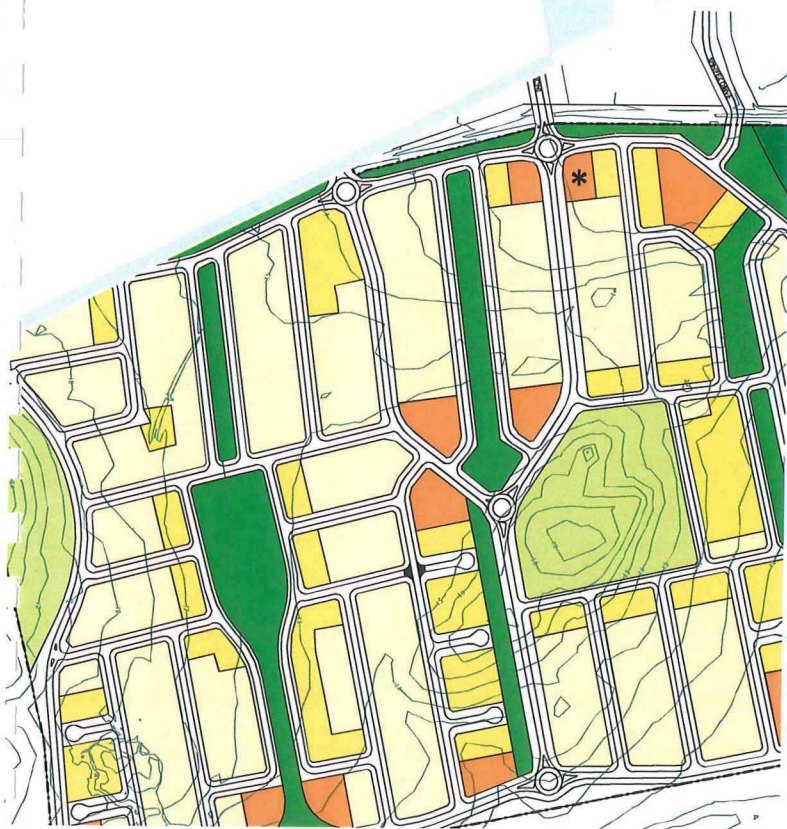


# Wickham South Development Plan

September 2012

Prepared for  
Rio Tinto



**Taylor Burrell Barnett**  
Town Planning & Design

DEPARTMENT OF PLANNING

19 OCT 2012

FILE SPN/0230

## **ENDORSEMENT PAGE**

This structure plan is prepared under the provisions of the City of Karratha  
Local Planning Scheme No.8

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE  
WESTERN AUSTRALIAN PLANNING COMMISSION ON:

**15 NOVEMBER 2012**

In accordance with Schedule 2, Part 4, Clause 28 (2) and refer to Part 1, 2. (b) of the  
*Planning and Development (Local Planning Schemes) Regulations 2015.*

Date of Expiry:

**19 OCTOBER 2035**

# **Wickham South Development Plan**

**September 2012**

Prepared for  
**Rio Tinto**

## DOCUMENT HISTORY AND STATUS

Wickham South Development Plan (08/073)		Revision	Reviewer	Date Issued
Prepared By:	<b>Taylor Burrell Barnett</b> 187 Roberts Road SUBIACO WA 6008 Phone: 9382 2911 Fax: 9382 4586 admin@tbbplanning.com.au	0	RC	05.10.10
		1	RC	14.10.10
		2	RC	20.10.10
		3	RC	17.11.10
In association with:	<b>Thinc Projects</b> <b>Shawmac</b> <b>SKM</b> <b>SVT</b> <b>Creating Communities</b> <b>Pracsys</b> <b>Serling Consulting</b> <b>Biota</b> <b>Tim Davies Landscaping</b>	4	LM	08.02.11
		5	LM	16.02.11
		6	RC	22.11.11
		7	LM	17.09.12



## TABLE OF MODIFICATIONS TO WICKHAM SOUTH DEVELOPMENT PLAN

Modification No.	Description of Modification	Endorsed by Council	Endorsed by WAPC
1.	1.1 Replace Development Plan (Part One)	19 Mar 2012	5 Jun 2012
	1.2 Replace Figure 3 – Public Open Space and Drainage Provision		
	1.3 Replace Table 3 – POS Schedule		
	1.4 Replace Figure 5 – Subdivision Concept Plan		
	1.5 Replace Figure 6 – Staging Plan		
2	2.1 Replace Development Plan (Part One)	20 Aug 2012	
	2.2 Replace Figure 3 – Public Open Space and Drainage Provision		
	2.3 Replace Table 3 – POS Schedule		
	2.4 Replace Figure 5 – Subdivision Concept Plan		
	2.5 Replace Figure 6 – Staging Plan		

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- Figure 2 Issues and Opportunities – Development Plan Area
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- Figure 4 Indicative Drainage Swale Abutting Residential Lots
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## APPENDICES

### APPENDIX A Native Title Claim and Determination for Wickham – NNTT and Federal Court



# PART 1

## 1 DEVELOPMENT PLAN STATUTORY PLANNING CONTROL

### 1.1 INTRODUCTION

This Development Plan has been prepared for Rio Tinto over the portion of land zoned 'Urban Development' in the Shire of Roebourne Town Planning Scheme No.8 (TPS 8) known as 'Wickham South' (the subject site). The primary purpose of the Development Plan being to facilitate permanent residential development in order to accommodate employees required as part of Rio Tinto's proposed expansion of their Cape Lambert Operations.

This Development Plan has been prepared in accordance with the provisions of Section 6.4 of TPS 8. Through the use of graphics and supporting technical data, the Development Plan recommends the preferred:

-  pattern of land use;
-  network and hierarchy of roads;
-  Public Open Space network; and
-  servicing strategy for the area.

Once endorsed, the Development Plan will become the reference document for all future development within Wickham South.

### 1.2 DEVELOPMENT PLAN STRUCTURE

For ease of future reference, this Development Plan report has been divided into two parts:

-  Part 1 – Development Plan – Statutory Planning Controls
-  Part 2 – Explanatory Report including Appendices

This structure will facilitate the identification and assessment of the statutory components of the Development Plan and will also assist in the future assessment of subdivision and development proposals which fall within the Development Plan area.





THE CONSTRUCTION OF CARSE STREET EXTENSION WITHIN THE DEPARTMENT OF EDUCATION LAND WILL BE SUBJECT TO THE APPROVAL OF THE DEPARTMENT OF EDUCATION

ADOPTION TABLE

	plan date	adopted by council	adopted by WAPC
DEVELOPMENT PLAN	01/02/2011	21/3/2011	28/06/11
DEVELOPMENT PLAN AMENDMENT (1)	18/10/11	19/03/2012	05/06/2012
DEVELOPMENT PLAN AMENDMENT (2)	25/06/12	20/08/2012	-

DWELLING YIELD SUMMARY

Density	No. of Dwellings	% Total Lots
Low Density R20	357	62.85
Medium Density R30	123	21.65
Medium Density R40 (Grouped Housing)	88	15.49
<b>Total</b>	<b>568</b>	<b>100%</b>

LEGEND

- DEVELOPMENT PLAN BOUNDARY
- RESIDENTIAL R20
- RESIDENTIAL R30
- RESIDENTIAL R40
- PUBLIC OPEN SPACE
- PUBLIC OPEN SPACE & DRAINAGE
- UTILITIES
- \* INDICATIVE LOCATION FOR POSSIBLE SHOP (LOCAL CONVENIENCE NEEDS) SITE

**DEVELOPMENT PLAN (AMENDED)**  
Wickham South Development Plan  
A Rio Tinto Project

N 0m 20 40 60m  
s: 1:4000@A3  
d: 17/09/2012  
p: 08/073/0581

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## Wickham South Development Plan

### 2 DEVELOPMENT PLAN AREA

This Development Plan shall apply to the land contained within the Wickham South Urban Development zoned area.

