stormwater runoff and natural drainage lines
x. indicate the design of the proposal including lot layout, major buildings, roads and landscaping proposals
xi. the demand for the development in relation to the overall market for similar developments
xii. the method of carrying out the development including the projected times of completion of each stage
xiii. provide provisions, as may be considered appropriate by Council, for inclusion in the Policy Manual
xiv. other information as may be required by Council

In addition, the following requirements apply within the Industrial Development Zone.

i. location and characteristics of industrial precincts, including likely industrial uses, developments and material processing

ii. on-site and off-site buffers required to separate uses within industrial areas and industrial uses from adjacent incompatible uses.

This Development Plan is compliant with the provisions outlined for the 'Industrial Development' zone under the Shire of Roebourne's Town Planning Scheme No. 8, with all matters required having been addressed within this document.

2.3 Design Process

In developing the concept design for the precinct, a range of considerations were taken into account to ensure the creation of a robust precinct that responded to the context and existing and future circumstances. The considerations were as follows:

2.3.1 Opportunities

- The site is well located to facilitate the delivery of new industrial land that is required in the Pilbara region, and to cater for future expansion. There is an immediate need to accommodate transportation and logistic enterprises that service the Port of Dampier, the Burrup Industrial Estate and, to a lesser extent, the Karratha Airport. The provision of suitable land in close proximity is made more pertinent due to the increased offshore activity and intended relocation of a number of users from the existing King Bay location.
- The site has a frontage to the Dampier Highway, the main connection between the Burrup Industrial Area and the Karratha township. This offers excellent access to the port, provides exposure to traffic along this busy stretch of road providing exposure for commercial uses and provides high accessibility for workforce. Dampier Highway is currently in the process of being upgraded to a dual carriageway, improving the road standard and increasing safety.
- The site has a frontage to a future Karratha Western Bypass currently proposed in the mid-term by Main Roads. This road will provide the most efficient route for access between Dampier Highway and the North West Coastal Highway. This road will be the designated Heavy Haulage Route and will attract significant number large road trains and be confidently located for main traffic by large vehicles accessing the Burrup Peninsular.
- The site is included within the 'Industrial Development' zone. This zone allows for the effective planning and design of a 'master planned' estate, allowing for the co-ordination of the various inputs into the development of the land and facilitating the long term roll out of the development. It also provides a conduit between the Local Government and State Government to streamline future requisite approvals, particularly that of subdivision and development.
- The surrounding land uses are compatible with the proposed use for a wide range of varied Industrial purposes. The site provides the opportunity to make efficient use of land within close proximity of the landfill site and wastewater treatment plant. The site has significant separation from sensitive receiving environments and is not under long term pressure for development for residential uses.
- The site is relatively flat and will require minimal bulk earth works, other than those required with respect to flood immunity. The site is well suited to a range of industrial uses, including the much needed lay down areas.
- The site is well drained, flowing into Seven Mile Creek as the natural grade of the land is from south-west to north-east. There is an opportunity to apply water sensitive design that can reduce the flow rates, improve the quality of water leaving the site and provide sediment control measures as the water enters Seven Mile Creek.
- The site provides the opportunity for the incorporation of vegetation that is appropriate to the location, providing the ability to provide local character to the estate. The existing vegetation on the site can be retained where practical or used as a guide for future planting through the collection of seeds.
- The subject site abuts a rail line that terminates at the Dampier Port. Whilst this is private infrastructure, there could be linkages between the subject site and the railway siding in the future.
- The site has been granted a Section 18 to 'Approve use of the Land for the Purpose of Industry' was issued by the Minister for Indigenous Affairs and agreement has been reached with the determined native title holders for the use of the land.

