# Ordinary Meeting of Council

## Tom Price

PUBLIC ATTACHMENTS
Part 2

23 April 2018

Clem Thompson Sports
Pavilion
Stadium Road
Tom Price
1.00 pm

The Shire of Ashburton 10 year Strategic Community Plan (2017-2027) provides focus, direction and represents the hopes and aspirations of the Shire.

# Our Vision

*We will embrace our unique Pilbara environment and lifestyle through the development of vibrant, connected and active communities that have access to quality services, exceptional amenities and economic vitality.*

## STRATEGIC DIRECTIONS

1. Vibrant and Active Communities
2. Economic Prosperity
3. Unique Heritage and Environment
4. Quality Services and Infrastructure
5. Inspiring Governance

The Shire of Ashburton respectfully acknowledges the traditional custodians of this land.

# Council Policy

| | |
|---|---|
| Number | ELM04 |
| Name | Code of Conduct |
| File No | GV20 |
| Aim | The Code provides a guide and a basis of expectations for Council Members, Committee Members, ~~and~~ staff, ~~and~~ Volunteers and Contractors. ~~.~~ It encourages a commitment to ethical and professional behaviour and outlines principles in which individual and collective Local Government responsibilities may be based. |
| Application: | All Council Members, Committee Members, ~~and~~ Staff, Volunteers and Contractors |
| Statutory Environment | Local Government Act 1995 (S 5.103 – Codes of Conduct) and Local Government (Administration) Regulations 1996 (Regs 34B and 34C). |
| Principles | Community Strategic Plan 2017-2027<br>Goal 05 Inspiring Governance<br>Objective 03 Council Leadership |
| Approval Date | OCM 21 November 2017 |
| Monitor & Review | Governance |
| Last Review | 23 April 2018 |
| Next Review | 2020 |
| Review Period | Every 2 Years |

Policy

**Objective**

The Code of Conduct provides Council Members, Committee ~~Members,~~ ~~and staff~~Members, staff, volunteers and c~~C~~ontractors in the Shire of Ashburton consistent guidelines for an acceptable standard of professional conduct. The Code addresses in a concise manner the broader issue of ethical responsibility and encourages greater transparency and accountability in Local Governments.
The Code is complementary to the principles adopted in the *Local Government Act* and regulations which incorporates four fundamental aims to result in:

a) better decision-making by local governments;
b) greater community participation in the decisions and affairs of local governments;
c) greater accountability of local governments to their communities; and
d) more efficient and effective local government.

It is intended to provide an elementary guide to:-

a) Complying with statutory duty to act honestly and exercise due diligence and a high degree of care.

b) identifying and resolving situations which could result in:-
   i) conflict of interests;
   ii) impropriety;
   iii) improper use of their positions;
   iv) Improper use of the Shire's resources.

c) Acting in ways which enhance both public perception and confidence in the Shire's administration and the system of Local Government in Western Australia.

**STATUTORY ENVIRONMENT**
The Code of Conduct observes statutory requirements of the *Local Government Act 1995* (S 5.103 – Codes of Conduct) and *Local Government (Administration) Regulations 1996* (Regs 34B and 34C).

**RULES OF CONDUCT**
Council Members acknowledge their activities, behaviour and statutory compliance obligations may be scrutinised in accordance with prescribed rules of conduct as described in the *Local Government Act 1995* and *Local Government (Rules of Conduct) Regulations 2007*.

1. ROLES

1.1 Role of Council Member

The primary role of a Council Member is to represent the community, and the effective translation of the community's needs and aspirations into a

direction and future for the Local Government will be the focus of the Council Member's public life.
The Role of Council Members is set out in S 2.10 of the Local Government Act 1995 as follows:

a) *"A Councillor —*
b) *(a) Represents the interests of electors, ratepayers and residents of the district;*
c) *(b) provides leadership and guidance to the community in the district;*
d) *(c) facilitates communication between the community and the council;*
e) *(d) participates in the local government's decision-making processes at council and committee meetings; and*
f) *(e) performs such other functions as are given to a Councillor by this Act or any other written law."*

A Council Member is part of the team in which the community has placed its trust to make decisions on its behalf and the community is therefore entitled to expect high standards of conduct from its elected representatives. In fulfilling the various roles, Council ~~Members~~Members' activities will focus on:

- achieving a balance in the diversity of community views to develop an overall strategy for the future of the community;
- achieving sound financial management and accountability in relation to the Local Government's finances;
- ensuring that appropriate mechanisms are in place to deal with the prompt handling of residents' concerns;
- working with other governments and organisations to achieve benefits for the community at both a local and regional level;
- having an awareness of the statutory obligations imposed on Council Members and on Local Governments.

In carrying out its functions a local government is to use its best endeavours to meet the needs of current and future generations through an integration of environmental protection, social advancement and economic prosperity.

1.2 Role of Staff

The role of staff is determined by the functions of the CEO as set out in S 5.41 of the *Local Government Act 1995* : -
*"The CEO's functions are to —*
*(a) advise the ~~council~~Council in relation to the functions of a local government under this Act and other written laws;*
*(b) ensure that advice and information is available to the ~~council~~Council so that informed decisions can be made;*
*(c) cause ~~council~~Council decisions to be implemented;*
*(d) manage the day to day operations of the local government;*

*(e) liaise with the ~~mayorm~~Mayor or ~~presidentp~~President on the local government's affairs and the performance of the local government's functions;*
*(f) -speak on behalf of the local government if the ~~mayorm~~Mayor or ~~presidentp~~President agrees;*
*(g) be responsible for the employment, management supervision, direction and dismissal of other employees (subject to S 5.37(2) in relation to senior employees);*
*(h) ensure that records and documents of the local government are properly kept for the purposes of this Act and any other written law; and*
*(i) perform any other function specified or delegated by the local government or imposed under this Act or any other written law as a function to be performed by the CEO."*

1.3 Role of Volunteers and Contractors
The role of a volunteer and contractor is determined by and limited to a written and/or verbal agreement with the Shire, to carry out specific functions on behalf of the Shire.

1.~~4~~3 Role of Council

The Role of the Council is in accordance with S 2.7 of the *Local Government Act 1995* :
*"(1) The ~~council —~~*
*~~c~~Council —*
*(a) directs and controls the local government's affairs; and*
*(b) is responsible for the performance of the local government's functions.*

*(2) Without limiting subsection (1), the ~~council~~c~~Council~~ is to —*
*(a) oversee the allocation of the local government's finances and resources; and*
*(b) determine the local government's policies."*

1.~~5~~4 Relationships between Council Members and Staff

An effective Councillor will work as part of the Council team with the Chief Executive Officer and other members of staff. -That teamwork will only occur if Council Members and staff have a mutual respect and co-operate with each other to achieve the Council's corporate goals and implement the Council's strategies. To achieve that position, Council Members need to observe their statutory obligations which include, but are not limited to, the following :

a) accept that their role is a leadership, not a management or administrative one;
b) acknowledge that they have no capacity to individually direct members of staff to carry out particular functions;
c) Refrain from publicly criticising staff in a way that casts aspersions on their professional competence and credibility.

1.~~6~~5 Communications with Developers and Interest Groups

Council Members and Committee Members should be mindful that meetings with developers could compromise their impartiality in the decision making process and should at all times have a ~~council~~ Shire officer present if such a meeting is considered necessary. To further protect Council Members from any suggestion of inappropriate behaviour, especially when dealing with matters of a controversial nature, written advice on the proforma at Attachment 2 should be recorded, ideally within 48 hours, with the Shire President and CEO giving details of such meetings.
*NB: The Local Government Operational Guidelines No. 12 titled Elected ~~Members Relationship~~Members' Relationships with Developers provides further guidance on this matter.*

2. CONFLICT AND DISCLOSURE OF INTEREST

2.1 Conflict of Interest

a) Council Members, Committee Members and staff will ensure that there is no actual (or perceived) conflict of interest between their personal interests and the impartial fulfilment of their professional duties.

b) Staff will not engage in private work with or for any person or body with an interest in a proposed or current contract with the Local Government, without first making disclosure to the Chief Executive Officer. In this respect, it does not matter whether advantage is in fact obtained, as any appearance that private dealings could conflict with performance of duties must be scrupulously avoided.

c) Council Members, Committee Members and staff will lodge written notice with the Chief Executive Officer describing an intention to undertake a dealing in land within the local government area or which may otherwise be in conflict with the ~~Council's~~ Local Government's functions (other than purchasing the principal place of residence).

a) Council Members~~,~~ and Committee Members who exercise recruitment or other discretionary functions will make disclosure to the President before dealing with relatives or close friends and may be disqualified from dealing with those persons. Staff who exercise recruitment or other discretionary functions will make disclosure to the CEO before dealing with relatives or close friends and may be disqualified from dealing with those persons.

~~Staff who exercise recruitment or other discretionary functions will make disclosure to the CEO before dealing with relatives or close friends and may be disqualified from dealing with those persons.~~

**b)** Staff will refrain from partisan political activities which could cast doubt on their neutrality and impartiality in acting in their professional capacity. An individual's rights to maintain their own political convictions are not impinged upon by this clause. It is recognised that such convictions cannot be a basis for discrimination and this is supported by anti- discriminatory legislation.

2.2 Financial Interest

Council Members, Committee Members and staff will adopt the principles of disclosure of financial interest as contained within the *Local Government Act*.

2.3 Disclosure of Interest

*Definition :*
*In this clause, and in accordance with Regulation 34C of the Local Government (Administration) Regulations 1996 -*

*"interest" means an interest that could, or could reasonably be perceived to, adversely affect the impartiality of the person having the interest and includes an interest arising from kinship, friendship or membership of an association.*

(a) A person who is an employee and who has an interest in any matter to be discussed at a council or committee meeting attended by the person is required to disclose the nature of the interest –
(i) in a written notice given to the CEO before the meeting; or
(ii) at the meeting immediately before the matter is discussed.

(b) A person who is an employee and who has given, or will give, advice in respect of any matter to be discussed at a council or committee meeting not attended by the person is required to disclose the nature of any interest the person has in the matter –
(i) in a written notice given to the CEO before the meeting; or
(ii) at the time the advice is given.

(c) A requirement described under items (a) and (b) exclude an interest referred to in S 5.60 of the *Local Government Act 1995*.

(d) A person is excused from a requirement made under items (a) or (b) to disclose the nature of an interest if --
(i) the person's failure to disclose occurs because the person did not know he or she had an interest in the matter; or

(ii) the person's failure to disclose occurs because the person did not know the matter in which he or she had an interest would be discussed at the meeting and the person discloses the nature of the interest as soon as possible after becoming aware of the discussion of a matter of that kind.

(e) If a person who is an employee makes a disclosure in a written notice given to the CEO before a meeting to comply with requirements of items (a) or (b), then –

(i) before the meeting the CEO is to cause the notice to be given to the person who is to preside at the meeting; and

(ii) immediately before a matter to which the disclosure relates is discussed at the meeting the person presiding is to bring the notice and its contents to the attention of the persons present.

(f) If –

(i) to comply with a requirement made under item (a), the nature of a person's interest in a matter is disclosed at a meeting; or (ii) a disclosure is made as described in item (d)(ii) at a meeting; or

(iii) to comply with a requirement made under item (e)(ii), a notice disclosing the nature of a person's interest in a matter is brought to the attention of the persons present at a meeting, the nature of the interest is to be recorded in the minutes of the meeting.

## 3. PERSONAL BENEFIT

### 3.1 Use of Confidential Information

Council Members, Committee Members, ~~and~~ staff, volunteers and contractors will not use confidential information to gain improper advantage for themselves or for any other person or body, in ways which are inconsistent with their obligation to act impartially, or to improperly cause harm or detriment to any person or organisation.

### 3.2 Intellectual Property

The title to Intellectual Property in all duties relating to contracts of employment will be assigned to the ~~Council~~ Local Government upon its creation unless otherwise agreed by separate contract.

### 3.3 Improper or Undue Influence

Council Members and staff will not take advantage of their position to improperly influence other Council Members or staff in the performance of their duties or functions, in order to gain undue or improper (direct or indirect) advantage or gain for themselves or for any other person or body.

3.4 Gifts

*Definitions :*

*In this clause, and in accordance with Regulation 34B of the Local Government (Administration) Regulations 1996 -*

*"activity involving a local government discretion" means an activity -*
*(a) that cannot be undertaken without an authorisation from the local government; or*
*(b) by way of a commercial dealing with the local government;*

*"gift" has the meaning given to that term in S 5.82(4) except that it does not include -*
*(a) a gift from a relative as defined in S 5.74(1); or*
*(b) a gift that must be disclosed under Regulation 30B of the Local Government*
*(Elections) Regulations 1997; or*

*(c) a gift from a statutory authority, government instrumentality or non-profit association for professional training;*

~~*association for professional training;*~~

*"notifiable gift", in relation to a person who is an employee, means -*
*(a) a gift worth between $50 and $300; or*

*(b) a gift that is one of 2 or more gifts given to the employee by the same person within*
*a period of 6 months that are in total worth between $50 and $300;*

*"prohibited gift", in relation to a person who is an employee, means -*
*(a) a gift worth $300 or more; or*
*(b) a gift that is one of 2 or more gifts given to the employee by the same person within a period of 6 months that are in total worth $300 or more.*

(a) A person who is an employee is to refrain from accepting a prohibited gift from a person who -
(i) is undertaking or seeking to undertake an activity involving a local government discretion; or

(ii) it is reasonable to believe is intending to undertake an activity involving a local government discretion.

(b) A person who is an employee and who accepts a notifiable gift from a person who -

(i) is undertaking or seeking to undertake an activity involving a local government discretion; or

(ii) it is reasonable to believe is intending to undertake an activity involving a local government discretion

must notify the CEO, in accordance with item (c) and within 10 days of accepting the gift, of the acceptance.

(c) The notification of the acceptance of a notifiable gift must be in writing and include -

(i) the name of the person who gave the gift; and
(ii) the date on which the gift was accepted; and
(iii) a description, and the estimated value, of the gift; and
(iv) the nature of the relationship between the person who is an employee and the person who gave the gift; and
(v) if the gift is a notifiable gift under paragraph (b) of the definition of "notifiable gift" (whether or not it is also a notifiable gift under paragraph (a) of that definition) –

——(1) a description; and
——(2) the estimated value; and
——(3) the date of acceptance, of each other gift accepted within the 6 month period.

(d) The CEO is to maintain a register of notifiable gifts and record in it details of notifications given to comply with a requirement made under item (c).

(e) This clause does not apply to gifts received from a relative (as defined in S 5.74(1) of the *Local Government Act*) or an electoral gift (to which other disclosure provisions apply).

(f) This clause does not prevent the acceptance of a gift on behalf of the local government in the course of performing professional or ceremonial duties in circumstances where the gift is presented in whole to the CEO, entered into the Register of Notifiable Gifts and used or retained exclusively for the benefit of the local government.

3.5 Purchasing Rewards/Loyalty Programs and Competition Prizes

Council Members, Committee Members and staff must not gain private advantage from public expenditure. Therefore, they must not:

(a) enter competitions where eligibility to enter is based on the Local Government being a customer of the business offering the competition and if you were not Councillor, Committee Member, employee, or volunteer of the Local Government you would not be eligible to enter;

(b) claim incentive points or bonuses on personal reward/loyalty programs from purchases made using Local Government funds, such as (but not limited to) Frequent Flyer points, Flybuys, Everyday Rewards;
(c) accept lucky door prizes or raffle prizes whilst attending Local Government-paid events, functions, professional development activities, or whilst engaging in official duties.

Any unintended or inadvertent private advantage gained by Council Members, Committee Members, staff, or volunteers in the course of their duties (eg. corporate business travel loyalty points) must be surrendered to the Local Government, or disclosed and then used only for Local Government business and with the CEO's or (in the case of the CEO) President's approval.

## 4. CONDUCT OF COUNCIL MEMBERS, COMMITTEE MEMBERS ~~AND~~ STAFF, VOLUNTEERS AND CONTRACTORS

### 4.1 Personal Behaviour

Council Members, Committee Members, ~~and~~ staff, volunteers and contractors will:

a) act and be seen to act, properly and in accordance with the requirements of the law and the terms of this Code;
b) perform their duties impartially and in the best interests of the ~~Council and~~the Local Governmentand the community uninfluenced by fear or favour;
c) act in good faith (ie. honestly, for the proper purpose, and without exceeding their powers) in the interests of the ~~Council~~ Local Government and the community;
d) make no allegations which are improper or derogatory (unless true and in the public interest) and refrain from any form of conduct, in the performance of their official or professional duties, which may cause any reasonable person unwarranted offence or embarrassment; and
e) always act in accordance with their obligation of fidelity to the ~~Council.~~Local Government~~.~~; and
f) refrain from publicly criticising Councillors in a way that casts aspersions on their professional competence and credibility.

Council Members will represent and promote the interests of the ~~Council~~Local Government, while recognising their special duty to their own constituents.

g) ~~Refrain from publicly criticising Councillors in a way that casts aspersions on their professional competence and credibility.~~

4.2 Honesty and Integrity

Council Members, Committee ~~Members, and staff~~Members, staff, Volunteers and Contractors will:

a) Observe the highest standards of honesty and integrity, and avoid conduct which might suggest any departure from these standards;
b) Bring to the notice of the President any dishonesty or possible dishonesty on the part of any other member, and in the case of an employee to the Chief Executive Officer; and
c) Be frank and honest in their official dealing with each other.

4.3 Performance of Duties

S. 2.10 of the Act states that Councillors are required to:

a) represent the interests of electors, ratepayers and residents of the district;
b) provide leadership and guidance to the community in the district.

These two roles are performed simultaneously. Councillors are 'representative' of the people who live in that particular district.

They have been elected to use their leadership skills and be prepared to make sometimes difficult decisions that will guide the community towards a better outcome.

It is important for Councillors to bear these requirements in mind when considering matters before council. It is a common misapprehension, particularly when wards are involved that the consideration of matters should align with the potential effect of a decision upon a ward. Instead Councillors are required to bring to the matter their knowledge and understanding of local consequences impacting on the whole community. Ultimately, Councillors have an obligation to decide an issue taking into account the 'greater good' of the community as a whole.

While on duty, staff will give their whole time and attention to the Local Government's business and ensure that their work is carried out efficiently, economically and effectively, and that their standard of work reflects favourably both on them and on the Local Government.
Council Members and Committee Members will at all times exercise reasonable care and diligence in the performance of their duties, being consistent in their decision making but treating all matters on individual merits. Council Members and Committee Members will be as informed as possible about the functions of the ~~Council~~Local Government, and treat all members of the community honestly and fairly.

4.4 Compliance with Lawful Orders

Council Members, Committee Members, ~~and~~ staff, volunteers and contractors will comply with any lawful order given by any person having authority to make or give such an order, with any doubts as to the propriety of any such order being taken up with the superior of the person who gave the order and, if resolution cannot be achieved, with the Chief Executive Officer.

Council Members, Committee Members, ~~and~~ staff, volunteers and contractors will give effect to the lawful policies of the ~~Council~~Local Government, whether or not they agree with, or approve of them.

4.5 Administrative and Management Practices

Council Members, Committee Members and staff will ensure compliance with proper and reasonable administrative practices and conduct, and professional and responsible management practices.

4.6 Corporate Obligations

a~~.~~). Standard of Dress
Council Members, Committee Members and Staff ~~and volunteers??~~ are expected to comply with neat and responsible dress standards at all times.
Accordingly :

(i) Council Members and Committee Members will dress in a manner appropriate to their position, in particular when attending meetings or representing the Local Government in an official capacity.
(ii) Management reserves the right to adopt policies relating to corporate dress and to raise the issue of dress with individual staff.

b~~.~~). Communication and Public Relations

i) All aspects of communication by staff (including verbal, written or personal), involving the ~~Council's~~ Local Government's activities should reflect the status and objectives of the ~~Council.~~Local Government. Communications should be accurate, polite and professional.

ii) As a representative of the community, Council Members need to be not only responsive to community views, but to adequately communicate the attitudes and decisions of the Council. In doing so Council Members should acknowledge that:

- As a member of the Council there is respect for the decision making processes of the Council which are based on a decision of the majority of the Council.

- Information of a confidential nature ought not to be communicated until it is no longer treated as confidential.
- Information relating to decisions of the Council on approvals, permits and so on ought only be communicated in an official capacity in writing, by a designated officer of the Council; and
- Information concerning adopted policies, procedures and decisions of the Council is conveyed accurately

iii) ~~iii.~~ Committee Members accept and acknowledge it is their responsibility to observe any direction the Local Government may adopt in terms of advancing and promoting the objectives of the Committee to which they have been appointed.