The Development Plan area comprises approximately 72.99 ha with the Title particulars consisting of the following:

**TABLE 1: TITLE PARTICULARS**

Lot Number	Plan Number	Volume/Folio	Interest	Primary Interest Holder	Area (hectares)
284	DP 214781	LR3139 / 88	Leasehold	RRJV	4.599
286	DP 214781	LR3139 / 89	Leasehold	RRJV	5.148
287	DP 214781	LR3139 / 90	Leasehold	RRJV	0.312
786	DP 31274	LR3131 / 216	Leasehold	RRJV	12.094
787	DP 31274	LR3131 / 217	Leasehold	RRJV	45.077
788 (part)	DP 31274	LR3131 / 218	Leasehold	RRJV	0.842
789	DP 31274	LR3131 / 219	Leasehold	RRJV	0.019
790	DP 31274	LR3131 / 220	Leasehold	RRJV	0.013

- Note:*
1. The Development Plan area also includes portions of existing and closed road reserves
  2. Areas are approximate only and subject to survey

Refer to **Development Plan** attached which depicts the application area boundary.

### 3 RELATIONSHIP WITH THE SCHEME

'Development Plan' is defined by TPS 8 as:

*"plans which address the schematic layout of proposed development and lot boundaries in addition to various other matters as may be required by the Scheme and includes local structure plans, outline or comprehensive development plans."*

This Development Plan has been prepared to satisfy Clause 6.4.1 of TPS 8 which states:

*"Before considering any proposal for subdivision or development of land within the Urban Development Zone, the Council may require the preparation of a Development Plan for the development area or any part or parts as is considered appropriate by Council."*

In addition to the above, development may only be permitted within the Urban Development zone when a Development Plan has been adopted. In this regard Clause 3.2.3 of TPS 8 states:

*"Notwithstanding the provisions of 3.2.2, development may only be permitted within the Urban Development and Industrial Zones where:*

- (a) a Development Plan has been adopted for the subject land and the development is in accordance with the plan; or*
- (b) Council has resolved that a Development Plan is not required."*

Unless provided for within this Development Plan, all land use and development shall accord to the provisions of TPS 8.

#### 3.1 CONTROL OF RESIDENTIAL DENSITY

This Development Plan controls the residential density allocation for the land that is zoned Urban Development. Clause 6.2.5 of TPS 8 states:

*"The density for residential development on land not within the Residential zone shall be determined by Development Plans where approved in accordance with the Scheme."*








#### 3.2 FUTURE LAND USE AND ZONING IMPLEMENTATION

Following the clear defining of zones and reservations through subdivision and development in accordance with the Development Plan, the Council shall amend TPS 8 to zone the land to reflect land use allocation depicted on the Development Plan. In this regard Clause 6.4.7 of TPS 8 states:





*"Council shall, when it considers subdivision and development in an area the subject of a development plan has proceeded to an extent where detailed zones and reservations can be defined, amend the Scheme to indicate these zones and reservations."*

## **4 DEVELOPMENT PLAN PRINCIPLES**




### **4.1 MOVEMENT**

-  The street network should have a high level of connectivity and be responsive to the site's characteristics.
-  Higher-order streets should provide easily-understood access to key land-use nodes and destinations.
-  Lower-order streets should enable easy movement throughout the area, whilst also providing opportunities for quieter residential street environments.
-  Streets should be aligned to focus on points of interest, and provide direct links between land use and landscape features.
-  Safe, pleasant and effective pedestrian and cycle movement should be provided through the street and open space fabric.
-  The creation of street connections between the Development Plan area and the Town Centre should be optimised.
-  Connections to Roebourne – Point Samson Road should be optimised to enable the effective distribution of traffic to and through the Development Plan area.

### **4.2 PUBLIC OPEN SPACE**

-  A variety of POS areas should be provided, to enable a diversity of outdoor activities and experiences.
-  Key high points and steep slopes should be integrated into POS as landscape features.
-  Flat areas of POS should be provided for passive and active recreation, and for drainage purposes.
-  Drainage lines and streets should be designed to create linear landscape links between POS areas, and provide amenity to support the provision of medium-density residential living.





### **4.3 LAND USE**

-  Provide a diversity of low and medium-density housing opportunities throughout the Development Plan area.
-  Optimise the location of medium-density residential in close proximity to POS amenity and key community facilities.
-  Provide the opportunity for the establishment of local convenience retail in a location that supports business sustainability and optimises the 'walkable catchment' of residents.

## 5 SHIRE OF ROEBOURNE TOWN PLANNING SCHEME NO. 8

### 5.1 LAND USE PERMISSIBILITY

Land use permissibility within the Development Zone is provided for under the Zoning Table of TPS 8. The Zoning Table lists the permissibility of land use as either of the following:




-  P – the development is permitted by the Scheme.
-  AA – the development is not permitted unless the Council has granted planning approval.
-  SA – the development is not permitted unless the Council has granted planning after giving notice in accordance with Clause 4.3.
-  IP – the development is not permitted unless the use to which it is put is incidental to the predominant use as decided by Council.

All land use permissibility within the Development Plan area shall be controlled in accordance with Clause 3.2 and the Zoning Table of TPS 8.

### 5.2 RESIDENTIAL DENSITY

In accordance with Clause 6.2.3 of TPS 8 all residential development within the Development Plan area shall conform to the provisions of the Residential Design Codes of Western Australia (R Codes).

Residential densities contained within the Development Plan include:

-  R20;
-  R30; and
-  R40.



# PART 2



## 1 SITE OVERVIEW

### 1.1 SITE DESCRIPTION

The Wickham Townsite is located immediately inland from the Pilbara coast and is sited on gently undulating Spinifex plains. The developed part of town is relatively flat, with the hills to the west and north, in particular, forming a spectacular backdrop to the town.

The subject site is vacant undeveloped land that contains two minor ridges in the central and north-east portions of the site (refer **Figure 1** – Local Context). The subject site is bound by existing residential development and education facilities to the north, Walcott Drive unconstructed road reserve to the west, vacant rural land to the south and Roebourne – Point Samson Road to the east.

### 1.2 HISTORICAL CONTEXT AND LAND TENURE

Wickham was constructed as a company town in 1972 to support operations at Robe River Iron Associates' (RRIA) Cape Lambert port facility. RRIA initially constructed all facilities and infrastructure in the town and the company provided the resources and management necessary to operate the town. Rio Tinto, which took over management and operational control of the extensive company assets of RRIA in 2000, now operates the Cape Lambert iron ore processing and shipping operation and has taken over RRIA's management role within the town.

Historically, the town was created on Crown land under Special Lease granted pursuant to the rights and obligations under the *Iron Ore (Robe River) Agreement Act, 1964*. The subject site falls within the Special Lease area.







## 2 ANALYSIS OF ISSUES AND OPPORTUNITIES

An assessment and analysis of the issues and opportunities for the development of Wickham South was undertaken in order to inform the preparation of the Development Plan. These are summaries in the twelve (12) points below under the headings: Movement Network, Public Open Space Network and Land Use and illustrated in **Figure 2 - Issues and Opportunities**.