2.3.2 Constraints

- The site is subject to flooding risk, with the 1 in 100 ARI flood level impacting on the eastern edge of the site. Significant amounts of fill will be required to be placed on the site in certain areas to raise the levels of the site to achieve flood immunity. This is due in part to the Seven Mile Creek bridge crossing, which constricts flows and increases the flooding impacts up stream.
- The geology and climate of the region results in high rainfall and low infiltration rates, meaning that the bulk of the water will need to be directed out of the site. Significant areas of the site will need to be dedicated to drainage infrastructure, resulting in reduced areas of developable land, as well as the imposition of potentially unsightly infrastructure designed to cater for peak flow.
- The geology and climate also impacts on the standard of construction that is required to be adopted throughout the estate, with civil works generally being more expensive than a metropolitan comparison as well as a tendency for restrained architecture in favour of cost efficiency.
- The Water Corporation wastewater treatment plant is located approximately 800 metres to the east of the site. The south eastern corner of the site is within the nominal 500 metre buffer zone. It is possible odour from the treatment plant may be an issue at the subject site during specific weather conditions.
- While the cost is predicted to be 'considerable' to deliver water, wastewater, power and telecommunication services to the site, no fatal flaws were determined to be present. Ultimately, all requites services are available to be provided to service the estate.
- Both 132 kV and 33kV power lines traverse site overhead. Both are required to be relocated to facilitate the development of the site. The existing 132 kV requires upgrade and reconfiguration, even if it were to be retained in the existing location. The 33 kV is required to be relocated and reticulated underground throughout the site to provide each lot with a power supply.
- The landfill facility abuts the subject site's southern boundary. This may cause issues relating to odour and dust. Rubbish blown onto the subject site from uncovered loads may also become a problem. Appropriate land uses should occur for lots within close proximity to the tip. Access to the landfill facility will be required to be maintained throughout the duration of the construction period and across the staging of the development.
- Main Roads are currently investigating the best manner to facilitate access for heavy vehicles between North West Coastal Highway and the Burrup Peninsular. A number of route options for the future Karratha Western Bypass have been identified. The key constraint is the uncertainty of an outcome, and the need to accommodate a range of possibilities that may never eventuate.
- There is limited available water for use on the irrigation of the vegetation to be established within the development. Underground reserves are too salty for irrigation use.
- The general cost of construction is significantly higher than the equivalent works in metropolitan Perth. This requires emphasis on efficient design to minimise duplication on infrastructure and maximise the effective use of the land.
- The nature of the likely end land uses are not conducive to aesthetic appeal, and therefore the overall structure of the estate needs to be designed in a manner that mitigates the impacts of visually displeasing aspects the future industrial uses.
- The key constraints were identified in a risk management workshop that was held by LandCorp in May 2009. The key constraints, including those identified above have been overcome or mitigated through the proposed design or management plans/strategies.

2.3.3 Design Objectives

There are a number of broad design objectives that were identified for the Development Plan which needed to be considered in design development in association with the need to attenuate the constraints and build upon the opportunities. These objectives are identified below.

Use and Function

- Partition the estate into two precincts to cluster complementary uses and provide exposure to lots from Dampier Highway;
- Locate any large scale industry uses, uses with potential negative impacts, and uses that require large areas (such as laydown) in the southern portion of the site within the areas covered by the buffers from the Waste Water Treatment Plant and the Landfill site;
- Design street blocks that enables a high degree of flexibility in the manner in which they are subdivision to suit end user requirements, as they change over time;

Servicing

- Facilitate the upgrade of the 132 kV powerlines along Dampier Highway, including the provision of required easements;
- Orientate lots in a manner that minimises the number of drainage channel crossings;
- Create lots that have an appropriate level of flood immunity for major storm events;

Roads and Access

- Provide a central spine road to maximise legibility and accessibility through the estate;
- Maximise the efficiency of road construction and minimise unnecessary dual frontage;
- Maintain access to the land fill site and the Rio Tinto private road that runs along to rail line to North West Coastal Highway;
- Accommodate the future Karratha Western Bypass between Dampier Highway and North West Coastal Highway;
- Minimise the number of access points to the future Karratha Western Bypass from the estate;
- Ensure the structure of the estate works both before and after the introduction of the future Karratha Western Bypass;
- Provide high permeability to provide for the circulation of vehicles, strategically locating the location of crossovers, avoiding the incidence of four-way intersections, and providing safe distance between intersection staggers;
- Provide for swept path for large freight vehicles (triple road trains) to ensure that all vehicles that use the estate can navigate through safely;
- Create safe access onto Dampier Highway, including the provision of adequate sightlines;

Amenity and Environment

- Present lots that provide a high visibility to Dampier Highway to present an attractive façade and maximum the opportunities for exposure of the lots;
- Provide clear frontage and provide for screening of unsightly storage and operation areas to the street; and
- Facilitate drainage through the site to Seven Mile Creek and minimise pollutants (hydrocarbons, nutrients, sediment) entering the Creek.

2.4 Design Response

The design response is reflected in the Development Plan, however more fully reflected in the Concept Plan included in Appendix B.

The design developed and applied for the estate addresses each of the considerations in a comprehensive manner as outlined below. The design has responded to the site requirements whilst ensuring a design which is robust. The concept plan applies greater detail in order to reflect an outcome based on current market indications; however the nature of industrial development requires a high level of flexibility. The core components of the plan relating to the location of light industrial uses, key road links and drainage reserves have been reflected in the Development Plan.

2.4.1 Drainage

The drainage requirements were a key driver in the design of the estate, utilising natural drainage lines to facilitate the movement of water across the site to the outflow points at Seven Mile Creek. Comprehensive drainage systems for stormwater runoff have been accommodated throughout the estate to cater for peak flow. The design of the stormwater infrastructure has been undertaken in a manner that minimises the use of concrete channels, instead creating a more natural appearance, both when dry and when carrying water. The drainage system will be open, aside from the culverts that will be used for taking the water under the road. The drainage channels will run alongside the roads within the road reserves. One retention basin is planned to be created on the western boundary of the site, which will assist in the management of water at peak flow events.

The lots will be graded to direct flow either into the street system or into cut-off drains at the rear/side of properties that will then feed into the drainage network throughout the estate. The drainage system will be designed to ensure that the quality of water leaving the site will not impact on Seven Mile Creek.