4.7 Appointments to Committees

As part of their representative role, Council Members are often asked to represent the ~~Council~~Local Government on external organisations. ~~-~~It is important that Council Members:

a) Clearly understand the basis of their appointment; and
b) Provide regular reports on the activities of the organisation

5. DEALING WITH ~~COUNCIL~~ LOCAL GOVERNMENT PROPERTY

5.1 Use of Local Government Resources

Council Members, ~~and~~ Staff, Volunteers and Contractors will:

a) ~~(a)~~ Be scrupulously honest in their use of the ~~Council's~~ Local Government's resources and shall not misuse them or permit their misuse (or the appearance of misuse) by any other person or body;

b) ~~(b)~~ use the Local Government's~~Council's~~ resources entrusted to them effectively and economically in the course of their duties; and

c) ~~(c)~~ not use the Local Government's~~Council's~~ resources (including the services of ~~Council~~ Shire staff) for private or business related purposes (other than when supplied as part of a contract of employment in the case of staff), unless properly authorised to do so, and appropriate payments are made (as determined by the Chief Executive Officer).

5.2 Travelling and Sustenance Expenses

Council Members, Committee Members and staff will only claim or accept travelling and sustenance expenses arising out of travel related matters which have a direct bearing on the services, policies or business of the Local Governments ~~Council~~ in accordance with the provision of the Local Government Act

5.3 Access to Information

a) ~~(a)~~ Staff will ensure that Council Members are given access to all information necessary for them to properly perform their functions and comply with their responsibilities.

b) ~~(b)~~ Council Members will ensure that information provided will be used properly and to assist in the process of making reasonable and informed decisions on matters before the Council.

**ASSOCIATED DOCUMENTS**

- ELM04 Communication with Developers and Interest Groups ~~–~~ SOA –CEO 109 Form~~FORM~~
- ELM04 – Use of Council Resources Procedure

This policy is to remain in force until otherwise determined by the Council or superseded.

# *CEO's Report*

## Review of Risk Management, Legislative Compliance and Internal Controls

Undertaken by Moore Stephens Australia Pty Ltd, Report Provided: 13 December 2016, Audit Date: 24-25 October 2016

This progressed report was last presented to the Audit and Risk Committee meeting ~~*21 September*~~*5 December* ***2017.*** Since this date, progress has been made as per below.

As at ~~5 December 2017~~13 March 2018:

Suggestions/Opportunities: 43

| | |
|---|---|
| Completed: | ~~27~~32 |
| Progressing: | ~~16~~11 |

This progressed report will be presented to the Audit and Risk Committee meeting to be held on the ~~15 December 2017~~13 March 2018. The intent is to report to the Committee that all the improvements/suggestions have been further reviewed and acted upon since the September meeting.

## Summary of Improvements (ref 9.1)

Extracted from the Review of Risk Management, Legislative Compliance and Internal Controls Report at the Shire of Ashburton, prepared by Moore Stephens (WA) Pty Ltd, 13 December 2016.

Key:

IS - AM – Airport Manager, SCD – Strategic & Community Development, EO-CEO – Executive Officer – Office of the CEO, CSO - CEO Councillor Support Officer, CS – Corporate Services, CSD – Corporate Services Director, CSFC – Corporate Services Finance Coordinator, CS-SC Corporate Services Support Coordinator (Tom Price), CS -LAM – Library & Administration Manager, CS – MIS – Corporate Services Manager of Information Services, DRS – Development & Regulatory Services, EMC – Emergency Management Coordinator, DSCD – Director Strategic & Community Development, CS - FM – Finance Manager, GES – Governance and Executive Services, GES – GM Manager of Governance & Corporate Strategy, IS – MSAM – Manager of Strategic Asset Management, MC&T – Manager Communications & Tourism, SCD - MCS – Manager Community Services, OD – Organisational Development, CS - PC - Procurement Coordinator, RC – Records Coordinator, S&WC – Safety & Wellbeing Coordinator, SODA - Senior Organisational Development Advisor, **SCD-MCS – Strategic & Community Development Manager of Community Services**

| Paragraph | | Matter Noted | Improvements | Responsible Department/ Position | Responses | Date for completion | Potential Additional Costs |
|---|---|---|---|---|---|---|---|
| 6.2.1 (1) | CORP 5 Risk Management Policy | Risk recording and reporting is not currently occurring as required by Risk Management Policy. | We suggest risk recording and reporting be undertaken in accordance with the Risk Management Policy. | CS-LAM OD-S&WC | COMPLETED – New policy created along with relevant procedures – Adopted July 2017 | Completed | Costs met by the pool scheme funds |
| 6.2.2 (2) | CORP 5 Risk Management Policy | We note the rating of consequences of risks does not consider the context in which the risk is being assessed. | We suggest the use of percentages when assessing consequences to enable the risk rating to be based on the context of the assessment being undertaken. | CS–LAM OD-S&WC | COMPLETED – Considered and implemented with a percentage and numerical rating system. See new Risk Management Profile and Reporting tool that forms part of the new Risk Management Framework | Completed | |
| 6.2.3 (3) | Internal Control Policy | Currently, no policy on internal controls has been adopted by Council. | We suggest an Internal Control Policy be formulated and adopted to formalise Council's commitment to internal controls, based on a risk management process. | GES | PROGRESSING – ~~A/~~CEO currently compiling internal control Directive. This item will form part of the Governance Health Check with Ron Back as proposed. | ~~February~~ June 2018 | ~~Nil~~ |

| Paragraph | | Matter Noted | Improvements | Responsible Department/ Position | Responses | Date for completion | Potential Additional Costs |
|---|---|---|---|---|---|---|---|
| 6.2.4 (4) | Legislative Compliance Policy | Currently, no policy on legislative compliance has been adopted by Council. We acknowledge a Governance Manual is available on the Shire website and covers the relevant matters, the administrative status of this document is however not clear. | We suggest a Legislative Compliance Policy be formulated and adopted to formalise Council's commitment to legislative compliance. | CS–LAM | COMPLETED<br>Auditors have confirmed it is not a legislative requirement but a recommendation for "Best Practice" to ensure compliance is achieved. Governance Officer and Admin Manager have conducted extensive research, WALGA have provided essential feedback (email on request) stipulating no policy required given we have compliance systems in place, such as the automated Compliance Calendar and the CEO should also be assessed on the organisations achievement of compliance with the annual DLG Compliance Annual Report (CAR).<br>Acting AM has reviewed other Local Governments Policies in this area, can produce an example if required. | Completed | Nil |
| 6.2.5 (5) | Occupational, Health and Safety Policy | Currently, no policy on occupational safety and health has been adopted by Council. We acknowledge a Policy is contained within the Occupational Safety and Health Manual. | We suggest an Occupational Safety and Health Policy be formulated and adopted to formalise Council's commitment to occupational safety and health. | CS–LAM<br>OD – S&WC | COMPLETED - EMP17 Occupational Safety & Health Management Directive – Approved EMTT 3/11/2016 | Completed | Nil |

| Paragraph | | Matter Noted | Improvements | Responsible Department/ Position | Responses | Date for completion | Potential Additional Costs |
|---|---|---|---|---|---|---|---|
| 6.2.6 (6) | FIN12 Purchasing Policy | We note the following matters in relation to the policy: Requirements where an exemption for calling tenders applies are not provided within the Policy. It is not apparent if the exemption for calling public tenders from WALGA Preferred Suppliers under paragraph 9 of the Policy requires multiple quotations as is the case for lower value purchases in accordance with paragraph 15 and 18.<br>Paragraph 16 refers to the use of Panel Tenders for purchases over $150,000, this is not provided for or mentioned elsewhere in the Policy. No reference to Policy FIN19 Panels of pre-qualified suppliers is made within the Policy. | We suggest the Policy be reviewed and amended to clearly detail requirements for purchases over $150,000 which are exempt from tender requirements under Regulation 11 of the Local Government (Functions and General) Regulations 1996. | CS-PC | COMPLETED – Policy modifications made. EMTT Reviewed. Agenda item adopted at November Council meeting. | Completed | Nil |
| 6.2.7 (7) | FIN12 Purchasing Policy | We note there are no requirements stated for instances where the scope of a contract is amended or extended. | We suggest the Policy be amended to provide requirements where there is an extension or variation of a contract's scope after a contract is signed. | CS-PC | COMPLETED – Policy modifications made. EMTT Reviewed. Agenda item adopted at November Council meeting. | Completed | Nil |
| 6.2.8 (8) | FIN14 Tender Assessment Criteria Policy | We noted the Policy was last reviewed on 9 December 2015 and makes reference to clauses in FIN12 which have subsequently been amended. | We suggest the Policy be reviewed and amended for changes in legislation and other associated policies. | CS-PC | COMPLETED - Policy adopted 14 March 2017 OMC | Completed | Nil |
| 6.2.9 (9) | FIN16 GRV Rating of Improvements on Mining Tenements and Petroleum Licence Sites Policy | We note the Policy was last reviewed by Council in 2014 and was developed in 2012 in response to a Policy of the Minister for Local Government to standardise the application of GRV rating of resource projects for a three year trial period. | We suggest the Policy be reviewed to ensure its remains relevant and appropriate. | CSD<br>CS-FM | COMPLETED - Modifications approved by Council as part of the December 2016 Review. | Completed | Nil |

| Paragraph | | Matter Noted | Improvements | Responsible Department/ Position | Responses | Date for completion | Potential Additional Costs |
|---|---|---|---|---|---|---|---|
| 6.2.10 (10) | FIN19 Panels of Pre-Qualified Suppliers Policy | We note the Policy does not contain provisions in relation to how the local government will ensure clear, consistent and regular communication between the local government and pre-qualified suppliers, as required by the regulations. | We suggest the Policy be amended to set out all required matters. | CS-PC | COMPLETED – Policy modifications made. EMTT Reviewed. Agenda item adopted at November Council meeting. | Completed | Nil |
| 6.2.11 (11) | ENG09 Asset Management Policy | We note there is no requirement within the Policy to utilise risk management techniques in the management of Shire assets. | We suggest the Policy be amended to require the use of risk management techniques in the management of Shire assets. | IS-MSAM | ~~PROGRESSING~~ COMPLETED – Policy ~~being reviewed in conjunction with Asset Management Strategy and Plans due for workshop in February 2018.~~ ENG 09 has been amended to include Risk Management techniques. Separate agenda item for Council | ~~February~~ March 2018 | Nil |
| 6.2.12 (12) | REC05 Community Lease and Licence Agreements of Shire Assets Policy | We note the Policy was reviewed in December 2014. The Policy details set fee levels for various organisations for both leases and licenses. However, the setting of fees and charges is required to be done annually when adopting the annual budget by an absolute majority of Council (s6.16(3) of *Local Government Act 1995*). | We suggest the Policy be reviewed, and levels of fees removed from the Policy. | SCD | COMPLETED - As fees are still relevant and are listed for and specifically referred as guide only (they do not purport to set the fees) – therefore a decision has been made to keep them for transparency | Completed | Nil |
| 6.2.13 (13) | REC05 Community Lease and Licence Agreements of Shire Assets Policy | We note license fees do not appear to have been limited to the cost of providing the service as required by s6.17(3) of *Local Government Act 1995*. | We suggest controls be developed to ensure license fees do not exceed the cost of issuing the license or providing the service. | SCD CS-FM | COMPLETED - - the licence fees referred to are not the licence fees that relate to S6.16 of the Local Government Act but licence fees permissible under the Land Administration Act as though they operated as a 'lease', therefore the concerns are not relevant or valid | Completed | NIL |
| 7.1.1 (14) | Workforce Plan | No Workforce Plan was available. | We suggest a Workforce Plan to be developed for adoption by Council. | OD | COMPLETED - Organisational Development have developed a Work Force Plan, Updated as of 30 June 2017 by the OD Projects Coordinator. | Completed | WAGES |

| Paragraph | | Matter Noted | Improvements | Responsible Department/ Position | Responses | Date for completion | Potential Additional Costs |
|---|---|---|---|---|---|---|---|
| 7.1.2 (15) | Strategic Asset Management Strategy | We noted the Strategy does not include and assessment of risks associated with the delivery of assets to the community. | We suggest a formal assessment of risks in relation to the delivery of asset services to the community be included in the Asset Management Strategy or Asset Management Plans (to be developed). | IS-MSAM | COMPLETED – Asset Management Strategy July 2017 including assessment of risks (pg. 38-41) adopted at September Council meeting. | Completed | $100,000 Budget allocation |
| 7.1.3 (16) | Strategic Asset Management Strategy | We note the Shire has not developed formal asset management plans. | We suggest an Asset Management Plan be developed for adoption by Council. | IS-MSAM | PROGRESSING – All AMP's except Roads and Waste have been reviewed by Council with Footpaths ~~(~~to be workshopped alongside potentially ~~-~~Roads at the ~~February~~ April OMC~~)~~ ~~-&~~ ~~Drainage completed. Drafts completed for Parks & Rec., Infrastructure, Buildings and Roads.~~ Plans to be put to Council for adoption at the June ~~March~~ 2018 OMC. | ~~February~~ June ~~-~~2018 | As per 7.1.2 above |
| 7.1.4 (17) | Local Emergency Management Arrangements | We note the Local Emergency Management Arrangements have not been reviewed in accordance with the requirements of the arrangements. | We suggest the Local Emergency Management Arrangements be reviewed in accordance with each of the documents. | DRS-EMC | COMPLETED - EMC has reviewed documentation and are current. Reviews are to be every 5 years if significant changes are required, otherwise arrangement stands. | Completed | NIL |
| 7.1.5 (18) | Onslow Local Emergency Management Arrangements | We note the document available on the Shire website is watermarked as 'Confidential Draft' yet is signed by the chairperson of the LEMC. | We suggest controls be developed to ensure confidential documents are not made available on the Shire website.<br>We also suggest standard procedures be developed to accurately show the status of documents and plans. | GES-MC&T | ~~PROGRESSING~~ COMPLETED – Website version corrected. GES to review and implement controls proposed.~~GES to review and implement controls.~~ | ~~March 2018~~ Completed | NIL |
| 7.1.6 (19) | Business Continuity Management Arrangements | We noted that a Business Continuity Management Plan has been partially developed and remains in draft. | We suggest the Business Continuity Management Plan be finalised and approved. | CS – D<br>CS - AM | COMPLETED – Plan completed in November 2017 and distributed to organisation via AIMS. | Completed | Nil |

| Paragraph | | Matter Noted | Improvements | Responsible Department/ Position | Responses | Date for completion | Potential Additional Costs |
|---|---|---|---|---|---|---|---|
| 7.1.7 (20) | Record Keeping Plan | We note the Plan contains an assessment of Risks however not all identified risks have been rated in accordance with the Risk Management Policy. | We suggest when the record keeping plan is next reviewed an assessment of risks be undertaken in accordance with the Risk Management Policy. | CS-RC | PROGRESSING ~~Currently under review for risk assessment due to updated Risk Management Policy and Framework.~~ Full Plan review due in 2021. State Records Office have confirmed that the only risk assessment that is required within the Shires Recordkeeping Plan (due in 2021) is a Records Emergency Management Plan - Risk Assessment. Moore Stephens confirmed no need to review until due date of 2021. | 2021 – form part of next review | NIL |
| 7.2.1 (21) | Draft Risk Management Framework | We note the framework is still in draft form and has not been finalised.<br>The Risk Level Matrix and Assessment Criteria differs to the one contained within the Risk Management Policy. | To avoid possible misinterpretation of rated risks, we suggest the development of one context based risk level matrix and assessment criteria to be used for all risk assessments. | CS-LAM<br>OD-S&WC | COMPLETED - New CORP 5 Policy and subsidiary Risk Management Framework procedures have been created and finalised. Approved by ARC and adopted by Council July 2017 OMC | Completed | NIL |
| 7.2.2 (22) | Documented Procedures | Limited documented procedures currently exist. | Opportunities exist to improve standard operating procedures and ensure they are documented and key controls clearly identified. Once these procedures are developed and implemented, they require constant monitoring for adherence and to ensure they are effective. | CEO<br>Directors<br>CS<br>OD | PROGRESSING – (ongoing) All staff positions are completing procedure manuals for their areas of responsibility. These manuals are constantly updated on an as-needs basis.<br>This is monitored and managed by the relevant responsible officers. | June 2018 | NIL |

| Paragraph | | Matter Noted | Improvements | Responsible Department/ Position | Responses | Date for completion | Potential Additional Costs |
|---|---|---|---|---|---|---|---|
| 7.2.3 (23) | Finance Department Procedures | We note the following matters in relation to the documented procedures: Key controls such as the prior authorisation of general journals, authorisation of creditor invoices for processing and payment and authorisation of credit limits for debtors are not documented within the procedures. Documented procedures for the processing of payroll are not included within the procedures. | We suggest the procedures be modified to clearly identify all key control requirements and procedures for processing and authorisation of payroll be documented. | CS-FM CS – FC OD | COMPLETED ~~PROGRESSING –~~ ~~Document is under review and being updated by both Organisational Development and the Finance Department. Recent amendments to 'Accounts Payable' section via Procurement.~~ A new Finance Procedure Manual has been created with the assistance of a Consultant. | ~~Mar 2018~~ Completed | $4,398.90 ~~NIL~~ |
| 7.2.4 (24) | Draft Procurement Coordinator Procedure Manual JA71 | We note the Tender Register is only required to be completed as the final stage of the tender procedure. | We suggest the Tender Register be completed at each stage of the tender process, to help ensure all tenders called are recorded within the Register at all times. | CS-PC | COMPLETED - Procurement has an internal Tender Register containing all details from beginning to end (both on AIMS and hard copy), there is also the Public Tender Register which contains the details as per our legislative requirement. | Completed | Nil |
| 7.2.5 (25) | EMP24 Credit Card Management Procedure | We noted the list of current credit card holders is not up to date, as required by the procedure. | We suggest the list of current credit card holders is updated. | CS-FM | COMPLETED | Completed | Nil |
| 7.2.6 (26) | Checklists | Checklists of key functions are not maintained. | Creation of standard checklists may assist in evidencing key points of control. | SoA CEO - GM | PROGRESSING – Key checklists exist, however the responsibility of further investigation and implementation will be the responsibility of the proposed Governance and Corporate Strategy Manager. The position remains vacant and will not be filled until ~~2018~~mid-2018. | ~~February~~ June 2018 | Nil |

| Paragraph | | Matter Noted | Improvements | Responsible Department/ Position | Responses | Date for completion | Potential Additional Costs |
|---|---|---|---|---|---|---|---|
| 7.2.7 (27) | Workflow diagrams | Workflow diagrams have not been compiled. | In conjunction with the development of documented procedures and checklists, development of workflow process diagrams may assist in clearly identifying controls and processes to be followed. | CS<br>OD<br>SoA | PROGRESSING – To be developed. Moore Stephens have suggested the Shire investigate Process Mapping, flow diagrams and swimming lane diagrams in the instances Checklists are not suitable. Trialling 'Lucid Chart' for Finance, Governance and Procurement Processes. | June 2018 | ~~unknown~~$ |
| 7.2.8 (28) | Procedures for the raising of Landing Fees | We noted no independent procedures exist for monitoring aircraft passenger numbers in order to raise landing fees. We view the current system of relying on the airline to report the number of flights and passengers as inappropriate. | We suggest procedures and processes be developed to ensure passenger numbers are independently verified before raising the fee. | IS-AM | COMPLETED<br>NOTE: Landing fees are based on the weight of the planes and are monitored by AVDATA who are an independent company engaged by the Shire. Passenger Head Tax are the fees paid by the airlines to the SoA. These are generated on a monthly basis by the airlines based on the passenger numbers. The only way to monitor/verify this process would require a SoA staff member permanently based at the airport counting passengers for each flight. This is a common practice in all airports and is an "honour system".<br>The recommendation is noted and a procedure will be created and implemented whereby "random" passenger counts will be undertaken by SoA staff and used to verify the fees paid each month.<br>**Confirmed that passenger numbers are provided as a monthly total and not on a flight by flight basis. Every flight in a reporting period would need to be counted to enable a verification. This is not practicable given costs.** | Completed | Nil |
| 7.2.9 (29) | Project Specific Risk Assessments | Documented risk assessments have been undertaken for a current major project and appear appropriate. However, the risk assessment was not in accordance with the Risk Management Policy. | We suggest the assessments be undertaken in accordance with the Risk Management framework. | SoA<br>IS<br>SCD | COMPLETED –Addressed in the new Risk Management Framework/Procedures | Completed | Nil |