### 2.1 MOVEMENT NETWORK

The key issues and opportunities for the movement network in the Development Plan area are:

1. The extension of Walcott Drive through to the highway is an opportunity to complete a key local distributor linkage for the town.
2. The connection of Spinifex Drive to the Walcott Drive extension is an opportunity to provide an eastern connection to the town centre and high school site.
3. The provision of a central north-south link road is important for effective traffic movement in the Development Plan area, and could form part of a possible link to Wickham Drive, the Town Centre and the primary school.
4. The extension of Carse Street past the primary school would provide a highly beneficial connection to the Town Centre and recreation centre for existing and future residents.
5. The development of the Development Plan area provides the opportunity to create the first available east-west link south of Wickham Drive that connects Walcott Drive and the highway.

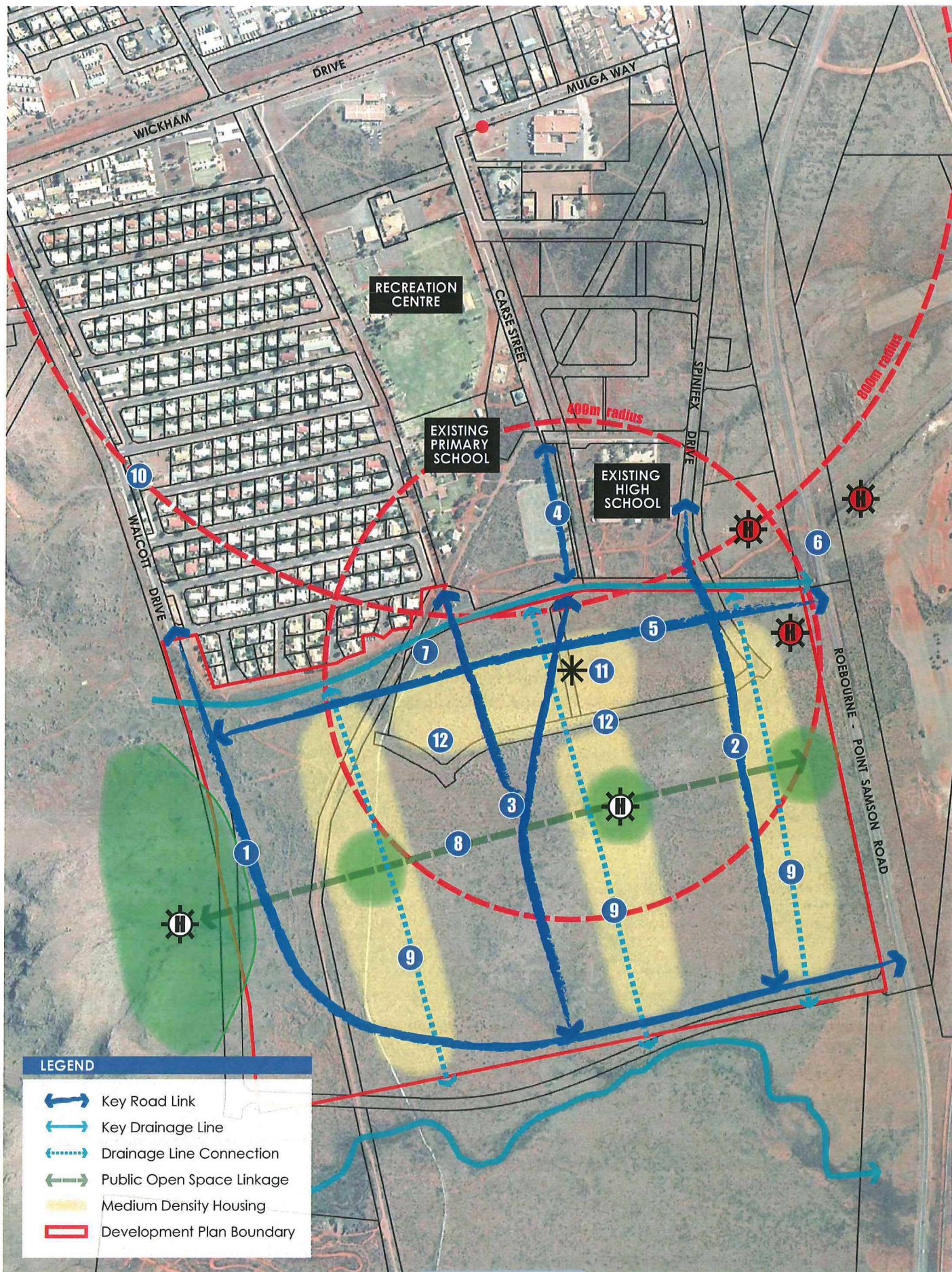
### 2.2 PUBLIC OPEN SPACE NETWORK

6. The arrangement of outcrops adjacent to the highway creates a potential landform gateway to the Development Plan area.
7. The existing drain that has been informally designed to capture hillside runoff needs to be improved, and has the opportunity to become an appealing east-west linear park.
8. An opportunity exists to create a connected arrangement of central open spaces that contain a variety of raised and flat landform and recreation features.
9. The site levels essentially fall from west to east, which requires a system of north-south drainage lines and POS that can efficiently convey stormwater runoff to the key west-east drainage corridors.

### 2.3 LAND USE

10. The theoretical 800 m/ten minute 'walkable catchment' boundary from the Town Centre extends up to the northern edge of the Development Plan area. The opportunity exists to consider the provision of local convenience retail that is within 400 m/five minute walk for residents in the Development Plan area.
11. The economic sustainability of a local convenience retail facility would benefit most from a location at the confluence of two well-integrated roads.
12. The appeal and effectiveness of medium-density housing will be best served by being located in close proximity to open space amenity and facilities within a convenient walking distance.





# ISSUES AND OPPORTUNITIES PLAN - DEVELOPMENT PLAN AREA Wickham South Development Plan

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s: 1:8000@A4  
d: Feb 2011  
j: 08/073






### 3 LAND USE DISTRIBUTION AND RATIONALE

#### 3.1 RESIDENTIAL DENSITY AND DWELLING YIELDS

In accordance with Clause 6.2.3 of TPS 8 all residential development provided for within the Development Plan shall be developed in conformity with the provisions of the R Codes. The Development Plan depicts the Residential Density Codes that apply to the subject site.

The Development Plan, included in Part 1 of this report, depicts the land use and residential density proposed for the land. In accordance with the Development Plan, the development of the subject site will permit the creation of a range of residential densities within 'Residential' areas, as follows:







-  R20;
-  R30; and
-  R40.

The Development Plan generally provides for residential land uses and the provision of open space and drainage areas consistent with a traditional residential neighbourhood. In this regard a mix of lower and medium residential densities have been provided and distributed in accordance with the recommendations of the WAPC's Liveable Neighbourhoods operational policy whilst taking into consideration existing subdivision layout within the town and other site characteristics. The application of a range of residential densities will facilitate the construction of various housing types. A breakdown of possible dwelling yield and density allocation is contained within **Table 2**.

**TABLE 2: INDICATIVE DWELLING YIELD AND DENSITY ALLOCATION - WICKHAM SOUTH DEVELOPMENT PLAN**

Density	Number of Dwellings	Percentage of Total Number of Dwellings
Low Density R20	426	57.73%
Medium Density R30 (Single and Grouped Dwellings)	166	22.49%
Medium Density R40 (Grouped Dwellings)	146	19.78%
<b>Total</b>	<b>738</b>	<b>100%</b>









The base residential density applied to the Development Plan is R20 which provides for a minimum lot size of 440m<sup>2</sup> and an average lot size of 500m<sup>2</sup>, providing for the bulk of the housing product for the subject site. Medium density coded areas include land coded R30, which provides for a minimum lot size of 270m<sup>2</sup> and an average lot size of 300m<sup>2</sup>, and R40 (Grouped Housing), which provides for a minimum lot size of 200m<sup>2</sup> and an average lot size of 220m<sup>2</sup>. The distribution of medium density coded areas is based on the following:

-  along higher order streets which provide convenient access to neighbourhood, town and regional road systems linking to the Wickham Town Centre, primary school, recreational areas etc;
-  adjacent and opposite to areas of high amenity (i.e. POS);
-  adjacent and opposite to points of interest (i.e. topographical features);
-  for amenity purposes, adjacent and opposite to landscaped drainage reserves;
-  to provide grouped housing sites which are distributed throughout the subject site facilitating affordable housing opportunities; and
-  within the theoretical 400m/five minute 'walkable catchment' boundary from local convenience retail.