2.4.2 Lot Layout

LandCorp are undertaking surveys and expressions of interest with potential end users to determine the lot mix and parameters that will best suit the end user. The broad structure of the industrial estate needs to be robust so that it can be developed to the specific needs of end users. This may include amalgamation or re-subdivision of lots to create lots that suit their needs. The subdivision should provide for a diversity of lot sizes that build upon the strategic location of the site and provide high access for interrelated business as well as good access for employees in both the Dampier and Karratha town centres. The lot design will be undertaken to minimise the number of crossings required over the drainage channels.

The lot design has been developed to ensure that the 'back of house' operations will not be visible from the street, particular along Dampier Highway, the future Karratha Western Bypass and the internal spine road. The Design Guidelines will be used to ensure the developments present an appropriate 'face' to the street.

2.4.3 Traffic and Route Options

The Karratha Town Structure Plan identifies the future realignment of Madigan Road such that it deviates from the existing alignment, passing around the north of the Waste Water Treatment Plant and to connecting into Dampier Highway adjacent to the frontage of the subject site. The diversion will assist in the development of the land at Gap Ridge shown as 'residential - future'. Main Roads have identified their intention to develop a link between North-West Coast Highway and Dampier Highway in the medium term.

This option was investigated and could be facilitated through the design of the subdivision over the subject site. However it was determined that the development of this route option would have significantly impacted on the flood immunity of the subject site due to the construction of a second bridge and the impact on the flows under the bridge.

More recent investigations identified a preferred route for the future Karratha Western Bypass to the south of the Waste Water Treatment Plant and to the west of the Landfill site, along the eastern edge of the subject site to Dampier Highway. This option would require a smaller bridge structure as it is passes over Seven Mile Creek higher in the catchment. This option provides the most direct link between North-West Coastal Highway and Dampier Highway.

The Development Plan allows for three future connections onto the Karratha Western Bypass road into the estate. However, as the timing of the future Karratha Western Bypass is uncertain, the estate has been designed to be fully functional if the bypass never eventuates. The initial connection into the estate before the development of the bypass will be through the northern intersection with Dampier Highway, controlled by traffic lights.

A service centre that has the capacity to accommodate road trains is intended to be located at the junction of Dampier Highway and the new spine road through the estate. This will provide a local convenience for the workers and visitors to the estate, as well as passing traffic along Dampier Highway. It is intended that the site will be subject to strict controls, to ensure this building presents well to the street, and acts as an entry statement in its own rights.

Overall the estate has been designed to provide generous spacing between the access points and limit the incidence of four-way intersections. Circulation throughout the estate has been designed to be logical and facilitate a high level of permeability. The road connections are generally straight and there are no cul-de-sacs' or dead ends in interim or the ultimate design.

2.4.4 Open Space

There is no public open space for recreation provided in this Development Plan. Public open space of this nature is not generally required for industrial subdivision and it was determined that the nature of the proposed land uses, proposed lot sizes, potential worker numbers and local climatic conditions did not warrant the provision of any dedicated public open space. The design has sought to locate the numerous easements required for drainage and services in manner which will enable significant landscape corridors that will offer opportunities for shade and will improve the overall amenity of the estate.

2.4.5 Landscape Design

The landscape design is to be consistent with current vegetation found on site, with a strong focus on waterwise planting. Landscaping and the entrance statement will encompass the natural form and features of the landscape.

The drainage and open space areas are simply to reflect the 'country', i.e. appropriate use of local materials and planting from the immediate area.

There is an opportunity to apply water sensitive design in the drainage design by use of low flow devices, encouraging infiltration, minimising erosion and releasing controlled water flow over a longer period.

At key entry points it would be proposed that iron ore relics and earth sculptures are revealed in collaboration with endemic Pilbara planting, spinifex, wildflowers, local boulders, stones and gravels to heighten the local landscape theming.

2.4.6 Buffers

The proposed development site is surrounded by rural zoned land (east and north) and is in close proximity to Karratha Airport (north), a waste disposal and treatment facility (south) and land zoned for industrial development (west). As such, the land is generally surrounded by compatible land uses and is unlikely to require stringent buffer requirements – particularly those which require off-site buffers on land not within the project site. Buffers should generally be contained within the lot, however, in some circumstances it may be appropriate for buffers to overlay complementary uses where no adverse effects can be demonstrated. Each proposal will be assessed on its merits at the Development Application stage when the specific nature and circumstances of the proposed land use are known. The Shire and relevant agencies will be consulted through the application process to clarify the need, if any, of buffer provisions – particularly in regards to the proposed future residential development to the east of the Gap Ridge Industrial Estate.

Refer Concept Plan attached at Appendix B.

2.5 Existing and Proposed Services

To ensure the proper functioning of the industrial estate, it is essential that appropriate services are provided. As such, a combination of using existing and proposed additional services is set out below.

2.5.1 Water

The Water Corporation is currently reviewing their overall planning for the Karratha townsite. However, there should be no constraints on the supply to the Gap Ridge Estate site.