| Paragraph | | Matter Noted | Improvements | Responsible Department/ Position | Responses | Date for completion | Potential Additional Costs |
|---|---|---|---|---|---|---|---|
| 7.3.1 (30) | Code of Conduct | Volunteers and contractors are not bound by a Code of Conduct when performing functions on behalf of the Shire. | We suggest an expansion of the scope of the Code of Conduct to include actions by volunteers and contractors. Alternatively, a separate Code of Conduct be developed for volunteers and contractors. | ~~CS SC~~ ~~SCD MCS~~ GES – GM | PROGRESSING ~~– Community Development have engaged an external consultant who is assisting with the implementation of a Volunteer Manual which will include full code of conduct details and requirements along with the full induction process.~~ –THG Consultant is no longer covering this area. Amendments to be made to the existing Policy ELM04 to mention Volunteers and Contractors by Governance | ~~February~~ April 2018 | Nil |
| 7.3.2 (31) | Occupational Safety and Health Manual EMP17 | We note the manual contains comprehensive requirements for contractors. However, there is no requirement for contractors or volunteers to be inducted on the requirements contained in the Manual. | We suggest a requirement for the induction of volunteers and contractors be included in the Manual. | OD-S&WC ~~CS SC~~ ~~SCD MCS~~ CS - PC | PROGRESSING - ~~Community Development have engaged an external consultant who is assisting with the implementation of a Volunteer Manual which will include full code of conduct details and requirements along with the full induction process. Will be need to liaise with Procurement and OD re Process for roll out for contractors utilising standard LGIS templates~~ . Contractors' induction currently being considered by S&WB Team in consultation with stakeholders (including Procurement). | ~~April~~ June 2018 | Nil |
| 7.3.3 (32) | Experienced Staff | Experienced senior staff are expected to have a sound understanding of the requirements of their roles. We noted cases where, due to external limitations, current staff have been elevated to positions for which they have limited experience and no formal qualification. | Key positions should be reserved for staff with relevant experience and qualification and where this is not possible, formal training and development plans should be mandated. | SoA | COMPLETED - Noted – for implementation on an "as needs" basis. | Completed | Combined with 7.1.1 |

| Paragraph | | Matter Noted | Improvements | Responsible Department/ Position | Responses | Date for completion | Potential Additional Costs |
|---|---|---|---|---|---|---|---|
| 7.3.4 (33) | Staff Training | Training needs analysis and register have not been updated. A number of licences /skills accreditations have expired. | We suggest the Training Needs Analysis and Register be updated with procedures implemented to ensure licences/skills accreditations remain current. | OD-Manager ~~SODA~~ | PROGRESSING – ~~Implementation of new human resources software ("ELMO") is still progressing and when finalised will retain and monitor this information more accurately.~~ ~~OD SODA to review the existing register and ensure update and implementation of current licences/skills.~~ELMO has failed to produce in this area. OD Manager is seeking alternatives. | ~~February~~ June 2018 | Nil |
| 7.5.1 (34) | Information Systems Plans | We noted an IT Disaster Recovery Plan and IT Security Plan are in place, but have never been tested. | We suggest the IT Disaster Recovery Plan and IT Security Plan be tested. | CS-MIS | PROGRESSING - The plan will be tested. ~~This test needs coordinated with third parties (such as Telstra) to ensure our backup systems are operating at an optimum.~~ ~~CS MIS to trigger a test of both plans to determine viability and adequacy of plans.~~Proper testing will require a complete shutdown of the Tom Price office and a cross over to the equipment at the Onslow Airport and as we are yet to have a final number for how this cutover will take, it is yet to be scheduled. | June 2018 | Nil |
| 7.5.2 (35) | IT Resources | No policy in place for the use of Shire IT equipment for private use. | We suggest a policy be created and implemented for the use of Shire IT equipment for private use. | CS-MIS OD | COMPLETED ~~PROGRESSING~~ – EMP14 Equipment & Key Directive ~~is being finalised.~~ ~~CS MIS to develop policy in conjunction with OD for all staff.~~has been completed 21 December 2017 | Completed. ~~March 2018~~ | $Nil |
| 8.1.1 (36) | Risk Register | We noted risks documented within Council Meeting minutes are not maintained within a risk register. | We suggest risks documented within Council Meeting Minutes are recorded within the risk register. | GES - GM ~~GES – EO~~ | COMPLETED~~PROGRESSING~~ – Governance Officer is compiling the register from January 2018 to identify all risks documented in Council meetings via minutes including date, type, level, impact and consequence. ~~ES – GM and EO CEO to compile examples for review and implementation~~ | Completed ~~March 2018~~ | Nil |

| Paragraph | | Matter Noted | Improvements | Responsible Department/ Position | Responses | Date for completion | Potential Additional Costs |
|---|---|---|---|---|---|---|---|
| 8.2.1 (37) | Minutes of Executive Management Group Meetings | No minutes of the Executive Management Group meetings were available for inspection. | We suggest minutes of the Executive Management Group meetings be maintained with risks, internal control and legislative compliance weaknesses identified in the minutes. | GES - EO | COMPLETED Minutes are documented and recorded in secure file GV27. | Completed | Nil |
| 8.3.1 (38) | Risk Register | We reviewed a draft register and noted it is not being maintained up to date. | Risk Register to be reviewed/updated on a regular basis. | GES - GM | COMPLETED – Corporate Risk Register updated and to be maintained by Governance Manager | Completed | Nil |
| 8.3.2 (39) | OSH Audit Response Register | We note the register contains 29 recommendations rated as high priority. Of these only 4 recommendations are recorded as complete. No dates are provided as to when the audit was undertaken or when the recommendations were finalised. | We suggest recommendations are dated to assist in following up on long outstanding matters. | OD-S&WC | COMPLETED<br>There are 129 recommendations total, 66 in progress, 8 not started, 47 complete, 8 awaiting other action. More detail can be provided if required. It should be noted not all recommendations are practical or necessary to implement. It should also be noted of those recommendations the “in progress” can include those that have been fully implemented in high risk departments but not completed elsewhere due to competing priorities.<br>S&WC to implement recommendations. | Completed | Nil |
| 8.3.3 (40) | Incident Register | We note the register does not record any follow up measures to help prevent re-occurrence of incidents. | We suggest the Register records actions to be taken to help prevent re-occurrence of incidents. | OD-S&WC | COMPLETED The Action Register in system STEMS records all proactive and reactive actions (controls) following incidents; scheduled inspections; ad hoc observations and hazard reports etc. Auditors did not review this program. | Completed | Nil |
| 8.5.1 (41) | Employee Complaints / Grievance Handling | We note there are no procedures to ensure employee complaints remain confidential, recorded and responded to appropriately. | We suggest a documented procedure be developed to ensure all employee complaints are logged and followed up to ensure they are resolved. | OD-MOD | COMPLETED - EMP16 Grievances, Investigations and Resolution Management Directive modified accordingly (refer to Executive Team Meeting 1/12/2016).<br>EMP22 Discrimination, Harassment and Bullying Management Directive modified accordingly (refer to Executive Team Meeting 24/11/2016) | Completed | Nil |

| Paragraph | | Matter Noted | Improvements | Responsible Department/ Position | Responses | Date for completion | Potential Additional Costs |
|---|---|---|---|---|---|---|---|
| 8.5.2 (42) | Community Complaints Handling | Whilst we note there are procedures for community complaints in relation to assets, there are no procedures to ensure general community complaints are recorded and responded to appropriately within a defined timeframe. | We suggest a documented procedure be developed to ensure all community complaints are logged and forwarded to the appropriate officer then followed up to ensure they are resolved. | CS-LAM<br>GES<br>CEO - GM | COMPLETED- New Council Policy adopted by Council 21/9/17 and implemented December 2017. | September 2017 | NIL |
| 8.6.1 (43) | Internal Audit | Currently, no internal auditors have been appointed, and limited internal audit functions have been undertaken. | We suggest that as the level of documented procedures increases, an expanded internal audit function to confirm adherence to documented policies and procedures may be required. | GES-CEO | PROGRESSING- Suggestion noted and included in the 2017/18 Budget. ~~The creation of the Manager of Governance and Corporate Strategy will be responsible for the implementation and process of an internal audit program.~~CEO's intention to establish a permanent internal auditor in the 2018/2019 Financial Year | June 2018 | Nil~~$?~~ |

# *You're the Voice*

## Shire of Ashburton

## Youth Engagement Strategy

**2018 – 2023**

shire of Ashburton
reef to range

# Acknowledgements

The Shire of Ashburton acknowledges and thanks all of the young people and community stakeholders who contributed their opinions and ideas, and gave generously of their time to assist in the development of this strategy.

The Shire also thanks the Tom Price Youth Support Association for conducting the initial consultation with young people in the Shire and for their ongoing input into and commitment to the development of a Youth Engagement Strategy.

The development of this strategy has been made possible by funding from the Department of Communities[1] through their Youth Friendly Communities Grants program.

This strategy has been developed by YACWA Consulting, part of the Youth Affairs Council of Western Australia (YACWA).

[1] The funding received was from a Youth Friendlies Community grant administered by the former Department of Local Government of Local Government and Communities, the communities component of this department now known as the Department of Communities.

# Contents

# Message from the Shire President

<<<<<To be populated >>>>>

# Executive Summary

There are currently approximately 1,000 young people aged 12 to 25 living in the Shire of Ashburton, which is around 8% of the population. Young people have unique and specific needs and yet a large proportion are unable to vote and participate in the usual democratic election of Shire representatives. This strategy affirms the Shire of Ashburton's commitment to work with young people and outlines the steps we will take to actively involve them in shaping the future of their towns.

To inform the development of the strategy, we spoke with and listened to 38 young people and eight key stakeholders from the Shire, schools and local community organisations.

Young people told us that their main issues of concern were a lack of activities for their age group during the holidays, not being able to vote and not being asked their opinion. Young people told us that they wanted to have more opportunities to develop their skills, to meet and connect with young people from other towns, and to have real input into decisions that affect them.

The key stakeholders we spoke with identified a number of opportunities for youth engagement at a council level and also felt that developing youth leadership skills was important. They identified opportunities for collaboration, partnerships and in-kind support that would ensure that young people's ability to engage was maximised.

The Youth Engagement Strategy 2018 - 2023 has six key components:

- Vision – what we want youth engagement to look like for young people in the Shire
- Outcomes – what we want to achieve for young people in the Shire
- Strategies – how we will go about achieving those outcomes
- Partnership opportunities – who we will work with the deliver outcomes
- Funding opportunities – how we will resource delivering the strategies
- Priority level – at what stage of the five-year strategy we will address the strategy

Our vision for young people living in the Shire of Ashburton is that they have the skills, connections and opportunities to actively shape the future of the towns that they live in.

The three outcomes that we want to achieve are that:

1. Young people are well informed and have avenues to communicate with the Shire and other key stakeholders
2. Young people have opportunities to get actively involved in planning and decision making
3. Young people have access to events and programs, services that meet their needs

# Introduction

The Shire of Ashburton services communities across a large area of the Pilbara, and includes the four towns of Onslow, Pannawonica, Paraburdoo and Tom Price. It is committed to including young people aged 10 to 24 within its mission of social prosperity. The purpose of this Youth Engagement Strategy (YES) is to enable the Shire to:

- Better understand the needs and priorities of young people
- Build a strong relationship and understanding with young people
- Develop and maintain appropriate communications channels with young people
- Facilitate young people's involvement in planning and decision making of events, activities, facilities and infrastructure that affect them

The development of this strategy involved three key stages:

- Review and research
- Consultation
- Analysis and strategy development

## Young people in the Shire of Ashburton

The population of the Shire of Ashburton is 13,262,[2] of which nearly 8% are young people aged 12 to 25 (*n* 1,005). Within this, 2.7 % of the population (*n*356) are of high school age (12 to 17) and 5% (*n*649) are of tertiary education and independence age. Both of these figures are lower than the regional average of 7.4% and 7% respectively, meaning there is approximately one-third less high school aged young people in the Shire of Ashburton in comparison most other regional Local Government Authorities (LGAs). There has been a decrease the numbers in both of these age groups living in the Shire over the last five years, despite the Shire's population increasing by 30% in the same time period. The Indigenous population in the Shire is 7.9% (*n*1,024). There are 302 young people attending high school and 394 attending TAFE or university. Approximately 73% of people living in the Shire state that they have internet connection.

## The youth landscape in the Shire of Ashburton

There are four towns in the Shire of Ashburton - Onslow, Pannawonica, Paraburdoo and Tom Price - and the majority of the population lives in these towns. As mining towns, Pannawonica, Paraburdoo and Tom Price all receive investment by Rio Tinto. Onslow is a coastal town which is assisted by investment from the Chevron Wheatstone project and BHP.

Each of the towns has a primary school. Onslow School caters for children and young people from kindergarten through to year 12. Tom Price has two primary schools and one high school. Paraburdoo has a primary school but no high school. A number of students from Paraburdoo take the bus daily to Tom Price High School, but many board away from the town. Pannawonica has a primary school, and in 2018 they will take high school enrolments - half of the teaching will be provided by existing teaching staff, and half will be provided by the School of Isolated and Distance Education (SIDE).

Each of the towns has a library, a public swimming pool, at least one oval, halls and sports courts, and parks and gardens, including skate parks in all towns. The Shire also organise a range of events and activities, including school holiday programs.

[2] http://profile.id.com.au/ashburton/population-estimate

The Shire has committees, including an Aboriginal Reference Committee and a Tourism Committee, however it does not, at this stage, have a youth committee. The Shire, through partnership with Rio Tinto, employ a club development officer in Pannawonica, Paraburdoo and Tom Price, and an element of this role interacts with young people in the community.

The Tom Price Youth Support Association (TPYSA) is a not for profit group which has successfully provided youth support services from two locations in the Shire for thirty years – the Tom Price Youth Centre and the Paraburdoo Youth Centre. The organisation delivers youth drop in services, life skills development programs and other intensive support services including case management, counselling, advocacy and referral.

The V Swans is the education and community development department of the Swan Districts Football Club and have staff providing programs in the Ashburton region. Based on Onslow, they have recently opened the V Swans Onslow Youth Centre, and run a number of programs from the centre and in the community.

# Youth engagement research and trends

It is widely regarded with the youth services sector that youth participation is important, even integral, to youth service delivery. The need to involve young people in decisions about services and facilities that affect them, is increasingly understood by each level of Government, however what organisations, and especially Government bodies, find more challenging is how to put meaningful youth participation into practice. Alongside this, there is an emerging focus on the importance of co-design of services from inception, even back to the point of procurement. In terms of funding, organisations which demonstrate a strong element of co-design with young people in the projects and programs are likely to be favoured when resources are being allocated.

Increasingly, peer to peer education, consultation and mentoring is being seen as an excellent way of achieving strong outcomes for young people. These methods build the skills, capacity and confidence of young people. Peer education or consultation in a youth context is where young people are provided with training and support to pass on information to others, or to consult with other young people to gather information.

The WA State Government is currently developing a state-wide youth strategy and in 2017 released a discussion paper – *Better Choices: Youth in WA*. The paper identified a number of approaches to youth services as leading examples of best practice. Relevant to this strategy include mentoring, digital engagement and youth led initiatives.[3] The paper states that research shows that young adults who have mentors, are more likely to engage in productive and beneficial activities. It states that digital engagement refers to organisations increasing their use of digital and online platforms to better engage with young people. Youth led initiatives refers to youth representative or advisory groups, as well as engagement linked to specific services or projects developed by young people.

There is a growing body of research and guidelines relevant to youth engagement. The Youth Affairs Council of Western Australia has a comprehensive list of worldwide best practice resources located on its website. Some of the most relevant to this strategy are represented in Table 1.

*Table 1: Youth participation resources*

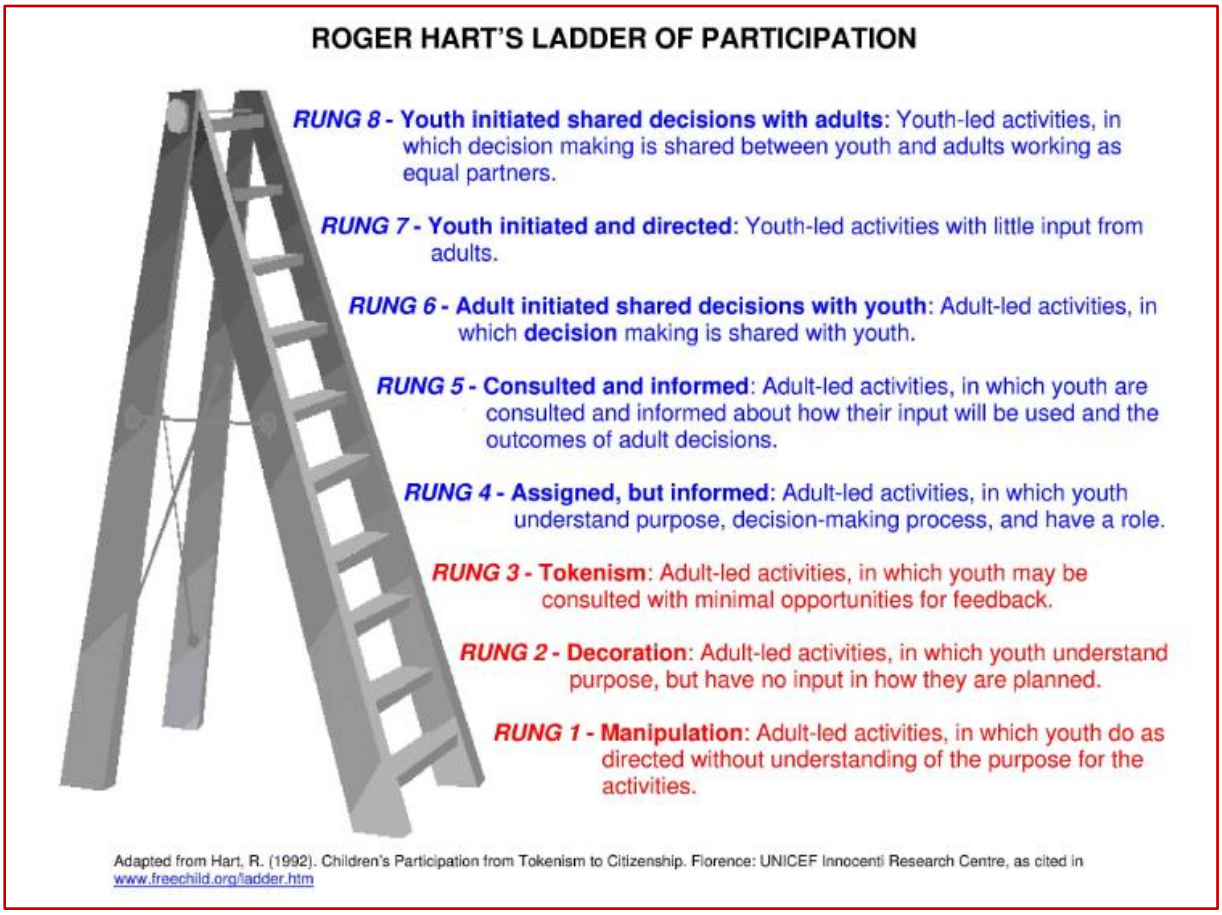
| Title | Organisation | Place |
|---|---|---|
| Involving Children and Young People: Participation Guidelines | Commissioner for Children and Young People (CCYP) | WA |
| Involving Children and Young People: Overview and Checklist | Commissioner for Children and Young People (CCYP) | WA |
| Involving Children in Decision Making – Your quick practical guide | Commissioner for Children – Tasmania | Tasmania |
| Youth Participation and Leadership – Organisation Resource | Youth Network of Tasmania | Tasmania |
| Rewriting the Rules for Youth Participation | National Youth Affairs Research Scheme | National |
| Building a Culture of Participation: Involving children and young in policy, service planning, delivery and evaluation | Department for Education and Skills | UK |

[3] www.dlgc.wa.gov.au/Publications/Documents/Better_Choices_Youth_WA.pdf

### *Harts ladder*

Hart's Ladder of participation is a well-used and highly referenced model of children and youth participation that clearly outlines levels of participation (see Figure 1). The first three rungs of the ladder refer to non-participation and the top five rungs refer to true participation. For the purposes of the Shire's engagement with young people, each of the actions included in the strategy have been reviewed to ensure they fall at level four and above. The Shire can refer to this model when conducting any youth engagement and aim for the work to reach as far up on this ladder as can be accommodated.

*Figure 1: Hart's Ladder of Participation*



# Strategic context

The Shire of Ashburton's Strategic Community Plan (SCP) 2017 – 2027 provides direction for the advancement of the Shire, it's towns and communities. It provides a holistic approach to planning for the future development and growth across the Shire, while recognising and responding to the distinctive nature of each town and community. The Youth Engagement Strategy supports a number of the key objectives in the SCP. Table 2 illustrates which areas of the Youth Engagement Strategy supports the outcomes and strategic directions in the SCP.