### 3.2 PUBLIC OPEN SPACE

POS has been provided in various locations on the Development Plan. **Figure 3 – POS and Drainage Provision** identifies these sites that are further detailed in **Table 3**.

The provision and distribution of POS throughout the Development Plan area is based on the following:

-  topographical features;
-  even distribution to provide convenient accessibility to residents;
-  accessed via a series of highly connected higher and lower order streets to promote maximum use;
-  to consolidate drainage reserves;
-  to consolidate and round-off existing Parks, Recreation and Drainage reserved land;
-  to provide useable areas of POS generally for passive recreational purposes;
-  to provide high levels of amenity for residents by generally locating medium density housing to front areas of POS; and
-  landscaped streets and drainage reserves that will provide links between areas of POS.

POS areas will be landscaped and developed by Rio Tinto as part of the subdivision of the land to provide high levels of amenity for residents from the point of occupancy of the dwellings. Landscaping plans will be provided to the Shire at the subdivision stage. Where sites are identified for passive recreation, natural vegetation is to be retained and/or rehabilitated where possible.

**TABLE 3: PUBLIC OPEN SPACE SCHEDULE - WICKHAM SOUTH DEVELOPMENT PLAN**

<b>Gross Site Area (ha)</b>		<b>72.99 ha</b>
<b>Deductions</b>		
Drainage Basins/Reserves	5.4799	
Existing Parks, Recreation and Drainage (Local Reserve under TPS 8)	1.3426	
<b>Total Deductions</b>	<b>6.8225</b>	
Gross Subdivisible Area		66.18 ha
<b>Required Public Open Space (10%)</b>		<b>6.618 ha</b>
<b>Public Open Space Requirements</b>		
Unrestricted public open space – minimum 80%	5.2944	
Restricted public open space – maximum 20%	1.3236	
<b>Total</b>		<b>6.618 ha</b>
<b>PUBLIC OPEN SPACE PROVISION</b>		
<b>Unrestricted Public Open Space</b>		
POS 1	1.9435	
POS 2	1.1642	
POS 3	0.4233	
POS 4	0.9074	
POS 5	0.3094	
POS 6	0.2055	
POS 7	3.2648	
POS 8	6.0052	
<b>Total Unrestricted Public Open Space</b>		<b>14.2233 ha</b>
<b>Restricted Public Open Space</b>		
Note – All Drainage Basins / Reserves not depicted as POS	0.0000	
<b>Total Restricted Public Open Space</b>		<b>0.000</b>
<b>Total Public Open Space</b>		<b>14.2233 ha</b>
<b>Percentage of Credited Public Open Space Provided</b>		<b>19.49%</b>
(Unrestricted POS Contribution)		



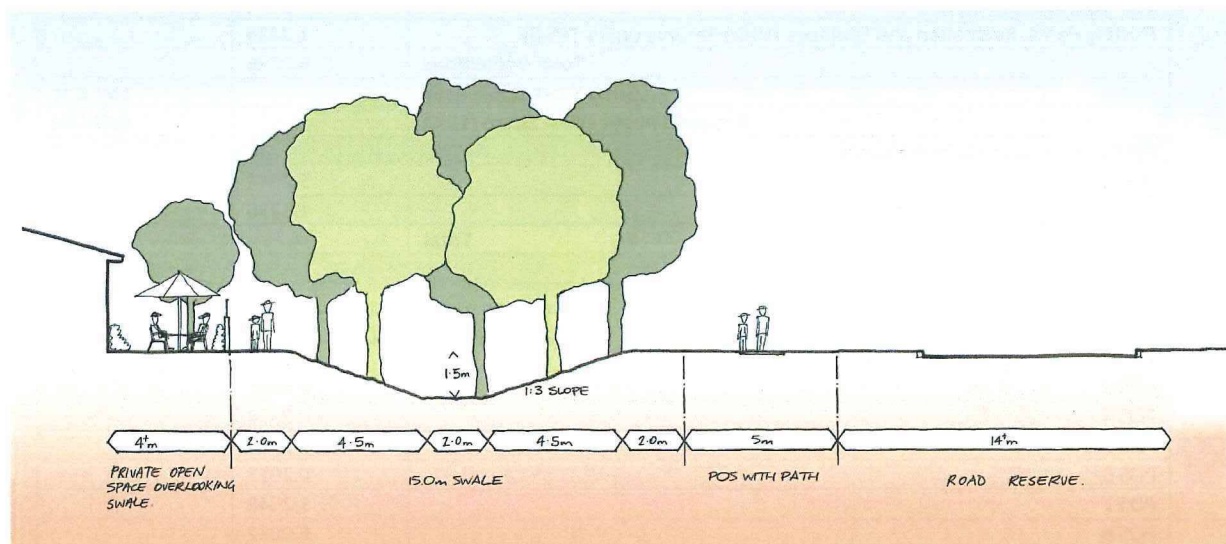
Drainage and POS reserves have been separated on the POS and Drainage Provision plan. As a consequence, no credit has been sought for drainage reserves within the POS calculation provided in **Table 3**.

### 3.3 OTHER LAND USES

As mentioned earlier, land use allocation is generally based on providing a residential and open space subdivision with little application of other land uses; this is based on the existing small residential population associated with Wickham and not prejudicing existing business opportunities located within the town. To acknowledge the recommendations of key WAPC operational policies, such as Liveable Neighbourhoods, a grouped dwelling site, with a Residential R40 density code, has been identified for potential small scale commercial development to service local convenient retail needs within the Development Plan area.

A diversity of formalised open space areas will be provided throughout the Development Plan area, which may include fenced infant play areas, kick-about spaces, fitness track and fitness stations and shade structures. Completing these formal open space areas will be areas for passive recreation, where efforts will be made to retain and enhance natural vegetation and topography, where possible.

**Figure 4 – Indicative Drainage Swale Abutting Residential Lots** depicts an indicative crosssection of a drainage swale and demonstrates the interface with abutting residential development (i.e. ensuring passive surveillance etc). Drainage areas will provide an important infrastructure use associated with the road network, but will also be landscaped to provide key areas of amenity throughout the subject site and will be developed in accordance with contemporary water management practises. It is proposed to incorporate POS along the edges of the drainage system to facilitate additional landscaping and pedestrian access for amenity purposes.



**Figure 4 – Indicative Drainage Swale Abutting Residential Lots**











## **4 MOVEMENT NETWORK**

Shawmac consulting civil and traffic engineers, risk managers has undertaken a traffic review of the extension of the Wickham Townsite based on the land use distribution and subdivision layout depicted on the Development Plan. Shawmac has also provided comment on whether infrastructure upgrades are necessary as a result of the additional traffic to be generated from the Development Plan. Shawmac's review included the following:

-  Modelling design flows (generation and assignment) for the proposed extension and preparation of:
  - a road hierarchy plan;
  - a traffic volume plan; and
  - an intersection treatment plan;
-  Recommendation for pedestrian and cycle networks;
-  Consideration of the impact of additional traffic on access points to Roebourne – Point Samson Road; and
-  Provide general commentary on the overall expansion of the Townsite.