It is envisaged that development of the Gap Ridge Estate will require the extension of a 250mm diameter water distribution main within the Dampier Highway road reserve to the site from an existing distribution main near the intersection of Brolga Road and Dampier Highway.

The proposed industrial lots will be fed by a network of reticulated mains which will connect to the distribution main and vary in size from 150mm diameter to 250mm diameter.

2.5.2 Power

It is envisaged that the high voltage power supply to the Gap Ridge Estate will be provided by connection to the Karratha Zone Substation located approximately 5.3km to the east on Balmoral Road near Rosemary Road.

It is anticipated that high voltage feeder cables will be required to be extended within the Dampier Highway road reserve from this zone substation to the site.

Horizon Power have indicated that as an interim strategy to service stage 1 of the site a new smaller substation with a 33kV/22kV step down transformer is likely to be established for the subdivision providing a connection point via the existing 33kV feeder which is fed from the Dampier Substation.

The area will be designed based on a minimum load of 50kVa per hectare.

A combination of transformers and switchgear will be required to be located throughout the development to reticulate three phase power to each proposed lot.

The existing 132kv line which traverses the site will be upgraded and relocated to the Dampier Highway road reserve as part of the development of the site.

2.5.3 Wastewater

Preliminary discussions with the Water Corporation indicate that sewer disposal will be achieved through the construction of a sewer pump station near the north east boundary of the subject site. This proposed Type 90 wastewater pumping station will service the entire Gap Ridge area via a network of DN225 reticulation sewers.

The pump station will discharge east via a proposed 200mm diameter pressure main located within the Dampier Highway Reserve to an existing Water Corporation access chamber near the intersection of Dampier Highway and Balmoral Drive. The existing pipework system will transfer effluent to the Water Corporation wastewater treatment facility located to the west of Madigan Road.

2.5.4 Stormwater

The Gap Ridge site is located within the catchment of the Seven Mile Creek and flood studies of the creek catchment during extreme (1:100 year events) have been indicated that some filling of the site will be necessary to preclude flooding.

The high intensity rainfall associated with being located in a cyclonic region requires the provision of a high capacity drainage network comprised of large open drains to cater for very high stormwater flows. These open drains will generally be located within road reserves or in some cases drainage easements within lots.

Minor storm events will be disposed by open gutter flow along road kerblines directed to open drains which will ultimately discharge into the Seven Mile Creek. This strategy is consistent with the pre development stormwater catchment regime.

2.5.5 Telecommunication

It is envisaged that Telstra's 'Smart Community' infrastructure would be provided within the development, which will allow for modern high speed digital communication to be available to all proposed lots.

2.5.6 Road Works

Main Roads have agreed in principle to the proposed access onto Dampier Highway. A full intersection is proposed to the north western end of the site which will be signalised. The location and configuration will enable extension to the east should development ultimately extend over Dampier Highway.

In the longer term (approximately 15 years) the Karratha Western Bypass, a heavy haulage route, may be constructed along the eastern boundary of the site and a flyover provided to the west bound carriageway of Dampier Highway to ensure the safe and efficient operation of the intersection of the Karratha Western Bypass Dampier Highway. The proposal shown in the Concept plan reflects the current design provided by Main Roads, although the works have not been formally considered or approved. Based on the most current advice from Main Roads the plan has maintained options for the future Karratha Western Bypass however is able to function independently as required.

The road pavement design for all roads within the subdivision will be in accordance with Shire of Roebourne requirements and incorporate specialist geotechnical investigation to cater for the existing clay subgrade conditions.

Footpaths will be provided in a limited manner on key access routes within the Light Industrial Area. No provision for footpaths has been made in the General Industrial Precinct.

2.6 Precincts

The estate has been divided into two precincts for the purpose of creating appropriate land use clusters:

- Industrial Precinct A – Light Industrial Area
- Industrial Precinct B – General Industrial Area

The broad intent is to facilitate uses which are more intensive but with limited off site impacts to the north of the estate where accessibility and exposure to Dampier Highway is highest. The southern area is intended to be preserved for large scale users, with particular emphasis on logistics operations to support resource development (off and on-shore). The table below describes the desired characteristics of the uses for each precinct.

TABLE 3 – PRECINCT CHARACTERISTICS

Factor	Precinct A	Precinct B
Lot size	▪ Require small-moderate sized allotments (2,000 m^2 to 2 ha).	▪ Require moderate-large allotments (1 ha +)
Impacts (Noise, odour, light)	▪ Do not have high impacts or require significant separation from other allotments	▪ Potential to impact on adjoining allotments or require significant separation from sensitive land uses
Exposure and Access (Damper Road/Heavy Haulage Route)	▪ Benefit from exposure to main roads, higher traffic generation	▪ Little benefit gained from exposure to main roads, but access to heavy haulage essential
Employment	▪ Moderate to high levels of staff on site	▪ Low to Moderate levels of staff on site
Hours	▪ Generally Standard Business hours	▪ Up to 24 hour / 7 day operations
Visitors	▪ Generally have a requirement for visitors as part of an ancillary wholesale, display or sales component or for business interaction	▪ Generally have low visitor numbers

2.6.1 Industry Precinct A

The Light Industry Precinct is intended to foster activities that are generally of a small scale and low impact industrial uses. The light industry area has been located in the northern portion of the estate. This has been undertaken to allow for a high level of exposure to Dampier Highway, as well as to the internal spine road.