*Table 2: Strategic links with the Youth Engagement Strategy 2018 - 2023*

| SCP Goal | SCP Objective | SCP Strategic Directions | Youth Engagement Strategy link |
|---|---|---|---|
| Vibrant and Active Communities | Connected, caring and engaged communities | • Encourage and provide a range of opportunities to community members and stakeholders to inform and participate in decision making<br>• Establish a strategic approach to community development planning that focusses on building social capital, developing community capability and addresses social isolation and dislocation all residents across the Shire<br>• Continue to develop programs that welcome and induct new residents and transient workers into their host communities | 1.1, 1.2, 1.3<br>2.1, 2.2, 2.3<br>3.1, 3.2, 3.3 |
| | Quality education, healthcare, childcare, aged care and youth services | • Play a leadership role in advocating to, and engaging with, relevant government and private sector stakeholders to foster a whole of Shire approach to the provision of quality education, training, healthcare, childcare, aged care, youth services and facility provision | 2.3, 2.4<br>3.2, 3.4 |
| | A rich cultural life | • Encourage and support community involvement with and appreciation of, arts and culture<br>• Continue to work collaboratively with the community to deliver town events<br>• Increase opportunities for children, youth and Indigenous residents to be part of the wider community | 2.1, 2.3, 2.4<br>3.1, 3.2, 3.3 |
| Inspiring governance | Effective planning for the future | • Regular communication and engagement with stakeholders and community to generate a sound understanding, support and buy-in to the Shire's plans and strategies | 3.2 |
| | Community ownership | • Ensure equitable and broad representation on committees and in community engagement activities to ensure there is well informed decision making<br>• Ensure broad participation and diverse representation in research, planning and decision making<br>• Develop a communications and engagement strategy that ensures the provision of quality information on Shire activities and uses modern methods to foster high levels of community awareness and involvement | 1.1<br>2.1, 2.2, 2.3<br>3.2, 3.4 |
| | Council leadership | • Improve civic engagement and leadership to increase the involvement of under-represented groups including youth, the Aboriginal community and seniors | 2.2, 2.3, 2.4<br>3.4 |

# Community consultation

Three stages of community consultation were used to develop the Youth Engagement Strategy.

## The process

### *Phase 1*

The first phase of consultation occurred in Tom Price, Pannawonica and Paraburdoo in early 2017. Graffiti boards were used to encourage young people to write comments on the following:

- the positives and negatives of being a young person living in the Shire
- their aspirations for the future
- what they would like the Shire to do for them

The result was a snapshot of a broad range of responses on issues which concerned young people such as lack of housing, jobs, public transport and shopping opportunities. There was a perceived divide between local government and young people and recognition that this perception needed to alter, and positive relationships developed. It was acknowledged that there was a need to design an engagement strategy that underpinned future youth inclusion.

### *Phase 2*

In the second phase of consultation, the Shire of Ashburton worked in partnership with the Tom Price Youth Support Association (TPYSA) to develop the *You're the Voice* workshop. TPYSA then delivered three, six-hour workshops in three locations. In total, 38 young people aged 12 to 17 participated in the workshops. The demographics of young people attending the workshops are listed in Table 3.

*Table 3: Numbers and demographic of young people attending You're the Voice workshops April to July 2017*

| Workshop location | Participants | | Ages | | Cultural background | | |
|---|---|---|---|---|---|---|---|
| | Male | Female | 12 to 14 | 15 to 17 | ATSI | CALD | Other |
| Onslow/Pannawonica | 7 | 5 | 3 | 9 | 1 | 5 | 6 |
| Tom Price | 7 | 11 | 11 | 7 | 2 | 5 | 11 |
| Paraburdoo | 7 | 1 | 4 | 4 | 2 | 1 | 5 |
| **Category totals** | **21** | **17** | **18** | **20** | **5** | **11** | **22** |
| **Overall totals** | **38** | | **38** | | **38** | | |

During the workshops the young participants explored the following:

- What they thought the Shire of Ashburton did in their town (exploring positives and negatives)
- How young people fit in to, or are planned for, in the Shire
- How they would like to communicate with the Shire in the future

The Shire President and a Shire of Ashburton staff member attended the Onslow/Pannawonica workshop, and two Councillors attended the Tom Price workshop, to discuss the role of the Shire with the young participants.

### *Phase 3*

The third phase of consultation YACWA conducted phone interviews with eight key stakeholders, across each of the four towns in the Shire of Ashburton from November 2017 through to January 2018. These were:

- Councillor Peter Foster – Shire of Ashburton
- Councillor Lindon Rumble – Shire of Ashburton
- Ruth Proslmeyr, Principal – Paraburdoo Primary School
- Ben Jamieson, Principal – Pannawonica Primary School
- Andrew Jack, Principal – Tom Price Secondary School
- Marian Herne, CEO – Tom Price Youth Support Association
- Dawn Thompson, Domestic Violence Counsellor, Nintirri Centre
- Kaiden Matera, Active Education Youth Services Manager – Ashburton, V Swans

They were asked the following key questions:

- What do you perceive as the main positives for young people living in the Shire?
- What do you perceive the main issues or challenges to be for young people in the Shire?
- Young people in the Shire said that they don't feel heard or taken seriously, or that when they are asked for their ideas and opinions that it is tokenistic and rarely taken into consideration. What do you think can be done about this? Can you see any opportunities for young people to be more included and their opinions valued?

As the conversation unfolded, follow up questions were asked as appropriate. In addition, those being interviewed who were not from the Shire, were asked about their relationship with the Shire and what opportunities they saw for collaboration.

## Key findings

The key findings are summarised in this section, but the information is reported more fully in Appendix A.

### *Young people*

The young people's consultation data is taken directly from the report developed by TPYSA in response to the three workshops held with young people in the Shire. It is important to note that the young people that participated in the workshops ranged from ages 12 to 17. Whilst this age range is the focus of the strategy, the ideas and opinions of young people 18 and over have not been explored.

The young people were generally very aware of what the Shire of Ashburton provides in their respective towns and had a good understanding of some of the difficulties the Shire face in providing for all sectors of the community across such a large area with a limited budget.

The areas that young people wanted to see the Shire focus on included:

- Developing a school holiday program that has more on offer for teenagers
- Providing more opportunities for them to have input into new facilities planned for their town
- Getting feedback on their ideas and how they have been used when they have been consulted
- Providing more opportunities for them to build their skills and confidence to engage
- Communicating better with them, using methods that they use, such as text and social media
- Building partnerships with key organisations to open up opportunities

- Addressing negative attitudes to young people's ideas and opinions

Some young people expressed the opinion that because they are not eligible to vote thy felt that their opinions were not of value to the Shire. Their ideas for how some of the above could be achieved included:

- Youth specific representatives involved in the Shire
- Youth exchanges between the towns in the Shire
- Provide incentives or rewards for youth engagement

### *Key stakeholders*

The key stakeholder consultation data from the report developed by TPYSA (where councillors and shire officers attended the youth workshops), and eight phone conversations.

The stakeholders felt that there was a number of good things for young people living in all of the towns in the Shire, including youth centres in three locations, good facilities for small towns (skate parks, swimming pools etc.), good sporting opportunities, safety, community spirit, natural resources, and strong culture.

The areas that key stakeholders wanted to see the more focus on to improve outcomes for young people in the Shire included:

- Supporting the development of more age appropriate activities during the school holidays
- Developing more activities for young people who are creative or into the arts
- Involving young people with better access to events within the Shire
- Engaging young people in a way which is meaningful and relevant
- Assisting young people out in the communities that do not attend school
- Working with high schools to offer a variety of options for students, to help students and families that don't want go away to school
- Improving post-high school opportunities, including higher education and work opportunities
- Building the identity of young people within the town, and the connection between young people and the towns
- Providing more access to mental health support and other support services

Some of challenges identified for the Shire in terms of planning for and meeting the needs of young people, included:

- The fluctuating numbers of young people in the towns due to school holidays, law time and other factors
- Getting external providers to the Shire to run interesting or creative activities with the young people, and the high cost associated with doing this
- Communicating with young people about what the Shire is offering

The Shire has limited resources, both in terms of funding, and staffing to support youth initiatives, however key stakeholders identified opportunities for partnerships with schools, local youth organisations such as the TPYSA and the V Swans, and with the local mining companies and other business.

# Youth Engagement Strategy 2018 - 2023

The Youth Engagement Strategy 2018 – 2023 is based around a vision, three focus areas with associated outcomes and 11 strategies outlining how these outcomes will be achieved. They Shire of Ashburton, whilst geographically large, has limited resources, so underpinning these strategies are partnership opportunities, these may be in-kind support, joining resources, or in some instances providing resources. The full strategy is presented in Table 4 and has a number of components:

### *Vision*

At the top of the table and overarching the strategy, is the vision – this is what the Shire wants youth engagement to look like for young people in the Shire.

### *Focus areas and outcomes*

On the left of the table there are three focus areas and associated outcomes. These outcomes outline what the Shire wants youth engagement to look like for young people in the Shire.

### *Strategies*

Falling out of the outcomes, there are 11 strategies identified that outline what the Shire will do (in partnership) to achieve those outcomes.

### *Partnership opportunities*

Many of the strategies (and actions that fall out of these) will be delivered in partnership key stakeholders in the Shire. Most of the strategies have one or more potential partnerships organisations or groups identified.

### *Funding opportunities*

Each of the strategies have potential funding opportunities identified that can be explored. Where it is likely that this strategy can be delivered with existing resources within the Shire, this has been listed as ‘existing Shire resources’.

### *Priority level*

The Youth Engagement Strategy is a five-year plan, and some of the actions are either more likely to be easily achieved or a greater priority than others. Each of the strategies have been colour coded, with red indicating high priority, orange indicating medium priority, and blue indicating low priority.

*Table 4: Youth Engagement Strategy 2018 - 2023*

| ***Vision: Young people living in the Shire of Ashburton have the skills, connections and opportunities to actively shape the future of the towns that they live in*** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **#** | **Focus area** | **Outcome** | **#** | **Strategy** | **Partnership opportunity** | **Funding opportunity** | **Priority level** |
| **1** | Communication | Young are well informed and have avenues to communicate with the Shire and other key stakeholders | 1.1 | Establish and maintain a youth database of names and phone numbers which can be used to promote events and opportunities to young people via text message (see *Youth Connectors Program* description) | TPYSA<br>V Swans<br>Schools | Existing Shire resources | High |
| | | | 1.2 | Develop and distribute a youth-friendly version of the Youth Engagement Strategy | Young people<br>TPYSA<br>V Swans | Community Arts Network (CAN) grant | Med |
| | | | 1.3 | Explore the development of a youth marketing tool to promote the Shire from a youth perspective | Arts organisation, i.e. Awesome Arts | CAN grant<br>Lotterywest<br>Mining companies | Low |
| **2** | Consultation and engagement | Young people have opportunities to get actively involved in planning and decision making | 2.1 | Develop a Shire *Youth Connectors Program* which provides opportunities for young people to provide input into and feedback on Shire plans and decisions as they relate to young people | TPYSA<br>V Swans | Youth Activities Grant (set up)<br>Existing Shire resources (ongoing) | High |
| | | | 2.2 | Actively develop opportunities for young people to attend council meetings when held in each town and/or when an item relevant to young people is on the agenda | Schools<br>Councillors | Existing Shire resources | Med |
| | | | 2.3 | Establish a Shire Youth Committee comprised of a Shire Councillor, staff representatives, key stakeholders and young people from each town that meets quarterly | Schools<br>Key stakeholders<br>Businesses | Existing Shire resources | Low |
| | | | 2.4 | Build the capacity and knowledge of Shire officers, councillors and key stakeholders on the importance of youth engagement and promote a positive image of young people to the community | n/a | Existing Shire resources | Med |
| 3 | Events and programs | Young people have access to events and programs, services that meet their needs | 3.1 | Review and expand the Shire's school holiday program in each town to provide at least one youth session (with a focus on alternatives to sport) | External providers | Existing Shire resources | High |
| | | | 3.2 | Ensure the Shire's new event strategy incorporates elements that appeal to young people | Young people | Existing Shire resources | High |
| | | | 3.3 | Build the skills and capacity of young people through traineeships and work experience programs | Schools | Existing Shire resources | Med |
| | | | 3.4 | Establish and deliver an annual youth leadership inter-town exchange camp to be held in each of the four towns on rotation (this would include leadership training) | TPYSA<br>V Swans | Lotterywest (initial)<br>Mining companies (ongoing) | Low |

*Youth connecters program*

The youth connectors program would involve young people signing up to be part of the program, by providing their contact email address, and phone numbers and agreeing to provide feedback on Shire events, activities, projects and programs as they relate to young people, and to help promote this information to their friends. In return, the Shire will provide young people with an annual card, that grants certain benefits, such as free or discounted pool entry. The Shire could apply for a Youth Activities Grant with the Department of Communities for the initial set up of this innovative program. On-going management could be a partnership with TPYSA (for the towns of Tom Price and Paraburdoo) and the V Swans (for the towns of Onslow and Pannawonica). This program should be named by the young people involved

# Appendix A – Key findings in full

### *Young people*

The young people's consultation data is taken directly from the report developed by TPYSA in response to the three workshops held with young people in the Shire.

#### *Young people's perspectives on what the Shire provides*

The young people were generally very aware of what the Shire of Ashburton provides in their respective towns including facilities (sporting, parks and gardens, library), infrastructure (road maintenance), services (rangers, rubbish/recycling), activities/events (school holiday programs) and other operations (advertising, helping the community, asking community opinion). They also had a good understanding of some of the difficulties the Shire sometimes face in providing for all sectors of the community across such a large area with a limited budget.

The young people provided feedback on the Shire's current services, which mostly centred around the school holiday program being focused on younger children and not appropriate for teenagers

They recognised and valued many of the structures that existed in their towns but saw them as facilities that were put there as par for the course, rather than with young people in mind. Young people were easily able to identify their town structure but were not sure exactly where or how they fitted into the picture.

#### *Young people's perspectives on youth engagement*

The young people also provided feedback on the Shire's engagement with young people aged 12 to 17. The most prevalent negative opinion amongst the young people regardless of age, gender or cultural background was their feeling of having an unheard voice within their communities. Young people did recall occasions where the Shire had consulted with them on projects such as the design of skate parks, but felt that this was a wasted exercise as their ideas had not been used in the finished products. Other feedback that related to engagement included:

- The perception that you must work at the Shire to get what you want
- That the Shire do not consult, but only respond to complaints
- That because they are not eligible to vote, young people's opinions are not of value to the Shire

The workshops also identified challenges with youth engagement that the Shire need to address, including:

- Building the skills, confidence and capacity for young people to engage effectively and meaningfully in any ongoing mechanisms, this will vary according to location, age, background and need to be ongoing (as more children move into the 'youth' age bracket)
- Building trust with young people, as there will be initial reluctance to get involved due to previous negative experiences
- Addressing how to effectively communicate with young people information about how to get involved
- Addressing inclusivity, i.e. maximum inclusion for those with high education, work or other commitments; or who have limited transport options
- Building up the structures to facilitate successful youth engagement including assigning responsibilities for youth engagement within the Shire, building partnerships with key

organisations to open up opportunities and addressing negative attitudes to young people's ideas and opinions

### *Communication*

Young people were asked about the best ways for the Shire to communicate with them. They said that communication strategies in the future needed to be modern and relevant to technology that they use and also needs to spark their interest. The key theme that emerged was the challenge of *how* to facilitate this communication. Young people recognised that many mechanisms can be put into place, but these do not necessarily capture a large cross section of young people as they can be focused on other things including school, work, sport, recreation and social life. Young people felt that there needed to be a variety of initiatives – some which provided a platform for participation and involvement, as well as other quick strategies which required immediate responses that were simple and time managed e.g. a survey question sent by SMS. They felt that there needed to be a reward or some incentive for participation. One idea for this which got support was an ID card which recognised them as a participant and then gave the access to benefits, such as a discount at the local pool.

### *What young people wanted*

Young people said that they wanted:

- To participate in voting
- To be included in decisions that were made for events, projects and facilities
- Youth specific representatives involved in the Shire
- Youth exchanges between the towns in the Shire
- Opportunities to develop skills and confidence

### *Key stakeholders*

The data from key stakeholders is taken from the both TPYSA report and the phone consults YACWA held.

#### *From the youth consultations*

The Shire President and a Shire staff member attended the Onslow/Pannawonica workshop, and two councillors attended the Tom Price workshop. They talked through the role of the Shire, which they identified as:

- Creating infrastructure and managing facilities
- Applying for funding, including working with the mining companies to improve or build new facilities
- Prioritising and balancing the needs of each of the four towns

They also talked through what they felt they hadn't done so well at in relation to young people, which included:

- Creating work opportunities
- Knowing what kids want to do, and providing age appropriate activities due to limited youth numbers in the older youth age range
- Designing and delivering inter-town activities
- Providing more holistic support
- Engaging young people in a way which is meaningful and relevant

#### *From the phone consultations*

The key stakeholders identified a number of **positives** for young people living in the Shire. These included:

- Youth centres in three locations
- Good facilities for small towns, e.g. all have skate parks and swimming pools
- Good opportunities to participate in a range of sports in the towns
- Safety and not a large amount of crime
- Great community spirit
- Fantastic natural resources, i.e. Karijini National Park
- Young people getting a good dose of culture and low cultural tension

In terms of the issues or **challenges** that young people living in the Shire face, they identified the following:

- Not many or enough opportunities for young people who were creative or academic
- Children and young people out in the communities often don't attend school
- The high schools not being able to offer enough options for students, or there not being a high school available at all
- Young people leaving towns (even if this is not what families really want) to seek better educational opportunities, this causes challenges during the holidays, with crime going up, some friction between young people that stay and those that go away, and also those that going away feeling dislocated from their home

- Limited post-high school opportunities, i.e. no TAFE, limited traineeships, limited part-time or casual first jobs
- Few opportunities to stay unless you are able to get work in the area, even if you were born in the town; unless young people are able to wait a while for opportunities, which many are not able to
- Building the identity of young people within the town, and the connection between young people and the towns - there can be the perception that Perth is 'more'
- Young people left at home with no supervision and nothing to do when parents are at work
- Challenges with limited access to mental health support and other support services
- Increasingly limited sporting opportunities once young people reach about 13 or 14, adult teams try to accommodate which works in some instances
- Cost of living, including airfares – it being harder for young people to move towards independent living when things are so expensive
- Limited affordable accommodation options for young people if things aren't working out at home

In addition, they identified some of the **difficulties** the Shire had in terms of planning for and meeting the needs of young people. These included:

- The ability to plan for young people in school holidays when they did not know how many that were away at boarding school would be returning
- The transience of the Indigenous population of young people, especially around law time
- The difficulty in getting external providers to the Shire to run interesting or creative activities with the young people, and the high cost associated with doing this
- Communicating with young people about what the Shire is offering
- Perception by those in Pannawonica that the town doesn't get its fair share of support from the Shire (because it's a closed mining town)

There were a number of ideas offered about what would help build on the positives and where there might be **opportunities** to address some of the challenges. These included:

- Partnerships with arts organisations, such as Awesome Arts to bring creative pursuits to the region
- Rio Tinto investment in the towns and being good source of funding for innovative projects that will benefit their workers and their families
- The high level of adult skills and qualifications in the towns that can be used to build the capacity of young people
- That people often have multiple roles in the town, for example they work at the Shire, but are also involved in the school and sporting clubs which makes communication easy
- A variety of somewhat untapped career opportunities
- Opportunities for better connectivity between the towns, especially between Paraburdoo and Tom Price, and then between Onslow and Pannawonica
- Until recently, Pannawonica had almost no teenagers in the town, but the dynamics in the town will change now that more teenagers are able to be accommodated with the school providing high school education

When asked specifically about **engagement**, the key stakeholders had a number of suggestions, which included:

- Encouraging and supporting young people to attend a council meeting when something is coming up for a debate and decision that is relevant to young people
- That the youth centres have a captive audience that should be utilised, but not all young people attend, so schools need to be utilised as points of engagement too
- Broadening the way that the Shire engages with young people and exploring options such as forums, chat groups, text messaging and reference groups
- Developing young people's commitment and investment in being part of a group of young people who provide input through incentives i.e. a membership card with benefits
- Establishing a Shire committee devoted to youth issues, include young people and asking them to make regular recommendations - one or two Councillors could be part of the committee
- Recognising young people that participate as Shire volunteers
- Marketing the towns through the eyes of young people – they could use Go Pros and film their favourite places
- Holding annual youth forums or camps, once a year in each town over two days, bringing in guest speakers, mentors and so on. A group of young people in each town could organise and host one year, then rotate
- Building a group of Shire of Ashburton youth ambassadors, which act as a consultative group for the Shire – they can answer questions, sometimes via a meeting but often via a text message, and receive privileges for being part of the group, i.e. and ID card and discounts – could aim for several hundred-young people