### **4.1 STRUCTURE AND ACCESS**

The Development Plan proposes to extend the existing Wickham road system including Walcott Drive, Carse Street and Spinifex Drive. Access from the local road network within the Development Plan area will also be provided to Roebourne – Point Samson Road. The extension of Carse Street will require the approval of the Department of Education as its extension is proposed through land under the control of the Department. Discussions with the Department of Education have commenced regarding access arrangements around the primary school. A series of higher and lower order roads will be provided throughout the Development Plan area, linking to the roads referred to above.

The town is currently accessed from a main connection to Roebourne – Point Sampson Road at Wickham Drive and a minor connection at Hakea Road. Wickham Drive is currently constructed as a kerbed two lane sealed road with a pavement width of approximately 7.4 m. Roebourne – Point Sampson Road is similarly constructed as an unkerbed two lane sealed road with a pavement width of approximately 7.0 m with sealed and unsealed shoulders. The intersection of Wickham Drive and Roebourne – Point Sampson Road is constructed as a Main Roads WA type “B” intersection, modified to provide a left turn lane for northbound traffic and pavement widening on the southbound carriageway to allow through traffic to pass right turning traffic.

Hakea Road is also constructed as a kerbed two lane sealed road with a pavement width of approximately 7.4 m and the intersection of Hakea Road and Roebourne – Point Sampson Road is similarly constructed as a Main Roads WA type “B” intersection.






The internal subdivision road layout is based on a predominately north-south alignment to enable residential lots to face in an east or west direction. This layout will allow dwellings to be positioned for maximum solar efficiency.



## 4.2 TRAFFIC

Traffic generation from the Development Plan area was estimated based on industry recognised generation trip rates of 8 daily trips per dwelling unit.

To distribute trips onto the road network a number of assumptions with respect to origin and destination were made and are summarised below:

-  Trips north via Walcott Drive will account for approximately 20.2% of all trips.
-  Trips north via Carse Street will account for approximately 17.7% of all trips.
-  Trips north via Spinifex Drive will account for approximately 12.6% of all trips.
-  Trips north via Roebourne – Point Sampson Road will account for approximately 25.4% of all trips.
-  Trips south via Roebourne – Point Sampson Road will account for approximately 24.1% of all trips.

Using the QRS II modelling software, trips were assigned to the network based on the Development Plan.

Assuming a distribution based on predicted desire lines it is expected that flows on Walcott Drive will increase by approximately 1,000 vehicles per day (vpd), flows on Wickham Drive by up to 1,000 vpd, flows on Spinifex Drive by up to 250 vpd and flows on Roebourne – Point Sampson Road by up to 1,500 vpd.

## 4.3 ROAD HIERARCHY

Based on the predicted traffic flows and road classification contained in Liveable Neighbourhoods, Shawmac has recommended a road hierarchy.



Shawmac has recommended that, given the location of the site and the expectation that the vehicle population will have a higher than typical percentage of larger 4 wheel drive vehicles, it is considered preferable for the lower classification of roads (Access Roads) be classified as Access B or Access D (both narrow and wider street).

Shawmac has advised that no unacceptable elements of design (e.g. corridor widths or road widths) were identified on the Development Plan.

## 4.4 INTERSECTION AND ARTERIAL ROAD IMPLICATIONS



The Development Plan provides for adequate sight distance at each intersection. Main Roads WA (MRWA) has advised the points of access from the subject site onto Roebourne – Point Samson Road are acceptable. Detailed engineering design will ensure minimum sight distances as per Austroads guidelines.

Based on operational parameters, all intersections can be configured as unsignalised – unchannelised intersections without detriment to levels of service, delays or queuing. However giving due regard to safety and amenity, Shawmac has made the following recommendations:

-  All intersections onto Roebourne – Point Sampson Road should be constructed as MRWA Type B (minimum) or MRWA Type C (preferable) intersections. Final configuration would need to be determined in conjunction with MRWA.
-  Roundabouts are desirable on Local Neighbourhood Connector Roads to moderate travel speeds.



## Wickham South Development Plan

-  Where ninety degree bends occur on Neighbourhood Connectors or higher category roads, a central raised median should be provided around the bend to regulate traffic movements.
-  Given the classification of Roebourne – Point Sampson Road and the prevailing speed environment, it is recommended that intersections on the road are configured so as to provide auxiliary turn lanes and passing opportunities.

Shawmac has advised that existing roads and intersections are predicted to perform satisfactorily under the increased traffic load and has subsequently recommended that no upgrading of existing infrastructure is required.

### 4.5 PEDESTRIANS AND CYCLISTS

Shawmac has recommended pedestrian and shared paths for the Development Plan area and it is noted that Liveable Neighbourhoods requires a footpath on all streets with the application of dual use paths in specific circumstances. The provision of paths throughout the subdivision will be undertaken in consultation with the Shire of Roebourne.

## 5 PLANNING FOR A POPULATION OF 3,000 – 4,000

### 5.1.1 IMPACT OF TOWNSITE EXPANSION ON RETAIL AND CORE GOVERNMENT SERVICES

An analysis has been undertaken by Pracsys, on behalf of Rio Tinto, to determine the potential impacts associated with an increase to the town of Wickham's population from 2,000 to between 3,000 and 4,000 persons. The Development Plan will facilitate growth within the town to a population of approximately this amount.

It is important to note that the demand for such services as retail, health, education and policing in a regional context is not a linear relationship. It is not possible to say, except in the broadest sense, that an increase in the population of Wickham of say 50% will result in a similar order of increased demand for human resources in selected areas. In addition, the creation of new employment in the town does not necessarily mean that town residents such as spouses might fill the new jobs. This is dependent on the nature of the job and the training, experience and professional qualifications required to fill the position.

#### 5.1.1.1 RETAIL

The Wickham Woolworths store loses a considerable amount of business to the Karratha Woolworths store which is regarded as the top or second top performing Woolworths store in Australia. Expenditure leakage, primarily to Karratha, is expected to be very high to extremely high for general supermarket and café / restaurant spending and approaching 100% for other categories. This is for two main reasons: one is the very limited availability (and, in some cases, complete unavailability) of retail offerings in certain areas in Wickham (e.g. specialist retail and comparison goods); and secondly, the obvious gravity effect that a larger population centre has on surrounding centres. The mooted plan of Karratha as a Pilbara City is expected to amplify that effect.

The total floorspace anticipated for Wickham at a population of approximately 3,000 persons and incorporating the catchments of Roebourne and Point Samson, is estimated at between approximately 2,500 and 3,000m<sup>2</sup> of net lettable area. The current provision of floorspace is within this band which suggests that the total floorspace is less of an issue than its configuration and the quality of the retail offering.

3,000m<sup>2</sup> of retail would generate approximately 100 direct jobs depending on the floorspace productivity and the degree of activity lost to Karratha and other centres. This translates to about an additional 20-30 full time employees (FTEs) in the retail sector in Wickham. This is not likely to translate to an equivalent increase in demand for housing in Wickham as local labour is likely to be utilised along with Karratha labour.

### 5.1.2 EDUCATION

A representative from the Department of Education and Training has suggested that with a population growth of up to 3500, the existing primary school within Wickham would manage the increase in student numbers with additional demountable classrooms. For instance, if the primary school numbers were to increase to a projected 585, the Department would provide additional transportable accommodation to the order of 5 to 6 classrooms. A review of the site suggests there is sufficient land area to accommodate the additional classrooms, particularly in light of the extension of Tamarind Place being removed.