The lot size in this precinct will vary from 3,000m^2 or less, to around 2 hectares. They are intended to be designed to provide for suitable width (30-40 minimum) and depth (70-80 minimum) for the types of uses required within the estate. In total, it is anticipated that there will be in the order of 70 lots in Precinct A.

No 'shops', 'restaurants' or 'take-away food outlets' are allowed within the estate, except on nominated service centre lot.

2.6.2 Industry Precinct B

The General Industry Precinct is intended to foster activities that generally require large areas or have significant impacts that require buffering to adjoining uses, given the high level of separation and good access to regional transport.

The lot size in this precinct will vary from 1 hectare to approximately 15 hectares. They are intended to be designed to provide for suitable widths and depths for the types of uses required within the estate and in most cases facilitate the onsite manoeuvring of triple road trains. In total, it is anticipated that there will be in the order of 40 lots.

Noxious uses will only be permitted within the 'Noxious Use' sub-precinct, located at the southern end of the estate.

2.6.3 Residential Uses

Residential uses will not be permitted within the Development Plan area unless it is accommodation provided in order to satisfy the requirements of section 48 of the *Transport Co-ordination Act 1966* being Drivers accommodation to meet fatigue management requirement for long distance truck drivers.

Facilities such as tea rooms may be provided for security personnel or other similar services that operate out of standard business hours, however they must not be provided in a manner that constitutes on-site accommodation.

2.7 Statement of Intent

2.7.1 Service Centre Site

A Service Centre site is provided at the entry to the estate, at the intersection of Dampier Highway and Exploration Drive. The centre is intended to provide amenity for the Gap Ridge Industrial Estate, allowing employees and visitors to the estate to undertake day-to-day tasks such as having a coffee, buying food and restocking basic supplies along with administrative tasks and conducting meetings (both business and informal) without the need to leave the estate given it is relatively isolated.

The Service Centre will also provide a convenience role to passing traffic along Dampier Highway. The service centre will have the capacity to service both heavy haulage vehicles as well as light commercial vehicles, caravans and cars for the purposes of refuelling and obtaining food and basic supplies.

2.7.2 Noxious Use Sub-Precinct

The Noxious Use Sub-Precinct has been created to allow for the clustering of high impact industrial uses so that they can benefit from co-location with similar or related activities within the Gap Ridge Industrial Estate, whilst being separated to an acceptable level to avoid land use conflict with low-impact uses.

Noxious uses represent an important part of any economy, particularly a resource focused one such as the Pilbara, and therefore it is important that land is available for the development of noxious uses. All Noxious Uses within the Gap Ridge Industrial Estate will be required to be located within the Noxious use sub-precinct and to demonstrate that they can manage their impacts within their own site (or to an alternative agreed acceptable level) and do not constitute a hazard to adjoining land uses.

2.8 Land Use Permissibility

The zoning table contained in the Scheme for Industrial Development defers to the applicable Development Plan.

The estate is divided into Industrials Precincts A and B as defined by the Development Plan, each having separate land use permissibility.

The symbols used in Table 4 have the same meaning as clause 3.2.2 of the Shire of Roebourne Town Planning Scheme No.8, being:

P	the development is permitted
AA	the development is not permitted unless Council has granted planning approval
SA	the development is not permitted unless Council has granted planning approval after publically advertising the application.
IP	the development is not permitted unless the use to which it is put is incidental to the predominant use as decided by Council
X	the development is not permitted

TABLE 4 – LAND USE PERMISSIBILITY

Land Use	Precinct A	Precinct B
Residential		
Aged or Dependent Persons Dwelling	X	X
Ancillary Accommodation	X	X
Caravan Park	X	X
Caretaker's Dwelling	X	X
Grouped Dwelling	X	X
Holiday Accommodation	X	X
Home Business	X	X
Home Occupation	X	X
Hotel	X	X
Motel	X	X
Multiple Dwelling	X	X
Residential Building	X	X
Park Home Park	X	X
Residential Building	X	X
Rural Settlement	X	X
Serviced Apartment	X	X
Short Stay Accommodation	X	X
Single House	X	X
Tourist Resort	X	X
Transient Workforce Accommodation	X	X
Industry		
Abattoir	X	AA
Aerodrome	X	SA
Agriculture	X	X
Intensive Agriculture	X	X
Harbour Installation	X	AA
Hire Service (Industrial)	P	P
Industry - Extractive	X	X
Industry - General	AA	AA
Industry - Light	P	AA