The stakeholders had a number of suggestions for ways in which the Shire could build or further develop **partnerships** with others in the community, including:

- Tom Price North Primary School's Pay It Forward program
- Establishing a high school scholarship fund for each high school and strengthen the relationships with the high schools
- Working with primary and high schools to develop a leadership strategy for young people, especially using existing programs such as cadets or student councillors
- Mental health support with headspace trialling iPad video conferencing in partnership with Tom Price High School
- Opportunities for the Shire to work with schools to attract teachers to do their practical placements in the area; the Department of Education will pay travel costs, but accommodation is expensive and the Shire may be able to assist
- An opportunity to piggy back on existing structures, such as the youth advisory groups for the youth centres, or local drug action groups
- Opportunities for in-kind contributions to make things work, for example Department of Child Protection, Human Services, Rio, Adecco and so on

| | | | | | | | | | | | | Utilities Connection Details | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Map Reference # | Area | Lot # | Street | Reserve | Owner | Lot Size m2 | Existing Purpose | TPS7 - Zoning | Topography and General Description of Land | Native Title or Local Aboriginal Corporation Considerations | Distance to Nearest Primary School | General Comments - Land Owner | Electricity | Sewer | Water |
| 1 | *Central* | 248 on Plan 14718 | Poinciana St | No | Hammersley Iron | 5856m2 | Vacant Land | Current: Residential | Site is cleared and flat. Soil characteristics are unknown as no geotechnical investigation has been undertaken | Native Title extinguished | ~290m | Supportive with the design provision of a buffer to the adjacent lot. | Will require new kiosk as existing is at capacity : Price Est $500 LV service connection to consumer panel : Price Est $100k | Sewer Mains runs through the middle of this block. Would need to relocate : Price Est $200k | Suitable Water Mains in vicinity Price Est : $75k for new service connection |
| 2 | Area W | 900 on Deposited Plan 15092 | Tanunda Street | No | Hammersley Iron | 30260m2 | Vacant Land | Current: Parks, Recreation and Drainage Proposed: Public Open Space Permissibility: Development must be in line with reserve purpose/intent | Slighty undulating. Soil characteristics are unknown as no geotechnical investigation has been undertaken | Native Title extinguished | ~250m | Landowner not supportive of location - not in line with RTIO town strategy. Landowner would like to retain. | Two existing HV kiosks are in vicinity. Both would require upgrade to upgrade existing HV Kiosk. Price Est: $500k LV service connection to consumer panel : Price Est $200k | No Sewer Mains in Vicinity. Price Est $180 - $250k to supply Sewer mains runs to existing pump station. Pump Station Capacity will need to be checked | Suitable Water Mains in vicinity Price Est $75k for new service connection |
| 3 | Central | 843 on Deposited Plan 15336 | East Road | No | Hammersley Iron | 5339m2 | Vacant Land | Current: Commercial and Civic Proposed: Commercial Permissibility: Child Care Centre would be discretionary | Site is mostly cleared. Slightly undulating. Soil characteristics are unknown as no geotechnical investigation has been undertaken | Native Title extinguished | ~600m | Landowner not supportive of location - landowner would like to retain. | No HV upgrade requires. LV service connection to consumer panel : Price Est $100k | Existing Sewer mains in vicinity Price Est $75k for new service connection | Existing Sewer mains in vicinity Price Est $75k for new service connection |
| 4 | Central | 400 on DP 409078 | Poinsettia Street | No | Shire of Ashburton | 3.5881 ha | Vacant Land | Current: Residential R30 Proposed: Residential R30 Permissibility: Child Care Centre would be discretionary after giving special notice | Relatively level with open drains & culverts in the north-east, north-west and south-east boundaries. No geotechnical investigation has been undertaken | Native Title extinguished | ~850m | SoA | LV service connection to consumer panel : Price Est $200k No HV upgrade requires. | Existing Sewer mains in vicinity Price Est $75k for new service connection | Existing Sewer mains in vicinity Price Est $75k for new service connection |
| | | | | | | | | | | | | | | | |

| Area | Lot # | Street | Reserve | Owner | Lot Size m2 | Existing Purpose | TPS7 - Zoning | Topography and General Description of Land | Native Title or Local Aboriginal Corporation Considerations | Distance to Nearest Primary School | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Central | 317 on Deposited Plan 67300 | Central Road | 41388 | Shire of Ashburton | 6230m2 | Park Land | Current: Public Purposes | Site is cleared and flat. Soil characteristics are unknown as no geotechnical investigation has been undertaken Drain running along southern boundary of lot | Native Title extinguished | ~50m | 1. Reserve purpose change required 2. Rezoning required 3. Movement of Drain Required 4. Purpose and power to lease change required 5. Consider exploring further if the shortlisted sites are not suitable |
| Central | 334 on Plan 15263 | Central Road | 44839 | Crown - MO to SoA | 11100m2 | ANZAC Memorial | Current: Parks, recreation and drainage | Site is cleared and flat | Native Title extinguished | ~735m | 1. Relocation of ANZAC Memorial required 2. Rezoning required 3. Distance from schools |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Central | 332 on Plan 15263 | Central Road | 44839 | Crown - MO to SoA | 13966m2 | Lions Park | Current: Parks, recreation and drainage | Site is cleared and flat | Native Title extinguished | ~735m | 1. Relocation of ANZAC Memorial required<br>2. Rezoning required<br>3. Distance from schools |
| Central | 69 on Plan 15337 | Mine Rd | R39728 | Crown - MO to SoA | 84748m2 | Information Bay/Drainage/Vacant Land | Current: Public Recreation | Heavily constrained (rocky and sloping) with drainage use (open swales). This site was investigated for use as the Emergency Services collocation site and deemed unsuitable | Native Title extinguished | Varies | 1. Subdivision of portion required<br>2. Reserve purpose change required<br>3. Rezoning required |
| Area W | 500 on Deposited Plan 406730 | Kanberra Drive | 40797 | Crown - MO to SoA | 42943m2 | Vacant Land | Current: Parks, Recreation and Drainage<br>Proposed: Public Open Space<br>Permissibility: Development must be in line with reserve purpose/intent | Site is cleared and flat. Soil characteristics are unknown as no geotechnical investigation has been undertaken | Native Title extinguished | ~200m | 1. Subdivision of portion required<br>2. Reserve purpose change required<br>3. Rezoning required |
| Central | 2 on Plan 18202 | Stadium Road | No | Shire of Ashburton | 5314m2 | Vacant Land<br><br>(Village Green) | Current: Commercial and Civic<br>Proposed: Commercial<br>Permissibility: Child Care Centre would be discretionary | Site is mostly cleared and flat with some trees/shrubs bordering it. Soil characteristics are unknown as no geotechnical investigation has been undertaken | Native Title extinguished | ~350m | 1. Located in the Town Centre<br>2. Subdivision of portion required<br>3. Restricts SoA future development - only remaining commercial and civic lot in TP central area.<br>4. Previous endorsement from Council to develop Shire admin and associated facilities on lot. |
| Central | 2 on Plan 18928 | Stadium Road | No | Hamersley Iron PTY LTD | 18095m2 | Little Gecko's | Current: Commercial and Civic | Existing facility in place - | Native Title extinguished | ~200m | Listed on the SoA Heritage Inventory<br>Facility size inadequate in current design, repurposing of facility would require an alternate venue to be found and bought up to NCQFS requirements, considered unrealistic by PGC |
| Central | 2 on Plan 18928 | Stadium Road | No | Hamersley Iron PTY LTD | | Nintirri Neighbourhood Centre | Current: Commercial and Civic | Existing facility in place - | Native Title extinguished | ~200m | Facility size inadequate in current design, repurposing of facility would require a significant upgrade, considered unrealistic by PGC |
| Central | 292 on Plan 15207 | Poinsettia Street | 40222 | Crown - MO to SoA | 3331m2 | Vacant Land | Current: Parks Recreation and Drainage | | Native Title extinguished | ~800m | 1. Size not suitable for project |
| Central | 302 on Plan 14720 | South Street | 40358 | Crown - MO to SoA | 13305m2 | Vacant Land | Current: Parks Recreation and Drainage | Drainage Reserve | Native Title extinguished | ~800m | 1. Not suitable, size confguration of lot and significant drainage on lot |
| Central | 3010 on Plan 51300 | Stothers Ct | No | Crown land leased to Rio Tinto | 17.398ha | Vacant Land | Current: Special Use | Varying sloping across the site. The site generally grades from the south-east to the north-west. Soil characteristics are unknown as no geotechnical investigation has been undertaken, however the terrain is rocky based on visual inspection of the site. | Subject to Native Title | | Unsuitable |
| Central | 523 on Plan 69942 | Doradeen Rd | No | Crown Land | 46819m2 | Vacant Land | Current: Conservation, recreation and nature landscape | Varying sloping across the site. Rocky terrain | Subject to Native Title | | Between Yaruga and Warara? Major civil works for access would be required as it drops off |
| Central | 3013 on Plan 51300 | Central Road | No | Crown Land | 6718m2 | Vacant Land | Current: Special Use | Varying sloping across the site. Rocky terrain | Subject to Native Title | | Pretty sure RTIO have just requested this UCL from the State |
| Central | 294 on Plan 14722 | Hibiscus St | 40209 | Crown - MO to SoA | 3020m2 | Vacant Land | Current: Public Recreation | ?? may be rocky and sloping | Native Title extinguished | ~1000m | 1. Size not suitable for project<br>2.Rezoning required |
| Area W | 501 on Deposited Plan 406730 | Kanberra Drive | 40798 | Crown - MO to SoA | 4341m2 | Vacant Land | Current: Parks, Recreation and Drainage | | | | 1. Size too small for project |
| Area W | 281 on Plan 15094 | Killawarra Drive | 39907 | Crown - MO to SoA | 1602m2 | Drainage | Current: Parks, Recreation ad drainage | Varying sloping across the site. Rocky terrain | Native Title extinguished | ~450m | 1. Size too small for project |

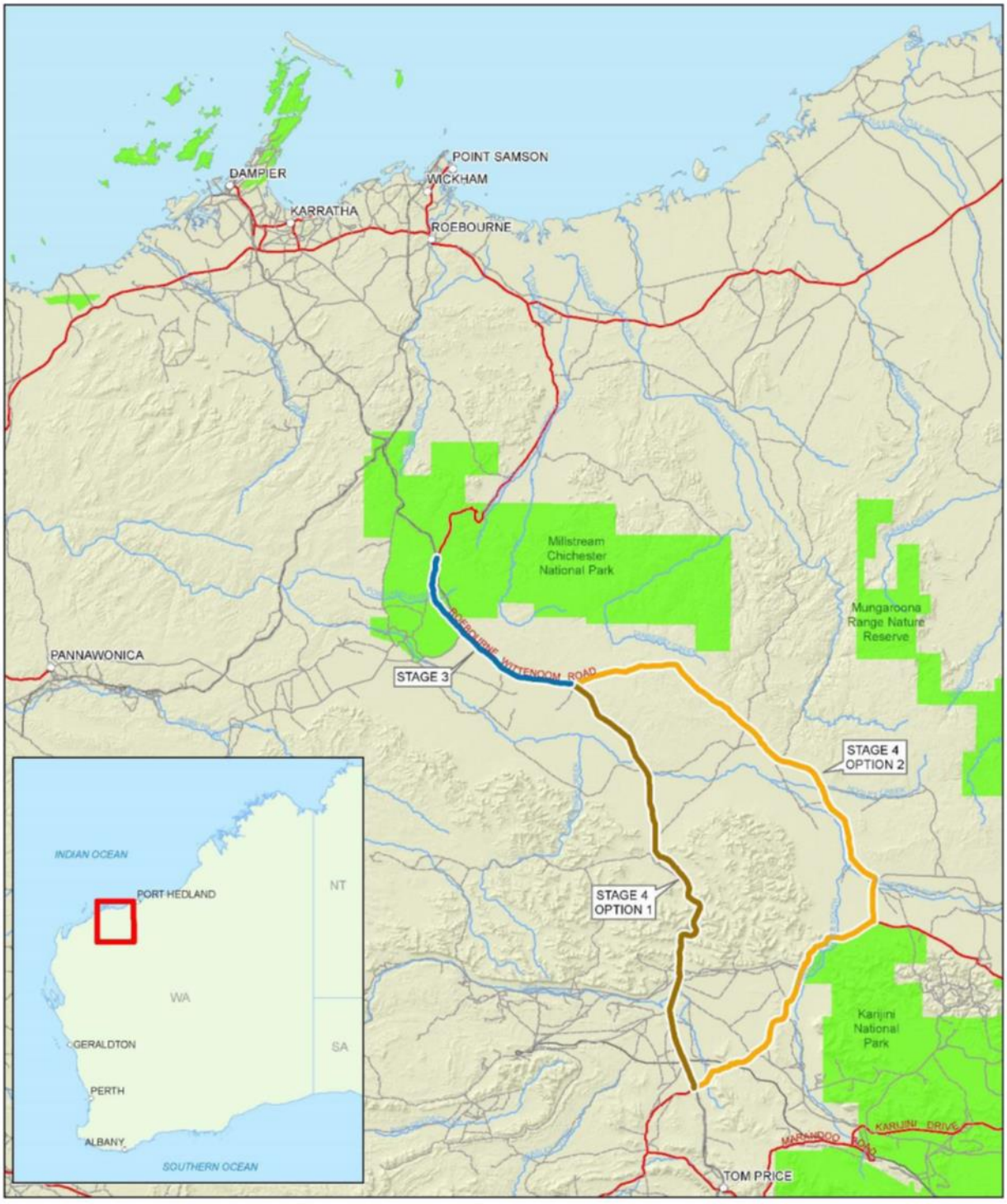
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Area W | 316 on Plan 15092 | Tanunda Street | R42328 | Crown - MO to SoA | 9121m2 | Civic Centre | Current: Recreation | Existing facility in place | Native Title extinguished | ~200m | 1. Existing Civic Centre Building, being occupied by existing groups. Would create a need to rehouse other groups (Gymnastics and play group) in alternate space |
| Area W | 267 on Plan 15095 | Killawarra Drive | 39874 | Crown - MO to SoA | 13419m2 | Vacant Land | Current: Parks, Recreation and drainage | Varying sloping across the site. Rocky terrain | Native Title extinguished | ~500m | 1. Extensive Civils required<br>2. Rezoning required |

Any other location removed based on distace from the school being more than 1km


| | | | | |
|---|---|---|---|---|
| shire of Ashburton reef to range | The Shire of Ashburton does not warrant the accuracy of information in this publication and any person using or relying upon such information does so on the basis that DMS shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information. | | 20/09/2017<br>1:16513 | N |



ATTACHMENT 13.2B




LEGEND

| | | | |
|---|---|---|---|
| Town | Major road | Stage4 - Option 2 | Managed lands and water |
| Watercourse | Minor road | Stage4 - Option 1 | |
| Railway | Track | Stage 3 | |

Paper Size A3
0 10 20 30 40
Kilometres
Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

shire of Ashburton
SLIP ENABLER

Shire of Ashburton
KTP3/4 Cost Benefit & Social Impact Assessment

Job Number 61-35084
Revision A
Date 13 Jan 2017

Locality Plan

Figure 1

999 Hay Street Perth WA 6000 Australia T 61 8 6222 8222 F 61 8 6222 8555 E permail@ghd.com.au W www.ghd.com.au

# Shire of Ashburton

## Karratha-Tom Price Road Stages 3 and 4

## Cost Benefit and Social Impact Assessment

March 2018

# Executive Summary

The Karratha-Tom Price Road is a predominantly unsealed road linking the regional centres of Karratha and Tom Price in the Pilbara region of Western Australia. The 269 km road provides crucial connectivity between these centres, as well as access to significant tourism destinations and mine sites in the region. However, use of this valuable route is currently restricted. Nearly 60% of the road is unsealed and unable to safely sustain high volumes of traffic or freight. While safer sealed routes do exist, they compromise time efficiency, stretching over 550 km and adding at least another 3 hours to the journey. The lack of a safe and time efficient transport option adversely affects the local residents and businesses of Karratha, Tom Price, Paraburdoo and the wider Pilbara region.

The sealing consists of four stages: Stages 1 and 2 have already been completed, while Stages 3 and 4 remain gravel. The proposed Stage 3 includes a section of Roebourne-Wittenoom Road, while there are two alternative alignments for Stage 4:

- Stage 4A – a new sealed road constructed adjacent to the Rio Tinto's Rail Access Road; or
- Stage 4B – sealing and realignment of the existing public road, i.e. Roebourne-Wittenoom Road to Fortescue Crossing Road and then to the Nanutarra-Bingarn Road intersection.

The Shire of Ashburton, City of Karratha and Main Roads Western Australia are currently considering options to seal the link between Karratha and Tom Price. Options are:

- Option 1 – Seal Stage 3 only at a capital cost of $70.23M;
- Option 2 – Seal Stage 3 and Stage 4A at a capital cost of $301.77M; or
- Option 3 – Seal Stage 3 and Stage 4B at a capital cost of $393.32M.

This report details the costs and anticipated socio-cultural and economic benefits of the project for Karratha, Tom Price and the wider Pilbara region, and recommends a preferred option for completing the road sealing. The analysis includes stakeholder consultation, opportunities / constraints assessment and cost benefit analysis of the three project options.

## National Significance

The Pilbara Region's Gross Regional Product is estimated at $34.642 billion and represents 43.68 % of Regional WA's GRP of $79.303 billion, 13.99 % of Western Australia's Gross State Product (GSP) of $247.705 billion, and 1.97 % of Australia's GRP of $1.755 trillion[1] and is dominated by iron ore mining activity.

With the Shire of Ashburton contributing 6% of the Gross State Product in 2016 (over $15.5 billion) and City of Karratha a further 6.5% (in excess of $16.7 billion), it is critical that the connection between extraction (Tom Price) and export (Karratha) is reinforced to continue to support the state and federal economies[2].

## Opportunity

The lack of a sealed road is a major inhibitor to investment and growth in the tourism sector and remains an inhibitor to future mining activity. The road will aid in the economic diversification of the region, particularly in the tourism sector – which will provide local employment opportunities,

[1] http://www.economyprofile.com.au/pilbara/industries/gross-regional-product; REMPLAN data incorporating Australian Bureau of Statistics' (ABS) 2016 Gross State Product, June 2017 National Input Output Tables and 2014 / 2015 Census Place of Work Employment Data

[2] Source NIEIR 2016

especially for Aboriginal communities. Linking Karratha to Tom Price and the inland Pilbara region will improve safety and transport network efficiency, and enable recreational, social and health benefits to be realised.

Current economic conditions in the Pilbara region for local business and contractors is significantly more competitive than over the last 10 years. Civil construction costs are currently at low rates. *As a marker of costs in the civil construction sector, growth in the Road and Bridge Index has slowed substantially over the past few years, from 4.9 per cent growth in 2011/12 to just 0.9 per cent in 2013/14, and has fallen 0.9 per cent through 2015/16.*[3]

Subsequently construction of the Karratha Tom Price Road in the current market is a significant opportunity.

## Problem Identification

- **Resources opportunities –** the Pilbara receives significant investment in iron ore mining, in the form of multiple mines, processing hubs and supporting businesses. Many of these activity hubs are linked via the Karratha-Tom Price Road. Numerous greenfield sites of significant economic value also exist along this route, though many smaller stranded mineral deposits (not only iron ore) are locked until the costs to develop and operate become viable. The gravel roads used to facilitate mine construction are not suitable for long-term operations and community use.
- **Limited tourism activation** – though the Pilbara offers a number of natural attractions, tourism in the region is constrained by a lack of accessibility. Travel time between tourist destinations prevents attractions from being packaged into drivable and integrated visitor experiences, and many travellers view the gravel road as unsafe.
- **Restricted access** – State Government services are primarily delivered in the major centres of Karratha and Port Headland. Due to travel distance and time along the unsealed road, cultural, educational, social and recreational activities are often considered inaccessible by residents in the surrounding catchments, creating social disadvantage.
- **Road safety –** unsealed roads are not as safe as sealed roads, as it is easier to lose control when driving. Heavy vehicles frequent the Karratha-Tom Price Road, increasing hazards and the severity of crashes. Reducing safety risks along the road is imperative as traffic volumes are projected to rise substantially, including an increase in truck volumes as new mines come online.
- **Transport network impacts –** freight efficiency is currently compromised by long distance, time consuming travel. Karratha-Tom Price Road is often affected by road closures (closed for 74 days in 2016) which adversely impacts local business owners' revenue and economic opportunities. Higher operations and maintenance costs are also incurred as driving on gravel roads also creates additional wear and tear on vehicles.