Beyond a population of 3,500 persons, the Department of Education and Training has suggested looking at potentially reclaiming the former high school site for use as a second primary school. There would be no plans for a high school or district high school facility in Wickham at a population of 3,000 persons or 5,000 persons, with the current arrangements for travel to Karratha remaining in place.



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### 5.1.3 POLICING

As mentioned with health and education, police resources are not assigned to specific stations on the basis of population alone but rather on the demand for specific police functions. Typically, the indicators for allocating police resources may include the incidence of crime and anti-social behaviour along with the rate of traffic accidents in a particular district. Pracsys advise, based on their understanding of the staffing levels at stations across the Pilbara, it is possible that the Wickham station may be extended by an additional constable and potentially the addition of part time support staff although this supposition is dependent on confirmation by the regional superintendent. In addition to the uniformed officers, Karratha also has one detective sergeant and two detectives.

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### 5.1.4 HEALTH

The demand for GP services in Wickham appears to be met by the private sector and it is unlikely that the public health system would compete in this area outside of the current levels of health servicing at the established centres. From the State's perspective, servicing health demands is currently based on the clinical services framework where cost is a major factor in the supply of services. Under this arrangement the WA Country Health Service determines the range and level of health services to be delivered in the region and accordingly determines the most efficient delivery model, which is heavily slanted towards the main population centres. The department is moving to an activity based funding mechanism over the next 2-3 years which may consider more closely regional population trends on the delivery of services.

Pracsys advise the implications for employment generation in Wickham as a result of the town expansion are not expected to be substantial. It may be that the population growth warrants an additional 0.5 GP FTE and perhaps one or two additional support staff in the practice. It may also mean an increase in the incidence of allied health services available through the Wickham Health Centre on a rotational basis.













## 6 URBAN WATER MANAGEMENT








### 6.1 LOCAL WATER MANAGEMENT STRATEGY

The Development Plan has taken into consideration the stormwater characteristics of the Pilbara, in particular the potential for erosion and sedimentation from surface water runoff. In accordance with the requirements of the Department of Water and Department of Planning's Better Urban Water Management guide, a Local Water Management Strategy (LWMS) has been prepared by JDA Consultant Hydrologists. The LWMS includes a flood study of the creek located to the south of the subject site. The LWMS will be lodged with the Shire of Roebourne and Department of Water for review and approval.

### 6.2 KEY PRINCIPLES AND ELEMENTS

The following table describes the key principles and elements of the LWMS which will guide the preparation of an Urban Water Management Plan at the subdivision stage.

PRINCIPLE	ELEMENTS
<b>Water Quantity</b> To maintain the total water cycle balance within development areas relative to the pre-development conditions.	 Maintain flow paths for existing catchments.  Maintain 5, 10 and 100yr ARI peak flows from the Study Area at or below current discharge levels.  No lowering of groundwater levels.  Maximise infiltration opportunities where possible.
<b>Water Quality</b> To maintain or improve the surface and groundwater quality within development areas relative to pre-development conditions.	 Use of treatment train approach to stormwater management.  Application of source controls – including education to reduce nutrient application, use of native plantings and vegetated swales.  Application of structural controls – retention/detention areas and vegetated swales.
<b>Water Conservation</b> To maximise the reuse of stormwater.	 Encourage implementation of water efficiency and demand management measures both internal and external of buildings.  Use of native plantings to minimise irrigation requirements.
<b>Ecosystem Health</b> To retain natural drainage systems and protect ecosystem health.	 Maintain 5yr, 10yr and 100yr ARI peak flows from the Study Area at or below current discharge levels to the Creeks.
<b>Economic Viability</b> To implement stormwater systems that are economically viable in the long term.	 Use of proven structural Water Sensitive Urban Design (WSUD) technology.  Use of source control techniques to minimise cost of nutrient management.

PRINCIPLE	ELEMENTS
<b>Public Health</b> To minimise the public risk, including risk of injury or loss of life to the community.	 Design in accordance with relevant design standards, best management practices, council regulations and government agency requirements.
<b>Protection of Property</b> To protect the built environment from flooding.	 Identification of 100yr ARI flood levels for Study Area.  Protection of downstream areas by restricting stormwater discharge to existing levels for storm events up to 100yr ARI.
<b>Social Values</b> To ensure that social aesthetic and cultural values are recognised and maintained when managing stormwater.	 Use of swales within public areas for stormwater conveyance.  Integration of drainage and POS functions.
<b>Development</b> To ensure the delivery of best practice stormwater management through planning and development of high quality developed areas in accordance with sustainability & precautionary principles.	 Urban water management in accordance with Better Urban Water Management (WAPC, 2008).  Development of the LWMS in accordance with Government agency guidelines and best management practice recommendations.

#### 6.2.1 STORMWATER SYSTEM OPERATION AND MAINTENANCE

Ongoing operation and maintenance of the drainage system will be the responsibility of the Shire of Roebourne. The surface drainage system will require routine maintenance to ensure its efficient operation.

It is considered the following operating and maintenance practices will be implemented periodically:

-  Removal of debris to prevent blockages.
-  Cleaning of sediment build up and litter layer on the bottom of drainage swales.

#### 6.2.2 FLOOD STUDY REPORT

The flood study undertaken for the creek located to the south of the subject site, investigated the impacts of the proposed subdivision (which includes partial filling of the floodplain) on the hydraulic regime of the creek.

The flood study report indicates that the south east corner of the site is located within the 100 year flood extent of the creek. Therefore the subject site will need to be filled 0.5m above the 100 year ARI flood level.



## 7 SERVICING

Rio Tinto has recently engaged Serling Consulting to undertake a servicing investigation to determine the infrastructure requirements relating to the servicing of the subject site for subdivision and development in accordance with the Development Plan. The following Section provides a summary of the servicing infrastructure requirements relating to the connection of the lots to water, sewer, power and telecommunications.

### 7.1 WATER SUPPLY

Rio Tinto's West Pilbara coastal communities and operations are supplied water from the West Pilbara Water Supply Scheme (Scheme) by the Water Corporation in accordance with agreements between the State and Rio Tinto entered into in the 1960s and 1970s (Agreements). Rio Tinto continues to work with the Water Corporation and the State to ensure Rio Tinto's current and future water requirements are delivered in accordance with the Agreements. Wickham's future water requirements have been estimated and included in Rio Tinto's and the Water Corporation's future demand projections and Scheme development plans.

The Water Corporation has advised the Townsite is serviced off a 535 steel trunk main from the Harding dam that connects into a 375 steel distribution main running along Wickham Drive to a high level ground mounted 9,000 kl storage tank off Walcott Street to the west of the Townsite. From there the Townsite is reticulated via reticulation sized AC water mains.

Rio Tinto's current entitlements, pursuant to the Agreements, can accommodate the additional services to new subdivided land. Serling Consulting has undertaken a preliminary assessment of the capacity of the existing 9,000 kl storage tank and conclude that it would be satisfactory for growth short term (i.e. estimated 400 to 500 lots) assuming an 8 hour reserve is acceptable. For development beyond this, additional tank storages would be required to achieve an 8 hour reserve.

### 7.2 WASTE WATER DISPOSAL

The Wickham Townsite has 150mm and 225mm VC gravity sewer reticulation mains gravitating to two waste water pumping stations that discharge into a waste water treatment plant (WWTP) located to the east of the Townsite.