Industry - Noxious	X	X[%]
Industry - Rural	P	P
Industry - Service	P	AA
Industry - Resource Processing	X	P
Road Freight Terminal	AA	AA
Stockyard	X	X
Storage facility/depot/laydown area	P	P
Commerce		
Animal Establishment	X	X
Display Home	X	X
Dry Cleaning Premises	AA	X
Market	X	X
Motor Vehicle and/or Marine Repair	P	AA
Motor Vehicle and/or Marine Sales or Hire	P	AA
Motor Vehicle and/or Marine Service Station	X*	X
Motor Vehicle and/or Marine Wrecking	P	P
Motor Vehicle Wash	P	IP
Office	AA	IP
On-site Canteen	IP	IP
Outdoor Display	P	AA
Reception Centre	X	X
Restaurant	X*	X
Restricted Premises	X	X
Shop	X*	X
Showroom	X	X
Take-away Food Outlet	X*	X
Vehicle Store	P	P
Warehouse	P	P
Health, Welfare & Community Services		
Carpark	X	X
Child Care Premises	X	X
Community Use	X	X
Consulting Rooms	X	X
Corrective Institution	X	X
Education Establishment	X	X
Emergency Services	P	P
Funeral Parlour	X	X
Hospital	X	X
Juvenile Detention Centre	X	X
Medical Centre	X	X
Nursing Home	X	X
Place of Public Meeting, Assembly or Worship	X	X
Minor Utility Installation	P	P
Utility Installation	AA	AA
Veterinary Centre	P	X
Entertainment, Recreation and Culture		
Equestrian Centre	X	X
Entertainment Venue	X	X
Marina	X	X
Private Recreation	X	X
Public Recreation	X	X
Tavern	X	X

Miscellaneous		
Driver's Accommodation	IP#	IP#
Factory Unit Development	P	P
Wind Energy Facility	P	P

* except on the service centre lot where it is a 'P' use

only where accommodation provided in conjunction with a road freight terminal and is used to satisfy the fatigue management provision of the Transport Coordination Act 1966, and the accommodation is not used for more 24 hours by any single individual in a week.

% except where located within the 'Noxious Industry' sub-precinct, where it is a 'AA' use.

2.9 Implementation and Staging

It is proposed that the development of the estate will occur in six stages. The staging may be further broken up or accelerated, dependant upon market demand.

TABLE 5 – STAGING PLAN

Stage	Total Area (ha)	Lots (No.)	Lot Area (ha)	Average Lot Size (ha)
1	98.60	34	69.56	2.05
2	10.09	23	6.52	0.28
3	34.62	10	27.09	2.71
4	14.43	9	8.79	0.98
5	58.45	48	45.01	0.94
6	40.42	5	37.27	7.45
TOTAL	**256.61**	**129**	**194.24**	**1.51**

Staging of the development of the estate has been proposed to ensure an adequate provision of industrial land and to achieve the desired form and function of the estate in a rational manner to avoid ad-hoc development.

The stages have been planned to ensure that appropriate sized lots are created as they are needed. Proposed Stage 1 contains lots in both Precinct A and B, with a mix of sizes to ensure that a good cross section of the estate is opened up. The lots fronting Dampier Highway are subject to the relocation of the 132kv line as part of the upgrade process, therefore the staging plan has allowed for stages 1 and 2 to be development before the works to this line are completed. The largest lots at the southern end of the estate will be developed last, length to which services need to be extended, as well as the distance from the entry to the estate, which will be at the traffic lit intersection, until the future Karratha Western Bypass has been constructed.

Changing market conditions and land supply considerations may alter the proposed staging.

Refer Staging plan attached at Appendix C.

2.10 Conclusion

The Development Plan for Gap Ridge Industrial Estate sets out a development framework that is structured to respond to:

- the statutory requirements of Council and WAPC;
- the physical characteristics, opportunities and constraints of the site;
- lot and location requirements of the industries which are to be accommodated;
- immediate and long term access requirements; and
- the logical and feasible staging and development of the land.

The Development Plan provides the basis for the achievement of a positive development outcome for the subject site. On maturity, the estate will provide for over 100 allotments of varied nature, to ensure that the existing gap in the provision of Industrial land supply is adequately addressed. It will also improve the distribution of industrial land across the Karratha, improving the synergies with associated land uses. The estate will directly improve the efficiency of the operation of the Burrup and the associated off-shore works that are currently occurring or planned.

The Development Plan provides a robust framework which enables timely and responsive land delivery whilst enabling clarity on the key components associated with land use intensity, servicing, drainage and key road networks.

Appendix A Development Plan

KEY:

- SUBJECT LAND
- INDUSTRIAL PRECINCT (A - RESTRICTED USE REFER PART 1 - OPERATIVE PART)
- INDUSTRIAL PRECINCT (B - RESTRICTED USE REFER PART 1 - OPERATIVE PART)
- NOXIOUS USES SUB-PRECINCT
- PARKS, RECREATION AND DRAINAGE
- POTENTIAL FUTURE BY-PASS ROAD - SUBJECT TO MRWA
- FUTURE ROADS TO BE CONSTRUCTED FOLLOWING INTRODUCTION OF BY-PASS ROAD
- AIRPORT OBSTACLE HEIGHT RESTRICTION SCA
- AIRPORT NOISE RESTRICTION SCA
- (SC) PROPOSED SERVICE CENTRE SITE TO INCLUDE PROVISION FOR ROAD TRAINS
- (TB) INDICATIVE LOCATION FOR TRUCK BREAKDOWN AREA