## Options Analysis

Each option was considered in terms of its social, environmental and economic impact.

### Social Impact

The stakeholder engagement process identified the following social impacts that the sealing of the road is expected to generate:

- Greater economic diversification, additional local business opportunities and job creation;
- Lifestyle, amenity and community cohesion;

[3] Civil Contractors Federation WA – WA Infrastructure Report 2017

- More accessible social infrastructure and services;
- Demographic change; and
- Improved traffic safety and road maintenance.

One potential negative impact identified was that increased demand for housing could potentially reduce housing availability. However, given the current reduction in accommodation due to the downturn in the mining industry, this impact is considered to be negligible to low.

Options 2 and 3 realised all social benefits and were rated as “high” positive social impact. Option 1 did not realise all social benefits as Karratha and Tom Price would remain separated by unsafe road, and was assigned a “medium” social impact rating.

**Environmental Impact**

A preliminary desktop assessment of environmental and heritage constraints for the proposed sealing of Stages 3 and 4 was undertaken. All options are likely to present significant environmental and heritage issues, including potential impacts to national parks, Priority 1 Ecological Communities, conservation significant flora and fauna, and Aboriginal heritage sites. Option 1 has the lowest environmental impact, and while Options 2 and 3 were considered to have medium environmental impacts. Environmental approvals and/or permits are likely required for each option.

**Economic Impact**

High level economic (capital and operational) expenditure was contrasted against the quantifiable benefits that each project option would realise. These benefits include the exploitation of stranded deposits, tourism uplift, and improved freight and travel efficiency.

A benefit-cost analysis (BCA) was performed to evaluate the overall impact of social, environmental and economic benefits and costs related to the project. The outcomes of the BCA are summarised below at several discount rates.

| Option | 4% | 7% | 10% |
|---|---|---|---|
| Option 1 | 1.027 | 0.330 | 0.170 |
| Option 2 | 1.706 | 0.899 | 0.510 |
| Option 3 | 1.228 | 0.658 | 0.388 |

## Summary

Option 2 has the highest positive Cost Benefit Ratio (BCR) across the three discounting rate options (4%, 7%, 10%). The results for Option 2 and 3 are primarily driven by lower travel time and vehicle operating costs, stranded mines impacts, and the increased tourist demand along both routes if the road was fully sealed.

The difference between Options 2 and 3 is largely a function of the lower capital cost of Option 2 compared to Option 3. Of the three options considered, Option 2 has the highest BCR of 0.899 at the standard discount rate of 7%.

The project is strongly aligned with National and State strategic aims and included in the Western Australian Regional Freight Network Plan. It has a social impact assessment for the residents of Tom Price, Paraburdoo, Karratha and surrounding areas is rated “high” positive.

The preferred Option 2 delivers the greatest benefits at all discount rates and fulfils the project objectives – improving the full road linkage between Karratha and Tom Price

# Table of Contents



# Table Index

# Figure Index



# Appendices

# Glossary / Definitions

| | |
|---|---|
| **Asbestos** | Includes actinolite, Amosite (brown asbestos), Anthophyllite, chrysotile (white asbestos), crocidolite (blue asbestos), tremolite, or any mixture containing one or more of the mineral silicates |
| **ASS** | Acid sulfate soils |
| **BCA** | Benefits-Cost Analysis |
| **BCR** | Benefits-Cost Ratio |
| **CALM Act** | *Conservation and Land Management Act 1984* |
| **CALM Regulations** | *Conservation and Land Management Regulations 2002* |
| **CEMP** | Construction Environmental Management Plan |
| **Clearing Regulations** | *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* |
| **DAA** | Department of Aboriginal Affairs |
| **DIDO** | Drive-in-drive-out |
| **DoT** | Department of Transport |
| **DotEE** | Department of Environment and Energy |
| **DoW** | Department of Water |
| **DPaW** | Department of Parks and Wildlife |
| **DWER** | Department of Water and Environmental Regulation |
| **EP Act** | *Environmental Protection Act 1986* |
| **EPA** | Environment Protection Authority |
| **EPBC Act** | *Environmental Protection and Biodiversity Conservation Act 1999* |
| **ESA** | Environmentally Sensitive Areas |
| **FIFO** | Fly-in-fly-out |
| **GRP** | Gross Regional Product |
| **LA Act** | *Land Administration Act* |
| **LGA** | Local government authorities |
| **MRWA** | Main Roads Western Australia |
| **Option 1** | Construction of Stage 3 only |
| **Option 2** | Construction of Stage 3 and Stage 4A |
| **Option 3** | Construction of Stage 3 and Stage 4B |
| **PEC** | Priority ecological community |
| **PSC** | Project Steering Committee for this assessment which consisted of members from the Shire of Ashburton, City of Karratha and the Pilbara Development Commission |
| **Public** | Any non-Shire person(s) entering the site for any purpose, i.e. commute between Tom Price and Karratha |
| **Road** | Karratha-Tom Price Road |

| | |
|---|---|
| **Regulator** | Department of Water and Environmental Regulation and/or Environment Protection Authority |
| **Rio Tinto** | Rio Tinto Iron Ore |
| **RIWI Act** | Rights in Water and Irrigation Act, 1914 |
| **Shire** | Shire of Ashburton and any of its authorised representatives or staff |
| **Shire Staff** | Appropriately trained employees of the Shire of Ashburton working at the site |
| **SIA** | Social Impact Assessment |
| **Stage 3** | The 48 km section from the intersection of Warlu Road and Roebourne-Wittenoom Road to the junction of the Rio Tinto Rail Access Road |
| **Stage 4** | Either Stage 4A or 4B |
| **Stage 4A** | The 107 km section parallel to the alignment of the Rio Tinto Rail Access road |
| **Stage 4B** | The 165 km section using the existing alignment of the Roebourne-Wittenoom Road to Fortescue Crossing Road and then to the Nanutarra-Bingarn Road intersection |
| **TRA** | Tourism Research Australia |

# 1. Introduction

## 1.1 Purpose

The Karratha-Tom Price Road is a predominantly unsealed road linking the regional centres and Local Government Authorities (LGA) of Karratha and Tom Price in the Pilbara region of Western Australia (Figure 1). The road provides crucial connectivity between these centres, as well as access to significant tourism destinations and mine sites in the region. However, use of this valuable road is currently restricted. Nearly 60% is unsealed, and it is unable to safely sustain high volumes of traffic or freight. While safer sealed routes exist, they compromise time efficiency, stretching over 550 km and adding at least another 3 hours to the journey. The lack of a safe and time efficient route option adversely affects the local residents and businesses of Karratha, Tom Price, Paraburdoo and the wider Pilbara region.

The benefits of sealing the road were recognised as early as the 1990s, and are considered in both the Shire of Ashburton's and City of Karratha's Planning Schemes. The Shire of Ashburton views the construction of the Karratha-Tom Price Road as a critical component of the Pilbara's road transport network. The road link has also been recognised by both the Minister for Transport and the Minister for Primary Industries and Regional Development as a very high priority project[4], and is listed as an important strategic project in Regional Development Australia's *Pilbara Regional Plan*, is on the Infrastructure Australia *2016 infrastructure Priority List,* and the area it serves is included in the White Paper on Northern Australia.

The local economy in the Pilbara is dominated by the mining sector, which accounts for 77% of Gross Regional Product (GRP) and provided approximately 45% of total jobs in 2005-15. This level of dependence represents one of the highest concentrations of a single industry in any region of Australia.

During the mining boom period, tourism contributed only 0.76% of GRP and 3.89% of total jobs (or 1,749) compared to 3.5% of Gross State Product (GSP) and 7% of total jobs in the State (REMPLAN, 2017).

Two of the most significant National Parks in Western Australia are located in the Pilbara and are accessible from Karratha via the Karratha – Tom Price Road. Increased access and visitation to Karijini and Millstream-Chichester National Parks provides a significant opportunity to diversify the mining dominated economy.

Ultimately, the complete sealing of the Karratha-Tom Price Road will provide a safer and more efficient route for those travelling between Karratha, Tom Price and neighbouring Paraburdoo. It will:

- Reduce travel distance by more than 250 km and save three hours travel time for a one-way trip;
- Allow residents to commute more easily between townships and increase the accessibility of essential services in these localities, ultimately improving quality of life for residents[5] by providing safe and time-efficient access to education, health, community and Government service hubs (predominantly located in Karratha);
- Reduce road safety risks; and

[4] Alannah MacTiernan, Regional Development Minister, pers. Comm., May 2017. Available from: https://thewest.com.au/news/pilbara-news/karratha-to-tom-price-road-sealing-pegged-for-2018-ng-b88461168z

[5] Qualitative feedback from interviews with stakeholders and the community consultation meeting

- Provide opportunities to increase economic productivity, and strengthen growth in tourism and business development in these regional towns.

The development of the Karratha-Tom Price Road began in 2003. Stages 1 and 2 were sealed and completed in 2003 and 2008 respectively, amounting to significant investment of $171.6m. Stage 1 extends from Tom Price to the Nanutarra-Bingarn Road intersection, and Stage 2 from Roebourne-Wittenoom Road/Warlu Road intersection to Karratha.

Stages 3 and 4 – which propose to provide continuous sealed road access from Karratha to Tom Price, Paraburdoo and Karijini National Park – are the focus of this report (see Figure 1).

Stage 3 includes a 48 km section from the intersection of Warlu Road and Roebourne-Wittenoom Road to the junction of Rio Tinto Iron Ore's (Rio Tinto) Rail Access Road. There are two options for Stage 4:

- Stage 4A – 107 km section along the Rio Tinto Rail Access Road alignment; or
- Stage 4B – 165 km section along the Roebourne-Wittenoom Road to Fortescue Crossing Road and then to the Nanutarra-Bingarn Road intersection.

Current economic conditions in the Pilbara region for local business and contractors is significantly more competitive than over the last 10 years. *Civil construction costs are currently at low rates. As a marker of costs in the civil construction sector, growth in the Road and Bridge Index has slowed substantially over the past few years, from 4.9 per cent growth in 2011/12 to just 0.9 per cent in 2013/14, and has fallen 0.9 per cent through 2015/16.*[6]

Subsequently construction of the Karratha Tom Price Road in this market is a significant opportunity.

[6] Civil Contractors Federation WA – WA Infrastructure Report 2017

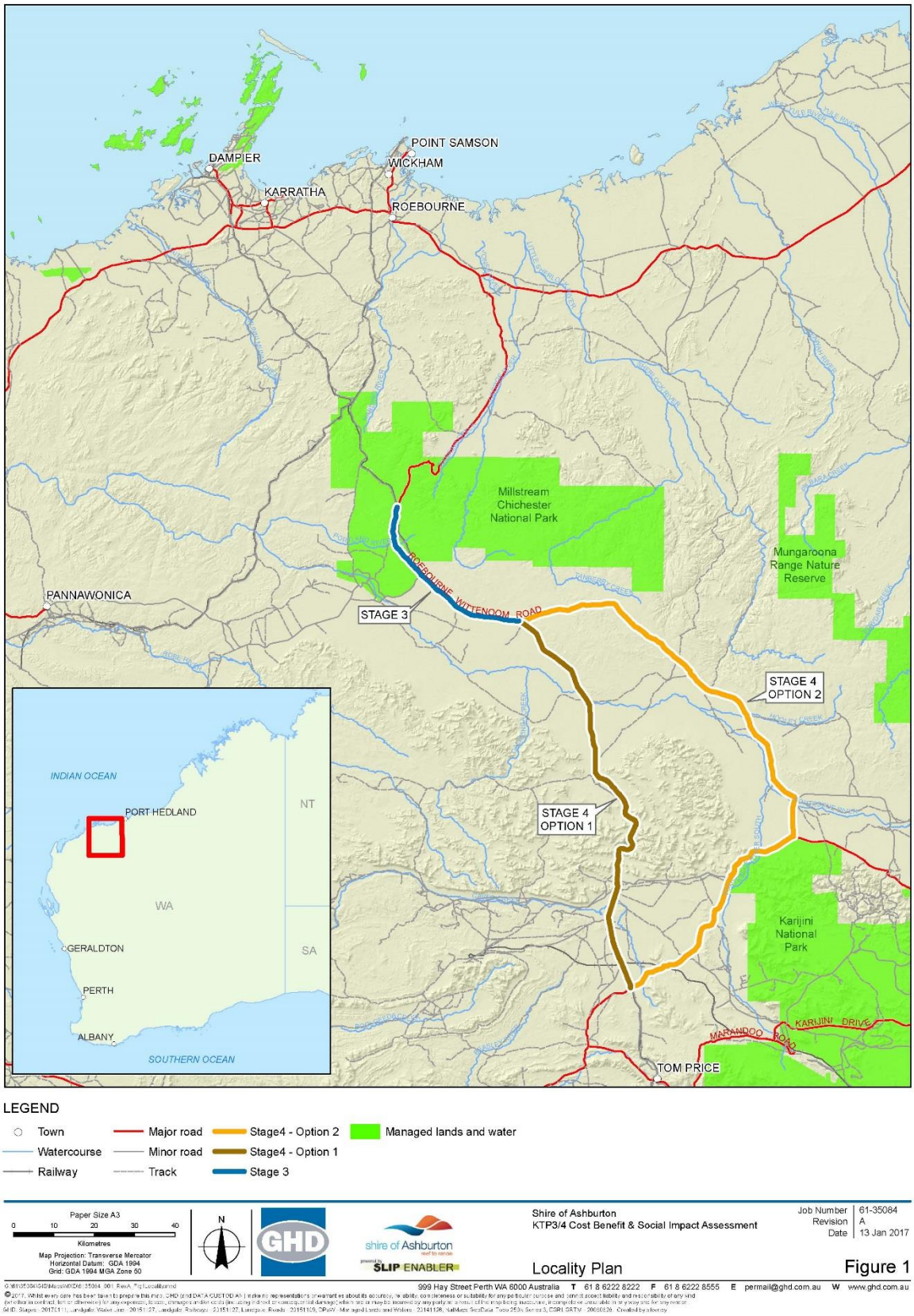



**Figure 1 Karratha-Tom Price Road location, Stages and Sealed Route Alternatives**

**Table 1 Summary of Karratha-Tom Price Road Stages and Routes between Karratha and Tom Price**

| Stage/Route | | Length[1] | Surface | Travel Time[2] |
|---|---|---|---|---|
| **Stage** | | | | |
| Stage 1 | Bingarn Road | 24 km | Bitumen | |
| Stage 2 | Karratha-Tom Price Road via Warlu Road | 88 km | Bitumen | |
| Stage 3 | Roebourne-Wittenoom Road | 48 km | Gravel | |
| Stage 4A | Rio Tinto Rail Access Road | 107 km | Gravel | |
| Stage 4B | Roebourne Wittenoom Road to Fortescue Crossing to Nanutara-Munjina Road | 165 km | Gravel | |
| **Route** | | | | |
| Route 1 | Karratha-Tom Price Road via Stages 2, 3, 4A and 1 | 269 km | Gravel (155 km)<br>Bitumen (114 km) | 3 h 00 min |
| Route 2 | Karratha-Tom Price Road via Stage Stages 2, 3, 4B and 1 | 327 km | Gravel (213 km)<br>Bitumen (114 km) | 3 h 30 min |
| Route 3 | Southwest on the Northwest Coastal Highway and then east on Nanutarra Road | 543 km | Bitumen | 6 h 08 min |
| Route 4 | Northeast on the Northwest Coastal Highway, south on Great Northern Highway and west on Karijini Drive | 575 km | Bitumen | 6 h 21 min |

[1] Approximate length calculated from the start of Warlu Road, on the North West Coastal Highway, to the Tom Price Visitor Centre (1 Central Rodd, Tom Price)

[2] Approximate travel time for alternate routes was based on recorded travel time between Karratha and Tom Price for Routes 1 and 2 and Google Maps estimates for Routes 3 and 4

## 1.2 Scope of Work

The objective of this assessment was to examine the expected socio-cultural and economic benefits for Karratha, Tom Price and the wider Pilbara region, and to recommend a preferred option for completing the sealed road linkage.

The proposed scope of works included the following:

- **Social Impact Assessment** – A high level assessment to understand social impacts resulting from an upgrade to the road including cultural, social, health, and employment outcomes;
- **Environmental and Heritage Assessment** – A high level constraints assessment to understand potential impacts resulting from an upgrade to the road, including environmental impacts, heritage matters, planning constraints, and likely approvals;
- **Economic Analysis** – Assessment of the economic impacts to (for example) the mining, tourism and transport sectors, with the aim of quantifying these impacts for inclusion in a benefit-cost analysis;
- **Benefit-Cost Analysis** – A benefit-cost analysis to evaluate the economic and financial components of the road and preferred pathway to completion, including economic impacts to the mining, tourism and transport sectors.

To analyse service needs, the following evaluations were undertaken:

- **Problem Identification and Assessment** – Uncovering the key problems or lost opportunities created by the road being unsealed; and
- **Benefit Analysis** – Identifies the key benefits or opportunities to be realised from an upgrade to the road.

The methodology used to undertake these assessments is summarised in Section 1.3 and fully described in Appendices A, B and C.

The report also includes an Options Assessment, which utilises a benefit-cost analysis to compare various options against the base case – the status quo or "do nothing" option. The options appraised were:

- **Option 1** – Seal Stage 3 only (Intersection of Warlu Road and Roebourne-Wittenoom Road to the junction of the Rio Tinto Rail Access Road);
- **Option 2** – Seal Stage 3 and Stage 4A (Stage 3 plus the section parallel to the Rio Tinto Rail Access Road); and
- **Option 3** – Seal Stage 3 and Stage 4B (Stage 3 plus the Roebourne-Wittenoom Road to Fortescue Crossing Road and Nanutarra-Munjina Road).

## 1.3 Methodology

### 1.3.1 Social Impact Assessment

The high-level social impact assessment (SIA) was undertaken as a desktop exercise and supplemented by structured consultation with key stakeholders and community groups (listed in Appendix D).

Although the project is located wholly within the Shire of Ashburton, the SIA considered social, environmental and economic impacts across all towns and areas surrounding the proposed routes.

Potential impacts and opportunities were identified through data triangulation, via:

- Targeted stakeholder consultation, including one-on-one consultations, Council briefings and both email and phone contact;
- Structured community consultation at the Nintirri Centre, Tom Price;
- Social profile of the study area; and
- A desktop review of recent social impact assessment reports of similar projects in similar study areas and their impacts on communities.

In total, 145 stakeholders were consulted, returning 45 formal responses. These stakeholders were asked to provide their perspectives on the project and how the sealing of the road may deliver social and economic benefits for the region. The results of this consultation informed the discussion of problems, opportunities and benefits in Sections 2 and 3, as well as the Project Options Analysis (including the BCA). The stakeholder consultation process and identified social impacts are fully described in Appendix A.

#### Assessment Ratings

A rating scale was developed to assess the potential impacts on each town and identified community. Identified impacts were assessed against the following criteria:

- **Nature of the Impact** – Impact identified as community / stakeholder aspiration
- **Significance of the Impact** – Impact identified as community / stakeholder need based on community / stakeholder profile

The ratings developed were:

| Nature of the impact | | |
|---|---|---|
| **Neutral**<br>No potential positive or negative impact | **Positive**<br>Potential opportunity and / or benefit | **Negative**<br>Potential risk that would need to be considered |

| Significance of the impact | | |
|---|---|---|
| **Low**<br>No potential major change | **Medium**<br>Potential moderate change | **High**<br>Potential major change |

### 1.3.2 Environmental and Heritage Assessment

A high-level desktop environmental and heritage impact assessment was performed by analysing GIS spatial files, relevant reports (e.g. Bamford, 2002; MRWA, 2003 and GHD, 2015 & 2016) and publically available, Government-managed databases. A constraints assessment was then produced based on this literature review and desktop searches.

The assessment process identified, assessed and reported on the environmental and heritage context, constraints on the proposed road upgrade, and any requirements for assessment or approvals. Results are detailed in Appendix B.

#### Assessment Ratings

To assess potential environmental or heritage impacts, each Option was rated according to the following criteria:

| Significance of the impact | | |
|---|---|---|
| **Low**<br>No potential major impacts, environmental risks or approvals | **Medium**<br>Potential moderate impacts and environmental risks. Approvals likely | **High**<br>Potential major impacts or environmental risks. Approvals highly likely |

### 1.3.3 Economic Assessment

A high-level economic assessment was undertaken as a desktop exercise and supplemented by structured consultation with key stakeholders. This assessment identified and quantified how upgrades to the road would benefit the townships and the wider Pilbara region – for instance, by reducing travel times, noise, pollution and their associated costs. Sealing the road would also increase economic activity along the road, and improve traveller safety and travel efficiency.