According to the Water Corporation the existing WWTP may, subject to detailed review, be able to accommodate a small increase (to the order of 500 persons). The main pump station upstream of the WWTP is currently operating close to capacity and will require an upgrade for more than approximately 150 persons. The WWTP will require upgrading beyond a 500+ person increase to the town. The main sewerage pumping station will require upgrading for any increase

The initial stages of development (i.e. approximately 215 dwellings) can gravitate into the existing gravity sewer located within Jacaranda Place. The balance of the proposed subdivision both to the east and the south would require a waste water pump station and pressure main (WWPS and PM) to connect to the Water Corporation sewerage system. This WWPS and PM would need to be in the order of 5 to 6 m deep and be located to the north east of the subdivision adjacent to Roebourne – Port Samson Road. A gravity sewer in the order of 6 to 7 m deep would be needed through a short section to connect the lots further south.

### **7.3 POWER SUPPLY**

The Wickham Townsite is serviced by a 33kV aerial HV power transmission line from the Cape Lambert P9 substation. The power is reticulated through the Townsite by a combination of overhead HV aerials to transformers to drop down the voltage to the normal 240V domestic supply, servicing the Townsite with predominately underground LV cables.

Rio Tinto own and maintain the Wickham Townsite power supply. The current system is considered to be close to capacity as a result any growth within the town will require an upgrade of the system to provide additional transformers. A more detailed assessment will most likely be required to ensure that the cable sizes are adequate to satisfy minimum voltage drop within the reticulated system.

It is also likely that subdivision will require upgrade of the HV transmission line from the Cape Lambert P9 substation to Wickham. A full engineering study will need to be undertaken by Rio Tinto to confirm the extent and details of any such upgrade based on the extent of development to be pursued.

### **7.4 TELECOMMUNICATIONS**

Telecommunications services are already located within the townsite.

## 8 IMPLEMENTATION

Rio Tinto has procured the preparation of this Development Plan, in consultation with the Shire of Roebourne, in the spirit of cooperation to promote orderly and proper planning for the Wickham Townsite. This Development Plan and the subsequent statutory planning applications required to implement this Development Plan are provided without prejudice to its position regarding any future request that the Shire of Roebourne or any other Shire may make in relation to a requirement to obtain planning approval under a Town Planning Scheme for operations under a State Agreement.

Rio Tinto has legal advice which supports its view that approvals under TPS 8 are not required, however, in the present circumstances; Rio Tinto does not wish to incur any delay-costs which would be associated with seeking a final determination.

### 8.1 DEVELOPMENT PLAN APPROVAL

TPS 8 requires the preparation and adoption of a Development Plan for all land zoned 'Urban Development' prior to any subdivision or development. The fundamental objective of a Development Plan is to demonstrate how an area can be developed in an orderly, coordinated and integrated manner, meeting sound planning principles and promoting high quality sustainable development solutions.

This Development Plan is submitted to the Shire of Roebourne for its approval. In order to facilitate the expedited approval of the Development Plan it is proposed to forward the Development Plan to the WAPC for concurrent review and subsequent adoption. Following adoption, the Development Plan will guide subdivision and development.

TPS 8 specifies the Shire of Roebourne may or may not require the Development Plan to be publicly advertised (which is typically for a period of 21 days). It is understood this Development Plan will be advertised, which will include community forums and information sessions.

### 8.2 SUBDIVISION

The RRJV Special Lease agreement for the land requires the preparation and lodgement of a plan of subdivision with the Minister for State Development. This is separate to the requirement for subdivision approval by the WAPC under the *Planning and Development Act 2005*, which is required on alienated land (not Crown Land). That is to say, the approval of the WAPC to subdivide the subject site in accordance with the Development Plan is not required. Approval to undertake civil construction works will be discussed in further detail below.

As a result of the subject site not requiring the approval of the WAPC, as is normally the case for the subdivision of land, a detailed subdivision concept plan has been prepared to inform the Shire and the WAPC of our Client's preferred subdivision layout. The subdivision concept plan will provide the basis for the preparation of detailed engineering designs that will be the subject of a Development Application lodged for approval with the Shire, in accordance with the requirements of TPS 8.

In the event that additional lots are required to be made available for the development by others (e.g. State Government, contractors etc) then it is likely that this land would need to be converted to freehold or appropriate tenure (i.e. the Special Lease surrendered and the land alienated from the Crown). Discussions with the State about the agreed lots for consequential population will continue throughout our client's feasibility studies.



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### 8.2.1 SUBDIVISION CONCEPT PLAN

As referred to under Section 8.2, subdivision approval is not issued by the WAPC for the subject site as is normally the case for freehold subdivision. A Subdivision Concept Plan has been prepared based on the subdivision road layout and land use distribution depicted on the Development Plan. The Subdivision Concept Plan will form the basis for the preparation of detailed engineering drawings (including servicing – sewer, power, water and telecommunications) and development application plans (generally based on the engineering drawings) to be submitted for the approval of the Shire of Roebourne.

**Figure 5** – Subdivision Concept Plan depicts the subdivision of the subject site in accordance with the road layout and land use distribution depicted on the Development Plan. Lot sizes are greater than the R Codes minimum and average requirements for the corresponding density code. Lot sizes have taken into consideration the existing housing product and lot size in Wickham; the desired housing stock of our Client; and the road layout depicted on the Development Plan, and as a result the lot sizes are substantially larger than the minimum lot size requirements of the R Codes.

Lot configuration for those lots adjacent to and opposite POS and drainage reserves has been designed to take advantage of the benefits associated with a higher level of amenity by ensuring lots directly front these areas.

The lots have been provided with significant frontages to facilitate the construction of a variety of dwelling designs and to accommodate the construction of modular housing; facilitate sufficient side access; and for appropriate solar orientation.

As depicted on the Development Plan, total POS within the subject site accounts for 8.5201 ha. Total Drainage within the subject site accounts for 3.8927 ha (excluding existing Parks, Recreation and Drainage reserved land which is 1.4198 ha).

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### 8.2.2 STAGING

Planning for 738 dwellings in Wickham South will ensure the short-medium term provision of land for housing and associated facilities. The staging of the development of the land provides for the extension of the existing road system and represents a logical expansion of the Wickham Townsite.

The staging of the subdivision and development of the Development Plan area is aligned with the demand for housing for the Rio Tinto workforce associated with the staged expansion of the capacity at the Port from 233mtpa to 283mtpa, through to 333mtpa.

**Figure 6** - Staging Plan provides for the delivery of a minimum of approximately 360 dwellings within Stage 1 (the yield calculated for Grouped Dwelling sites is based on the average lot size for the applicable residential density as specified by the R Codes) to accommodate the immediate direct workforce increase based on the first 50mtpa expansion at the Port (up to a system capacity of 283mtpa). Stage 1 is to satisfy current residential workforce estimates from Rio Tinto of approximately 260 residential roles, the maximum allocation of lots for consequential population (20%) and a contingency (10%). The estimate of direct employment and indirect employment is subject to further review through Rio Tinto's feasibility study.

This demand is broken down into a mix of approximately 60% 4(bedroom)x2(bathroom) dwellings and 40% 3x2 dwellings.



A similar number of dwellings are anticipated to be required for the Rio Tinto workforce and consequential population associated with a further 50mtpa expansion at the Port (up to a system capacity of 333mtpa). A similar mix of approximately 60% 4x2 and 40% 3x2 is also proposed and can be accommodated within Stage 2.

Both Stages 1 and 2 include additional dwelling sites in excess of the minimum numbers required for the first and second 50mtpa expansion in order to accommodate any changes in the workforce numbers and distribution. This is very likely as workforce numbers are not yet finalised.

### **8.3 DEVELOPMENT**

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#### **8.3.1 CIVIL WORKS**

Civil works will require Planning Approval from the Shire of Roebourne. A Development Application will be submitted to the Shire, at a time nearing final approval of the Development Plan, in order to obtain the approval of the Shire. The Development Application will detail subdivision works to be undertaken with an expectation that a condition will be provided on the approval for detailed civil engineering drawings to be prepared and subsequently approved by the Shire's engineering department, prior to development commencing. This process will mimic the standard engineering approval process, as adhered to under a subdivision approval.