NB: ROAD RESERVE WIDTHS INDICATIVE ONLY

DRAINAGE
45M ROAD RESERVE
SC
35M ROAD RESERVE
26M ROAD RESERVE
DAMPIER HIGHWAY
DRAINAGE
ACCESS TO RIO TINTO SEVEN MILES FACILITIES
A
52M ROAD RESERVE
P.O.S. & DRAINAGE
TB
42M ROAD RESERVE
47M ROAD RESERVE
INTRIM ACCESS AND INTERSECTION (LEFT IN LEFT OUT) WITH DAMPIER HIGHWAY TO BE REMOVED AS PART OF CONSTRUCTION OF FUTURE BY-PASS ROAD
26M ROAD RESERVE
42M ROAD RESERVE
52M ROAD RESERVE
POTENTIAL FUTURE BY-PASS ROAD
DRAINAGE
DRAINAGE
DRAINAGE
47M ROAD RESERVE
45M ROAD RESERVE
DRAINAGE
42M ROAD RESERVE
B
52M ROAD RESERVE
FUTURE CONNECTIONS TO POTENTIAL BY-PASS ROAD
DRAINAGE
40M ROAD RESERVE
42M ROAD RESERVE
45M ROAD RESERVE
DRAINAGE
DRAINAGE
40M ROAD RESERVE
FUTURE CONNECTION TO POTENTIAL BY-PASS ROAD
ACCESS TO SEVEN MILE ROAD
LANDFILL SITE

DEVELOPMENT PLAN

GAP RIDGE INDUSTRIAL ESTATE

DATE 18.03.2013 | DWG NO 001 | REV K | SCALE 1:5000 @ A1

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Appendix B Development Concept

KEY:

- GAP RIDGE INDUSTRIAL ESTATE
- LIGHT INDUSTRIAL ZONE
- GENERAL INDUSTRIAL ZONE
- NOXIOUS USES SUB-PRECINCT
- 132 KV POWER LINE AND EASEMENT
- DRAINAGE
- 1 IN 100 YEAR FLOOD PLAIN
- TRAFFIC LIGHT CONTROLLED AREA
- ❶ LANDSCAPED ENTRY STATEMENT
- ❷ SERVICE CENTRE SITE WITH PROVISION FOR ROAD TRAIN ASSEMBLY
- ❸ TRUCK BREAK DOWN AREA
- ❹ DETENTION BASE

Design Parameters:

Power
- 132Kv power lines relocated to the edge of the Dampier Road Reserve on a single pole configuration, with a minimum 20 metre easement, 10 of which is accommodated within the Damper Road Reservation;
- No drainage within the Horizon Power Easement;
- Substation site provided adjacent to Dampier Highway.

Drainage
- Cut off drains provided at the rear of the lots, which will carry the stormwater into the roadside drainage network;
- Drainage provided through the site into outflow points that will subsequently drain into the Seven Mile Creek;
- The number of crossovers over road side swales is limited through the orientating of lots

Traffic and Access
- Access maintained to the land fill site in a logical and direct manner;
- Access maintained to the Rio Tinto section of Seven Mile Road;
- Access provided to the Rio Tinto Seven Mile railway facility to the west;
- The number of 4 ways intersections is limited;
- The estate serviced by a central spine road to maximise legibility and accessibility;
- Road network relates to landform and drainage system requirements;
- Initially the access into the estate will be provided via the northern most access. This access onto Dampier Road will be controlled by traffic lights and may be converted to a four way intersection in the future;
- All internal roads designed to enable circulation for triple road trains;
- Clearly marked entry statements promote sense of arrival into the estate;
- The service centre positioned to provide a high level of accessibility and exposure initially and after the introduction of the heavy haulage route.

End user requirements
- Lots designed with high degree of flexibility to enable them to be amalgamated or further divided if required;
- The estate partitioned into two precincts to cluster complementary uses and provide exposure to lots from Dampier Road.

DAMPIER HIGHWAY

ACCESS TO RIO TINTO SEVEN MILES FACILITIES

INTRIM ACCESS AND INTERSECTION (LEFT IN LEFT OUT) WITH DAMPIER HIGHWAY TO BE REMOVED AS PART OF CONSTRUCTION OF FUTURE BY-PASS ROAD

ACCESS TO SEVEN MILE ROAD

ACCESS TO LANDFILL SITE

DRAFT DESIGN CONCEPT

GAP RIDGE INDUSTRIAL ESTATE

DATE 15.03.2013 | DWG NO 002 | REV D | SCALE 1:5000

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Appendix C Indicative Staging Plan

KEY:

GAP RIDGE INDUSTRIAL ESTATE
TOTAL AREA: *267.59 ha*

STAGE 1
TOTAL AREA: 98.60 ha
NO. LOTS: 34
LOT AREA: 69.56 ha
AVERAGE LOT SIZE: 2.05 ha

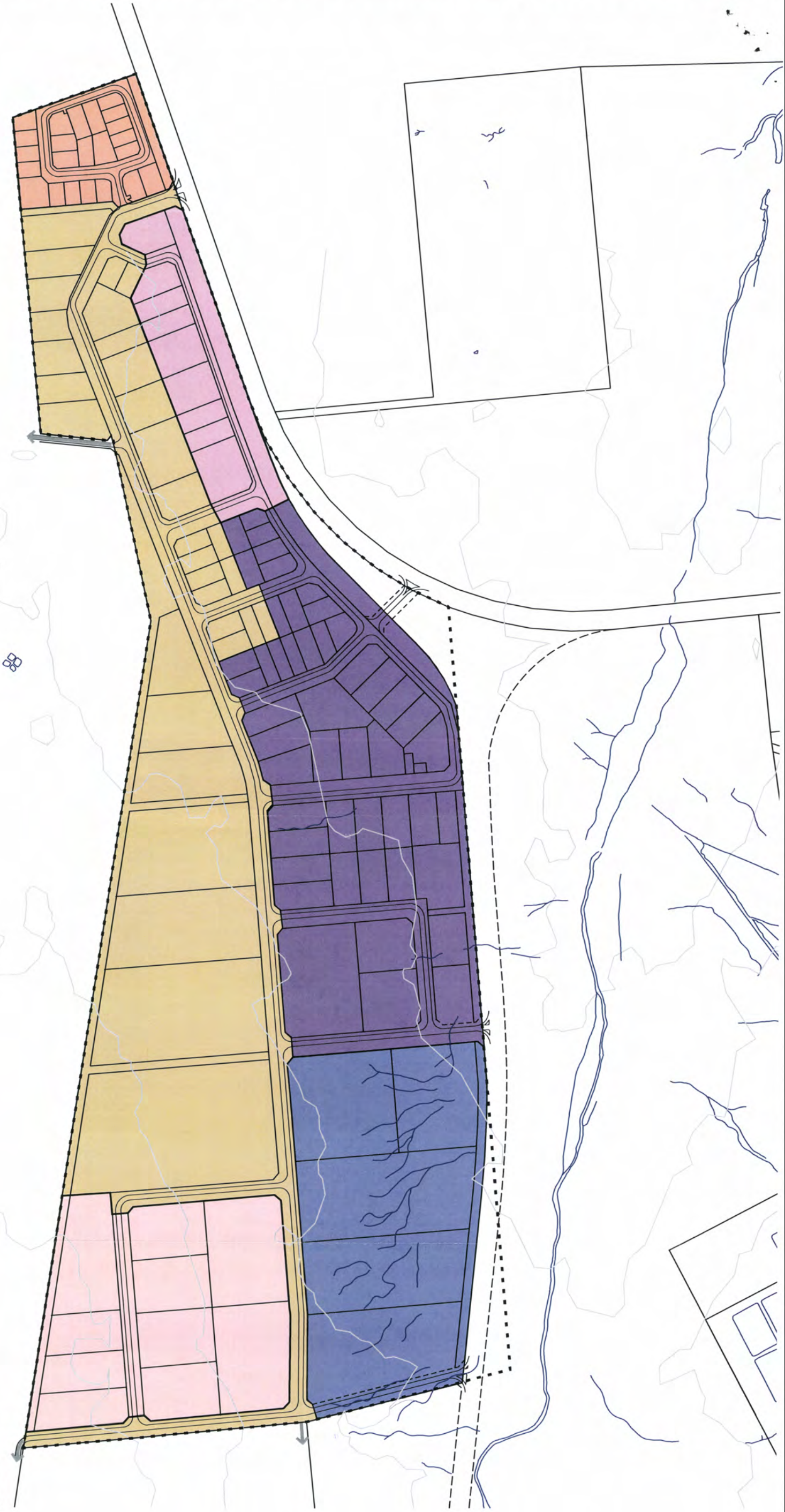
STAGE 2
TOTAL AREA: 10.09 ha
NO. LOTS: 23
LOT AREA: 6.52 ha
AVERAGE LOT SIZE: 0.28 ha

STAGE 3
TOTAL AREA: 34.62 ha
NO. LOTS: 10
LOT AREA: 27.09 ha
AVERAGE LOT SIZE: 2.71 ha

STAGE 4
TOTAL AREA: 14.43 ha
NO. LOTS: 9
LOT AREA: 8.79 ha
AVERAGE LOT SIZE: 0.98 ha

STAGE 5
TOTAL AREA: 58.45 ha
NO. LOTS: 48
LOT AREA: 45.01 ha
AVERAGE LOT SIZE: 0.94 ha

STAGE 6
TOTAL AREA: 40.42 ha
NO. LOTS: 5
LOT AREA: 37.27 ha
AVERAGE LOT SIZE: 7.45 ha



INDICATIVE STAGING PLAN

GAP RIDGE INDUSTRIAL ESTATE

DATE 15.03.2013 | DWG NO 003 | REV F | SCALE 1:5000

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