Identified capital expenditure(s) or costs of the road upgrades were then incorporated into a benefit-cost analysis. Only those economic benefits that can be directly aligned to the capital expenditure were included in a benefit-cost analysis[7].

#### Assessment Ratings

To assess potential economic impacts, each Option was rated according to the following criteria:

[7] This is particularly important for benefit-cost analysis involving tourism initiatives, as new initiatives may *shift* (or redistribute) tourism expenditure rather than *increasing* absolute levels of tourism expenditure.

| Significance of the impact | | |
|---|---|---|
| **Low** | **Medium** | **High** |
| No potential major economic impacts | Potential moderate economic impacts | Potential major economic impacts |

### 1.3.4 Benefit-Cost Analysis

A benefit-cost analysis (BCA) was developed for three project Options (see Section 1.2) according to national and state guidelines, including the Austroads – *Guide to Project Evaluation*[8].

The BCA is used to aid decision-making regarding the allocation of resources, expressing (where possible) both costs and benefits in monetary terms to provide a basis for direct comparison. This method produces a Benefits-Cost Ratio (BCR), which equates to the 'Present Value of Benefits' divided by the 'Present Value of Costs'. A BCR greater than 1 indicates that a net benefit is being generated, and is the usual benchmark to determine whether to proceed with a project. Thus:

- **BCR > 1.00** – If more than one option is considered, accept the project with the highest BCR greater than 1.00.
- **BCR < 1.00** – Re-evaluate project.

BCRs are, however, only one of the many criteria that may be applied in investment decision making. When other considerations (usually strategic) are taken into account, projects with BCRs less than 1 may still be supported.

The process to developing the BCA and resulting analysis is fully described in Appendix C.

### 1.3.5 Risk Assessment Workshop

A Risk Assessment Workshop was held with Project Steering Committee (PSC) on Tuesday 31st January 2017. The PSC included members from the Shire of Ashburton, City of Karratha and the Pilbara Development Commission.

The objective of the Risk Assessment Workshop was to identify the risks involved in each stage of the project and to quantify the significance of their impact.

The Risk Assessment was also used to supplement the stakeholder consultation outcomes and project options analysis to define the key problems/opportunities/benefits discussed throughout this report.

The Risk Assessment, including the Risk Matrix used to evaluate risk level, is described in Appendix E.

## 1.4 Assumptions and Limitations

This report has been prepared by GHD for Shire of Ashburton and may only be used and relied on by Shire of Ashburton for the purpose agreed between GHD and the Shire of Ashburton as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Shire of Ashburton arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

[8] Austroads Guide to Project Evaluation is available from http://www.austroads.com.au/road-construction/planning-evaluation/publications-resources/guide-to-project-evaluation

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Shire of Ashburton and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

GHD has prepared the Preliminary Social and Environmental Impact Assessments set out in section 4.1 and 4.2 (respectively) of this report using information reasonably available to the GHD employee(s) who prepared this report; and based on assumptions and judgments made by GHD in Appendix A and Appendix B, respectively.

GHD has prepared the benefit cost ratios (BCR) set out in section 4.4 of this report using information reasonably available to the GHD employee(s) who prepared this report; and based on assumptions and judgments made by GHD in Appendix C.

GHD has prepared the Cost Estimates set out in Appendix F of this report using information provided to and reasonably available to the GHD employee(s); and based on assumptions and judgments made by GHD in Appendix F.

# 2. Problem Identification and Assessment

A number of economic, social and community safety problems surrounding the unsealed Karratha-Tom Price Road were identified during qualitative interviews with stakeholders and in the Risk Assessment Workshop.

These problems may be summarised as:

- **Restricted economic development and diversification** – Economic development or diversification opportunities in the mining and tourism sectors are restricted by unsuitable road conditions.
- **Social impact and community safety** – Social, health and employment benefits are restricted by unsafe and time-consuming route options.
- **Transportation network impacts** – Operating costs are escalated by unsealed roads.

## 2.1 Restricted Economic Development and Diversification

### 2.1.1 Mining Dominance

The local economy in the Pilbara is dominated by the mining sector, which accounted for 77% of Gross Regional Product (GRP) and provided 41% of total jobs in 2013-14. This level of dependence represents one of the highest concentrations of a single industry in any region of Australia.

During this time period, it was estimated that tourism contributed a mere 0.76% of GRP and 3.89% of total jobs (or 1,749), significantly lower than the State averages of 3.5% of Gross State Product (GSP) and 7% of total jobs (REMPLAN, 2016). Though relatively small, tourism makes an important contribution to the local economy as the majority of its benefactors are local small businesses. As such, the flow-on impact of tourism is actually greater than from mining. Recent research indicates that, for every visitor dollar spent in a local retail business, $0.89 flows on into the local economy, compared to the same dollar in iron ore mining, which only produces $0.18 of flow-on benefit in the local economy (PRC, 2015). Tourism may therefore drive economic growth and diversification (PDC, 2016).

Mining in the west Pilbara will continue for decades as existing mining reserves are exhausted and new deposits developed to sustain global demand for iron and steel. However, the volatility of iron ore prices and the Pilbara region's dependence on iron mining poses a significant risk to stable regional development. Sustained moderate growth in the mining industry is difficult to achieve when there is a high investment cost to develop due to remoteness and restricted transport access, perpetuating the boom-bust cycle. This cycle has a major detrimental impact on the lives of local residents and creates significant economic hardship for the small to medium size businesses that service the mining industry.

The dominance of iron mining activity over the local economy must therefore be addressed, with greater diversification offering the most viable solution.

### 2.1.2 Limited Tourism Activation

The Pilbara currently attracts an average of 906,700 visitors (domestic and international) who spend over 8.5 million visitor nights in the region annually for a variety of purposes. Of these visitors, 18% (164,400) are Interstate (112,700) or International (51,700) visitors (PDC, Overnight Visitor Fact Sheet 2016).

Of these 290,700 visitors (domestic and international) visit the Shire of Ashburton (only 32% of the total Pilbara region visitors) and spend just over 3 million visitor nights.

The significant attractions in the Pilbara are predominantly unique natural landscape features, including the Karijini and Millstream-Chichester National Parks. The park entrance to Millstream-Chichester is located approximately 130 km south of Karratha and approximately 182 km north of Tom Price. The entrance to Karijini National Park is a further 277 kms from Millstream-Chichester via Tom Price and is approximately 98 kms east of Tom Price, – the shortest route linking these iconic landscapes is via Stage 3 and Stage 4A of the proposed Karratha-Tom Price Road.

Karratha's beaches and coastline provide a wide range of activities including scenic landscapes, Aboriginal cultural experiences and water sports (boating, fishing, diving etc.). Murajuga National Park on the Burrup Peninsula west of Karratha is another popular destination, known for its unique ecological and archaeological heritage, including the world's largest and most important collection of petroglyphs – ancient Aboriginal rock carvings.

Aboriginal cultural experience tourism, allowing visitors the opportunity to discover the art, history and culture of the Aboriginal people in the Pilbara, has been identified in the Pilbara Development Commission's *Pilbara Tourism Activation Infrastructure* report (Oct 2016) as an opportunity to uplift the regional visitor economy.

Registrations of Interest from investors interested in establishing a quality ecotourism accommodation facility within the Millstream Chichester National Park at Palm Pool has recently been called by Department of Biodiversity, Conservation and Attractions. The State Government initiative, Naturebank, prepares and releases land within the State's conservation estates for the development of ecotourism. Naturebank is a partnership between Tourism WA and the Department of Biodiversity, Conservation and Attractions and involves undertaking planning and pre-release clearances to take much of the risk out of investor decisions on land uptake. A Registration of Interest was previously released for two sites in the Python Pool area and now interest in the third site at Palm Pool in the Millstream Homestead area is being investigated.

However, the iconic natural features and cultural tourism opportunities between Karratha and Tom Price cannot be fully exploited at present due to the road network configuration. Travel times and indirect routes prevent the region's tourism attractions from forming an integrated tourist itinerary. Improving the road configuration will boost the regional visitor economy by connecting the area's tourism products.

### Current Tourism Typologies

In the year ending December 2015, leisure visitors spent a total of $66.5 million in the Pilbara region alone (TRA 2016a; TRA 2016b). The area's leisure tourism market may be segregated into: Fly-In, Drive-In and Grey Nomads.

The two largest existing tourist typologies, comprising 70% of total visitor nights in the Pilbara (PDC, 2016) are:

- Grey Nomads (older couples travelling with caravans), and
- Backpackers (younger international visitors aged 20-29).

#### *Fly-In*

A minority of visitors to the region fly-in. There are a number of locations with major airports including Newman, Port Hedland, Karratha and Paraburdoo (servicing Tom Price). Tourists generally fly into one of these airports from Perth and hire a car or campervan from a local car rental provider. Those who hire a car require local accommodation – generally motels, caravan/camping parks or eco-retreats.

Travel is predominately restricted to easily accessible areas, with most car rental conditions prohibiting use on gravel roads.

#### *Drive-In*

Drive-in tourists from Western Australia and nationally are the largest leisure visitor market. Most bring their own accommodation in the form of caravans, campervans or camping trailers.

Those travelling with 4WDs and off-road camper trailers are able to travel on gravel roads, such as the current Rio Tinto Rail Access Road, and are able to link Karijini and Millstream-Chichester National Parks in a single itinerary. However, most caravan travellers are discouraged from using these roads due to the possibility of damage to their vehicles (PDC, 2016). Those caravaners discouraged by the unsealed roads would alternatively have to travel more than 500 km via Route 3 or 4 (see Table 1) to link these destinations, effectively restricting the growth opportunities for local business and tourism product operators.

#### *Grey Nomads*

Grey Nomads are generally older retired couples travelling in self-contained caravans during the colder months in Perth. They face the same restrictions as those who hire campervans. Most caravan owners elect not to travel on gravel roads to avoid damaging their vehicles, caravan or contents.

Grey Nomads are limited in their ability to navigate within the Pilbara region due the extent of the gravel sections of the Warlu Way tourist route, and are generally unable to visit both Millstream-Chichester and Karijini in the same itinerary. Thus, the gravel section of the Karratha-Tom Price road discourages marketing the Pilbara as a detour through the national parks or as an alternative winter retreat to Broome, a further 835 kms.

When Grey Nomads do venture inland, their outbound journey regularly circumvents the City of Karratha as the only logical sealed road option is on the Great Northern Highway to the east.

## 2.2 Social Impacts and Community Safety

### 2.2.1 Restricted Access

State Government services in the Pilbara region are delivered almost exclusively from the major centres of Karratha and Port Hedland. The Karratha catchment area takes in most of the Shire of Ashburton, including Tom Price and Paraburdoo. However, the travel distance and time along the unsealed road for both Government officers visiting Tom Price and local residents seeking Government services or facilities in Karratha poses significant costs and creates social disadvantage.

Cultural, educational, social and recreational activities are often considered inaccessible, or their uptake is severely limited, due to travel time and distance. This isolation also generates adverse health outcomes – for instance, residents of Tom Price in the later stages of pregnancy who cannot travel on a gravel road for extended distances are forced to leave their families at home for many weeks or months prior to childbirth, to seek maternity services in Karratha or Perth.[9] This places significant stress on families.

The effective separation of large portions of the inland Pilbara from the Karratha hub is compounded by frequent road closures. According to statistics provide by Rio Tinto for the Rail Access Road, the road was closed for 74 days (or 1/5$^{th}$) of the year in 2016 (Table 2). These closures or partial closures (4X4 only) are generally the result of flooding and unsafe water crossings, occurring most frequently during the cyclone season (mid-December to April). Tom

[9] Qualitative information from interviews with stakeholders and the community consultation meeting

Price stakeholders commented that these closures posed a risk to both health and safety – considering, for example, the inability to quickly access medical services in an emergency. Tom Price business owners also commented that closures impact their revenue and reputations when they are unable to deliver goods to their clients (particularly mining camps).[9]

**Table 2 Status of Days, 2016, Karratha to Tom Price Road**

| Status | Days |
|---|---|
| Open | 277 |
| 4WD & Trucks Only | 14 |
| 4X4 Only | 53 |
| Closed | 21 |
| TOTAL DAYS | 365 |

Source: Stuart Estcourt, Access Road Inspector, Rio Tinto (March 2017).

### 2.2.2 Disaster Evacuation – Alternative Route

Tom Price and Karratha are particularly vulnerable to bushfires and cyclonic flooding.

#### Tom Price

Cyclones are far reaching and have caused considerable damage and flooding in inland parts of the Shire of Ashburton.

The routes identified in the *Shire of Ashburton – Inland Local Emergency Management Evacuation Plan* for disaster evacuation are restricted to main arterial roads only. The incoming approach roads to Tom Price and Paraburdoo, being Great Northern Highway, North West Coastal Highway, Paraburdoo-Tom Price Road, and Nanutarra-Mujina Road, have all been subjected to flooding during and after cyclones. The sealing of the Karratha-Tom Price Road will provide an essential alternative disaster evacuation route.

#### Karratha

Karratha is a coastal city and port and is particularly exposed to cyclones whilst they are at their most destructive force when crossing the coastline. Karratha is vulnerable as it's only sealed main arterial road in and out is the North West Coastal Highway, which runs parallel to, and approximately 15 kms from, the shoreline. A single direct major cyclonic event is likely to close the highway in both directions, effectively isolating the city. The only alternative inland evacuation route is the Karratha-Tom Price Road, if it were sealed, providing access to the Great Northern Highway.

### 2.2.3 Road Safety

Stakeholder consultation indicated that the community generally perceives the current route options to be unsafe and/or overly time-consuming. However, the risks associated with travelling on gravel roads are often preferred to the extended distances of the two alternative sealed routes (see Table 1), increasing the risk of vehicle crashes, damage or injury. This is particularly hazardous as many heavy vehicles use the same gravel roads.

Driving on gravel roads demands greater attention to variations of the surface and it is easier to lose control than on a sealed road. Problems associated with driving on gravel roads include:

- Loss of vehicle control due to loose gravel, ruts or stony / sandy ridges at the edges or in the middle of the road;

- Washouts, corrugations, potholes and ruts causing loss of control or damage to vehicles due to excessive vibration;
- Dust thrown up from a leading or passing vehicle reducing visibility, which is particularly problematic due to consistently dry, dusty conditions in the Pilbara;
- Stones thrown up from a leading or passing vehicle damaging the car body, lights or windshields;
- Sharper and larger stones cutting and puncturing tires, or being thrown up by the wheels and damaging the underside of the vehicle, or even puncturing the fuel tank of unmodified cars;
- Skidding on mud after rain;
- Excess dust permeating door-opening rubber moulding, breaking the seal and causing dust to enter the vehicle cabin;
- Lost binder in the form of road dust will, when mixed with rain, wear away the painted surfaces of vehicles; and
- Many gravel roads are only one lane wide or slightly larger, requiring constant vigilance to slow down to safely pass other vehicles.

Table 3 shows the number of reported crashes along the Karratha-Tom Price Road. From 2011 to 2016, there were 18 crashes, 1 of which resulted in a fatality.

Table 4 shows that the majority of vehicles involved in crashes are light vehicles (utilities), both public and commercial.

**Table 3 Traffic Crashes on the Karratha-Tom Price Road (2011 to 2016)**

| Category | Stage 3 | Stage 4A | Stage 4B |
|---|---|---|---|
| Fatalities | 0 | 1 | 0 |
| Incident Requiring Medical Attention | 0 | 0 | 2 |
| Collision | 1 | 1 | 2 |
| Out of Control | 3 | 1 | 4 |
| Other | 1 | 1 | 1 |
| Total | 5 | 4 | 9 |

Source: MRWA
Note: Other refers to incidents including swerving to avoid collisions

**Table 4 Vehicles Involved in Crashes on Karratha-Tom Price Road (2011 to 2016)**

| Vehicle type | No. vehicles | Highest severity |
|---|---|---|
| Road Train | 1 | Major Property Damage Only |
| Truck | 3 | Fatality (1) |
| Utility | 9 | Fatality (1) |
| Station Wagon | 3 | Major Property Damage Only |
| Other | 5 | Medical Attention |
| Unknown | 1 | Major Property Damage Only |

Source: MRWA
Note: Other refers to caravans and 4WDs

While most travellers have the option of avoiding Karratha-Tom Price Road via a substantially longer but sealed route (refer Table 1) to mitigate the risk of incident, avoidance is not possible for industries dependent on the road for transportation of goods, services or personnel. A number of major resource industries are situated along the route, including mines for Rio Tinto and FMG – both possessing significant workforces and established mining camps. Though some of the workforce arrives directly via FIFO (i.e. fly-in-fly-out from FMG's Solomon Airport, Rio Tinto's Brockman and Boolgeeda Airports or the Paraburdoo Airport), many staff commute (drive-in-drive-out) from Karratha, Tom Price or Paraburdoo. These commuters and service providers are therefore subjected to the safety risks of operating on unsealed gravel roads[10].

## 2.3 Transport Network Impacts

The Western Australian Regional Freight Transport Network Plan prepared by the Department of Transport in 2013 (latest version) is the lead planning document for investment in regional road, rail and port transport projects. The Plan identified that:

*An effective freight transport network is essential for the long-term development of Western Australia and the Pilbara. A strong freight network ensures remote, regional and metropolitan businesses and communities have reliable access to goods and services. It underpins the capability to move these goods efficiently and sustainably into, around and out of the State thereby making a substantial contribution to the overall prosperity and liveability of Western Australia*.

The Western Australian Regional Freight Transport Network Plan identifies the "Completion of the missing link in the Karratha Tom Price Road: Millstream to Nanutarra-Munjina Road" as one of nine Priority Projects in the Pilbara.

The priority is part of the initiative to "Develop of the Pilbara road network to support coastal and inland industrial expansion" by 2020.

[10] To mitigate the risk of incident, it is likely that these organisations would apply Health and Safety Controls, which may include travel management plans, use of appropriately modified or equipped vehicles and 4WD training.