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#### **8.3.2 BUILDING**

Building Licenses from the Shire of Roebourne will be required for all Single and Grouped dwellings prior to their erection/construction.

### **8.4 OTHER ACTIONS**

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#### **8.4.1 ROAD CLOSURES**

There are existing road reserves within the Development Plan area that do not contain constructed roads. These road reserves are located over the western and southern portions of the Development Plan area. The Development Plan proposes not to utilise these road reserves in full and, therefore, following approval of the Development Plan, these road reserves will become redundant. It is, therefore, necessary for these roads to be closed as part of the standard road closure process.

Road closure requests have already been lodged with the Shire and initiated, in order for these processes to be commenced and finalised prior to development.

## **9 CONCLUSION**

This Development Plan has taken into consideration a number of aspects associated with the existing Wickham Townsite in order to achieve a development that is complimentary to the town and consistent with the objectives of Rio Tinto. A Structure Plan has also been prepared to provide an appropriate context for the Development Plan area based on existing zoned land within the town which is appropriate for development. The Structure Plan has been prepared as a separate document and will be an important tool to guide future development within the town and the vision for the revitalisation of the town centre.

The Development Plan has been prepared based on contemporary planning methodologies such as the recommendations of WAPC operational policies like Liveable Neighbourhoods; existing site constraints such as topography and road reserves; and land tenure arrangements. The Development Plan will ensure a coordinated extension of the Wickham Townsite whilst providing a staged development for Wickham South to meet the housing demands of Rio Tinto's future workforce.





LEGEND				
<div> <div></div> DEVELOPMENT PLAN BOUNDARY </div>				
NOTE: DRAINAGE AREAS INCLUDED WITHIN PUBLIC OPEN SPACE				
OVERALL				
Size	No. Lots	% Total Lots	Average Size	% of Total Area
401m <sup>2</sup> - 500m <sup>2</sup>	79	16.56%	447m <sup>2</sup>	11.70%
501m <sup>2</sup> - 600m <sup>2</sup>	206	43.19%	560m <sup>2</sup>	38.24%
601m <sup>2</sup> - 700m <sup>2</sup>	145	30.40%	634m <sup>2</sup>	30.44%
701m <sup>2</sup> - 800m <sup>2</sup>	24	5.03%	732m <sup>2</sup>	5.82%
801m <sup>2</sup> - 900m <sup>2</sup>	7	1.47%	838m <sup>2</sup>	1.94%
901m <sup>2</sup> - 1000m <sup>2</sup>	4	0.84%	931m <sup>2</sup>	1.23%
1001m <sup>2</sup> +	12	2.52%	2674m <sup>2</sup>	10.62%
Total Number of Lots	477			
Minimum Lot Size 400m <sup>2</sup>			Average Lot Size 633m <sup>2</sup>	
Maximum Lot Size 3852m <sup>2</sup>			Total Lot Area 302192m <sup>2</sup>	

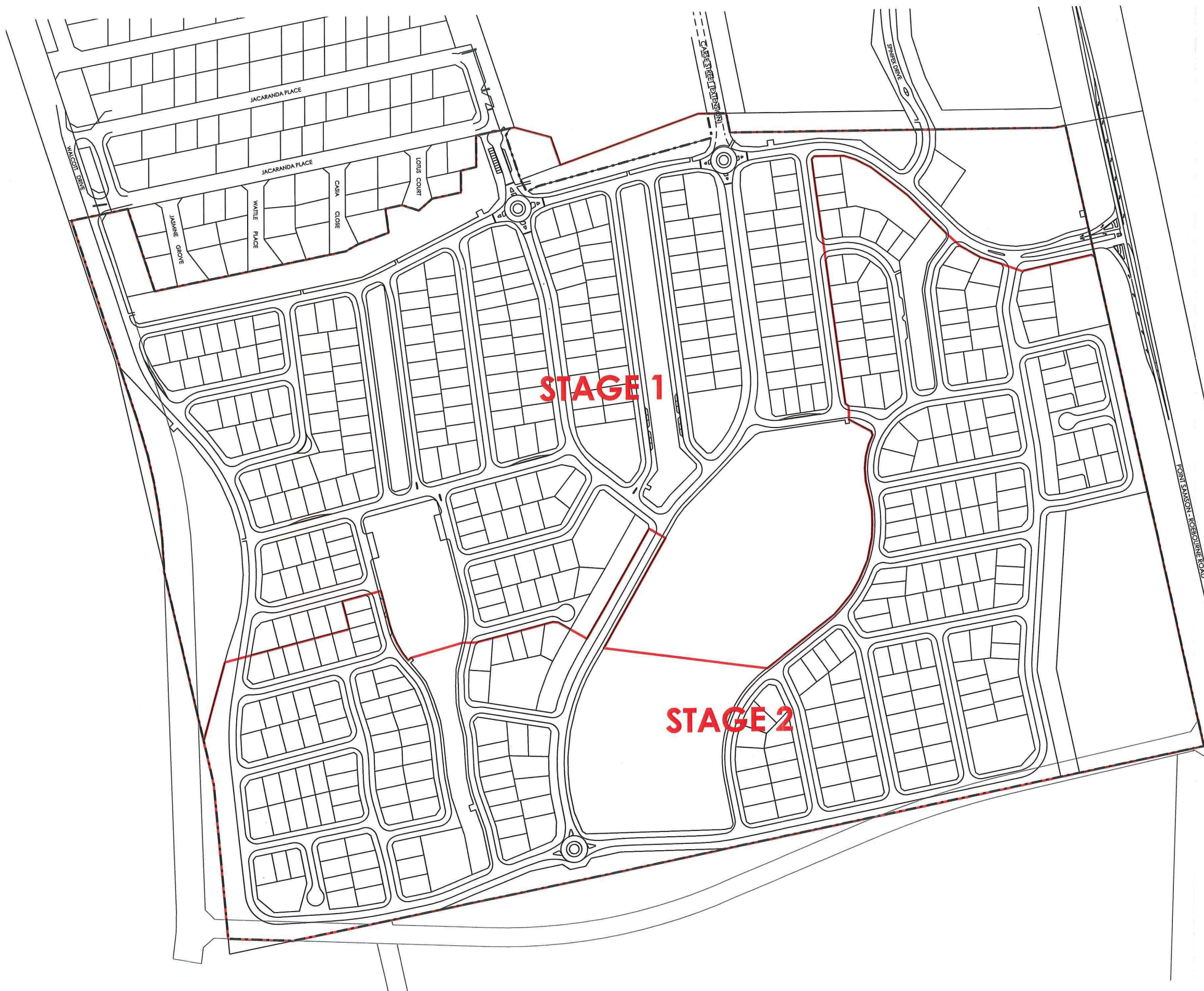
**SUBDIVISION CONCEPT PLAN (AMENDED)**  
Wickham South Development Plan

0m 20 40 60m
  
s: 1:4000@A3
  
d: 26/06/2012
  
p: 08/073/110



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LEGEND			
	DEVELOPMENT PLAN BOUNDARY		
	STAGING BOUNDARY		

STAGING SUMMARY			
Type	Stage 1	Stage 2	TOTAL
SINGLE	217	244	461
GROUPED	54	55	109
TOTAL	271	299	570

NOTE: DUPLEX DWELLINGS IDENTIFIED AS GROUPED.

**STAGING PLAN (AMENDED)**  
Wickham South Development Plan

0m 20 40 60m  
s: 1:4000@A3  
d: 26/06/2012  
p: 08/073/108