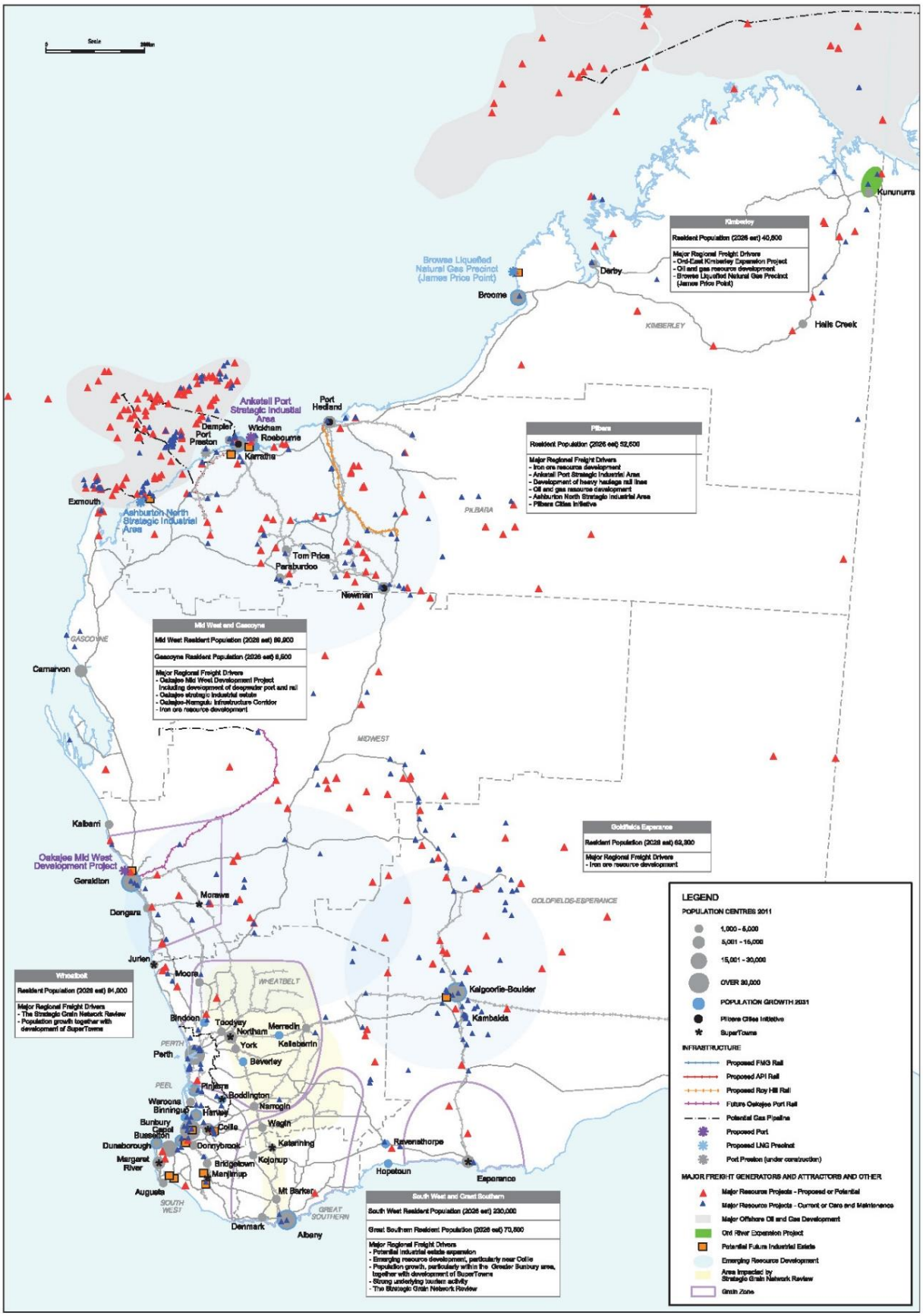



**Figure 2 Future Freight Drivers**[11]

[11] Western Australian Regional Freight Transport Network Plan – 2013 – Page 20

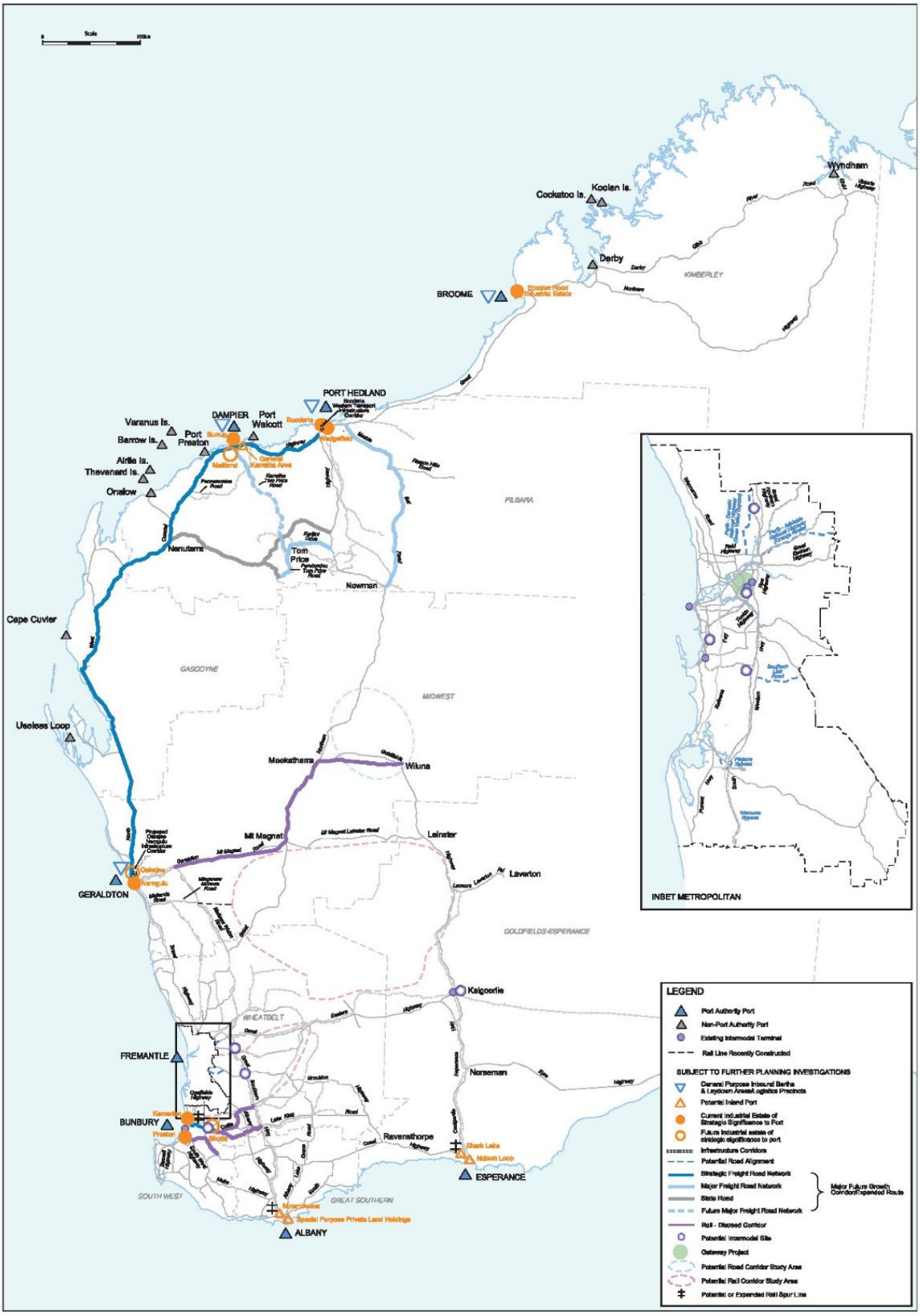



**Figure 3 Regional Freight Network Priorities**

Transport network impacts recognised by stakeholders included increased vehicle maintenance costs, costly modifications to vehicles and lost revenue / opportunity.

Tom Price business owners – notably freight companies transporting goods along the unsealed route (particularly large volumes of commodities and perishables to mine sites) – identified the following impacts of operating on the gravel stages of Karratha-Tom Price Road:

- Road condition and frequent closures results in lost revenue and opportunities due to not being able to deliver goods to clients;
- Expansion into new mining and tourism endeavours are currently unviable due to elevated costs and travel time;
- Only non-sensitive freight can be transported via gravel roads – sensitive freight must be transported greater distances via the alternate sealed routes (Table 1);
- Increased vehicle maintenance costs – road users, both public and commercial, experience a higher risk of vehicle damage, with the road being notorious for blown tyres[12];
- Trucks are often purpose built to withstand the harsh condition of the gravel stages, resulting in inflated build costs (approx. 20% extra); and
- The remoteness of Tom Price and Paraburdoo impacts companies' ability to source and retain quality staff, which may be improved with better access to the region.

As with safety, the public can take alternative routes to avoid the gravel-related vehicle issues associated with Karratha-Tom Price Road, whilst industry cannot. Businesses must therefore contend with the inflated maintenance costs and reduced time/operating efficiencies associated with travel on unsealed gravel roads.

## 2.4 Timing Considerations

The sealing of the Karratha-Tom Price Road has featured in the Shire of Ashburton's and City of Karratha's Planning Schemes for many years, and is considered a very high priority project by the Minister for Primary Industries and the Minister for Regional Development. The State has committed $50 million and indicated the need for Stage 3 to be under construction by May 2018[13]. The road also aligns with Infrastructure Australia's '2016 Infrastructure Priority List' (page 9 'improve road access to remote WA communities' is listed as a near-term priority)

The sealed road for the complete journey, inclusive of Stage 4, is necessary to realise the full benefits of a diversified economy, leverage tourism as a major economic driver and address the social disadvantage experienced by the City of Karratha and Shire of Ashburton residents.

Also see Section 3.1.1 Resources Opportunities for other timing considerations.

[12] Tyre businesses in Tom Price commented that a large volume of vehicles attend their premises with damaged tyres as a result of commuting along Karratha-Tom Price Road

[13] Zaunmayr, T. (2017) Karratha to Tom Price road sealing pegged for 2018, *The West Australian*. 1 May. Retrieved from: https://thewest.com.au/news/pilbara-news/karratha-to-tom-price-road-sealing-pegged-for-2018-ng-b88461168z

# 3. Benefits Analysis

Sealing Stages 3 and 4 will generate social and economic benefits for the Pilbara Region and the State. The current unsealed road is a major inhibitor of investment, mining activity and growth in the tourism sector. A road upgrade will significantly reduce travel time between centres and provide a safe, consistent and efficient driving environment for all road users.

This is expected to contribute to the economic diversification of the region, potentially increasing local employment opportunities, and link Karratha to the inland Pilbara towns to deliver recreational, social and health benefits.

Table 5 outlines the benefits identified through investigations and engagement with stakeholders.

**Table 5 Benefits Identified of Upgrading Karratha-Tom Price Road**

| Benefits Identified | |
|---|---|
| • Attraction of private sector investment, especially in the tourism and resources industries.<br>• Facilitating local workforce participation in new resource projects.<br>• Improved access for tourists; including grey nomads and international visitors to Karijini and Millstream-Chichester National Parks.<br>• Increased liveability of Tom Price and Paraburdoo, including improved equity and access to employment, health, education, and training.<br>• Availability of new business opportunities, such as agriculture.<br>• Creation of regional employment. | • Improved safety by reducing the risks associated with travel on gravel roads and driver fatigue.<br>• Reduced maintenance costs for vehicles and road infrastructure, particularly associated with mining activities.<br>• Reduced costs of damage for transported goods.<br>• Increased freight capacity.<br>• More reliable transport links for local enterprises.<br>• A potential new road corridor under the States PortLink concept connecting a supply chain between Tom Price and the Pilbara ports.<br>• Reduced isolation of Aboriginal communities. |

The identified benefits may be summarised under the following three areas:

- **Improved development opportunities and economic diversification** – access to new or expanding business development opportunities in resources, tourism, agriculture, renewable energy
- **Improved road safety** – a reduction in traffic along unsealed roads will improve community safety and reduce crash risks
- **Improved transport network efficiency** – reduced travel times and operating costs will support improvements in the efficiency of the transport network in and around Karratha, Tom Price and the broader region

## 3.1 Improved Development Opportunities and Economic Diversification

### 3.1.1 Resources Opportunities

Established in the 1960s, mining became the Pilbara's single largest industry, and continues to thrive despite the recent slump in iron-ore prices, with multiple projects expected to proceed.

The current mines that operate in the vicinity of the road include Rio Tinto's Silvergrass, Nammuldi, Brockman and Western Turner Syncline mines and Fortescue Metal Group's Solomon, Firetail and Serenity mines.

Whilst these mining operators are able to absorb the financial impost of vehicle deterioration from gravel road use during the construction phase, benefits for local goods and services businesses that supply the mine sites will be realised in the longer operational phase. Tom Price businesses are particularly impacted, as many of the mine sites must be accessed from the Karratha-Tom Price Road, resulting in increased overhead costs due to wear and tear and the need for upgraded specification vehicles capable of enduring long travel on gravel. These small and medium sized businesses will gain significant benefit from the sealed road.

### Current Major Proposals

Significant iron ore deposits exist to the south of the proposed road upgrades, and are expected to be exploited as improved transport options increase their accessibility. Two major proposals / projects likely to benefit from the road being sealed are Flinders Resources Balla Infrastructure (BBI) Project and FMG's proposed Western Mining Hub.

BBI Group is currently undertaking a bankable feasibility study to make a final investment decision on the BBI Project in 2018. The project involves the development of a major Pilbara Iron Ore Project (PIOP), located west of Stage 4A, which will be linked via conveyor to a new 160 km multi-user railway network (Figure 4). The railway will extend from PIOP to a new trans-shipping operation at Balla, near Whim Creek, on the Pilbara coast. This proposed BBI port, rail and processing hub would be the first multi-user facility in the region, encouraging other mining groups to export and unlock the smaller, unviable mineral holdings in the region.

The BBI project is expected to create more than 3,300 jobs during construction and 910 jobs once operational. Yet, whether this project benefit locals or not depends heavily upon the status of the Karratha-Tom Price Road. The mine design currently includes an airstrip allowing for fly-in-fly-out (FIFO) operations, which would compromise local jobs. However, BBI Group has indicated that drive-in-drive-out (DIDO) arrangements would be considered viable if the road were sealed, allowing workers to be bussed between Karratha, Tom Price and the project site.

Positioning the local workforce to benefit from participation in the BBI project is therefore largely contingent upon undertaking the road sealing project, particularly Stages 3 and 4A[14].

[14] The West Australian. *Decision makers given Pilbara road seal ultimatum.* Available from https://thewest.com.au/news/pilbara-news/decision-makers-given-pilbara-road-seal-ultimatum-ng-b88400492z

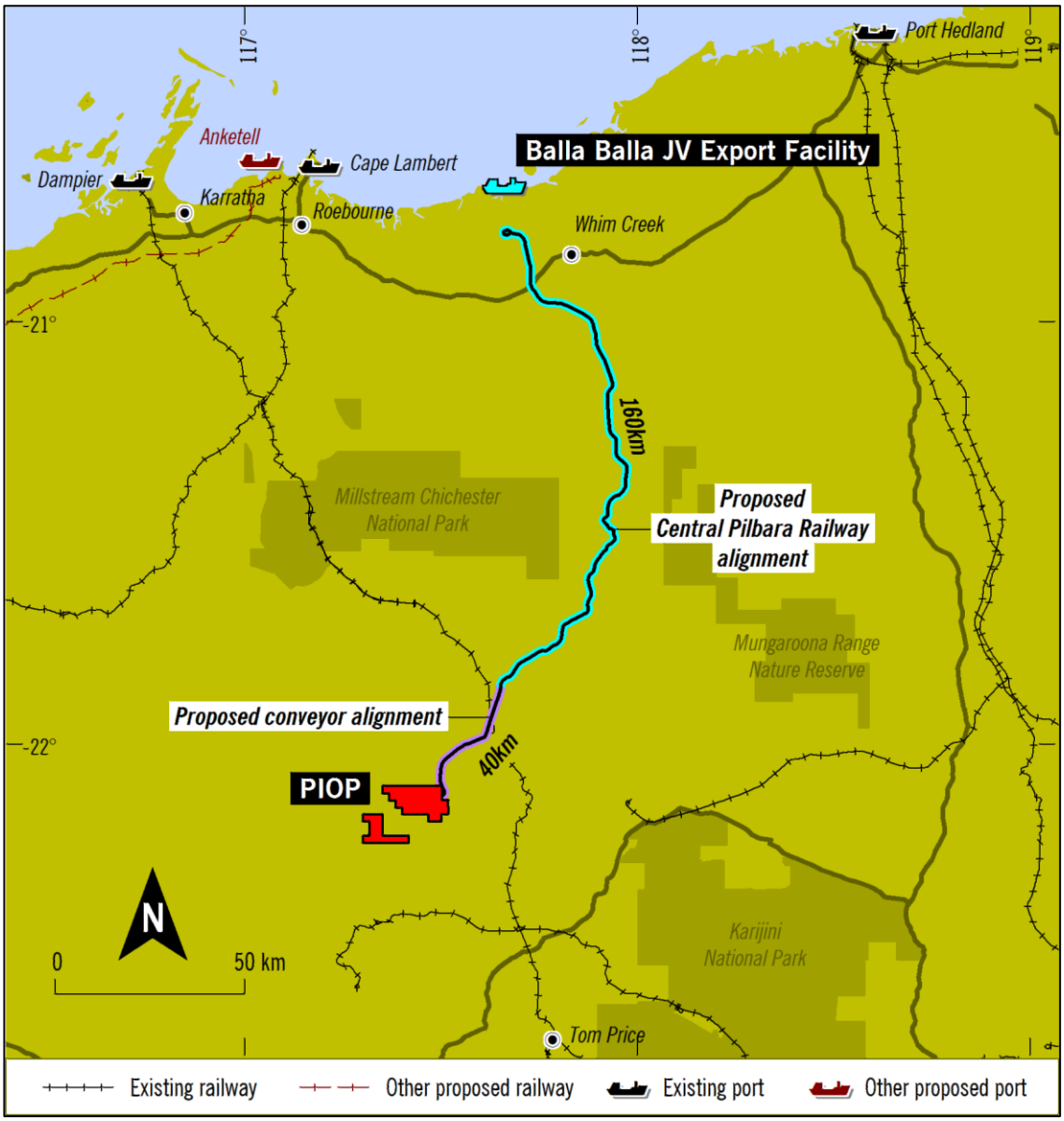



**Figure 4 Proposed Balla Infrastructure Project**

Source: BBI company announcement

FMG's propose to develop its Western Mining Hub, 150 km south of Karratha, to replace its depleting Firetail Mine (refer to Figure 5). Construction is expected to commence in 2018/2019 with a workforce of approximately 1,000 personnel. The operational workforce is expected to reach approximately 400 personnel, comprised of a mixture of FIFO and DIDO from Karratha and Tom Price, again emphasising the importance of completing both Stage 3 and 4A.

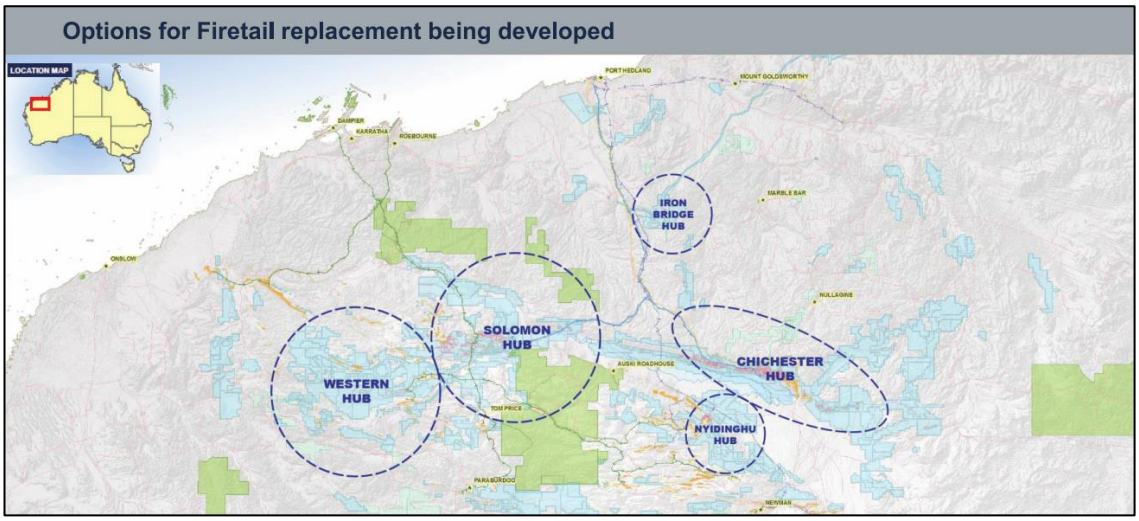



**Figure 5 Proposed Western Hub**

Source: Martin Drage (FMG)

Another major project is Rio Tinto's Koodaideri Mine, located 110 km northwest of Newman and adjacent to the Great Northern Highway. Ore will be taken by rail to the ports at Cape Lambert and Dampier. This will require the construction of a railway to connect to the existing Tom Price railway line. At present, it is unclear whether the road upgrade would benefit this project (or other opportunities) as limited feedback was received from Rio Tinto during the consultation.

Each of the three new mining projects involve significant construction works which will increase traffic demand for the movement of construction material, the labour force and ongoing logistical supplies.

### Other Stranded Deposits

Many other stranded deposits face similar development challenges – predominantly the cost and method of transporting the mined ore to port for export. Other mining tenement holders along the road include:

- Forge Resources Swan Pty Ltd;
- Rockford Metals;
- Hancock Prospecting;
- Polaris Metals; and
- ESports Mogul Asia Pacific Limited.

Mining tenements in the region are often land blocked by other tenements. They are unable to negotiate fees for use of the private railways and ports, making exporting expensive and infeasible. The BBI Project's business model allows for land tenement owners without their own transport and processing infrastructure to utilise BBI's railway and port facilities. Together, the BBI project and sealing of the road may strongly improve the viability of stranded deposits and increase economic activity in the region.

## 3.1.2 Tourism Activation

Though tourism has always played a role in the Pilbara economy, the tremendous demand for accommodation and services during the mining investment boom 'crowded out' many leisure visitors. As the region continues to transition from the mining investment boom to business as usual (particularly with mine replacements), tourism can once again become a major contributor to economic growth.

The *Pilbara Regional Investment Blueprint* and the *Pilbara Tourism Product Development Study* both highlight the important role tourism has to play in the future development of the Pilbara economy, while the *Pilbara Tourism Activation Infrastructure* report specifically identifies the sealing of the Karratha-Tom Price Road as critical infrastructure requirement. Undertaking this work would decrease travel times in between attractions along the road, allowing tourists to experience more that the region has to offer.

In 2017, Tourism WA in collaboration with the Pilbara Regional Council commissioned a survey to measure the potential tourism benefits of sealing the Karratha-Tom Price Road (Metrix 2017). Data collected from 3,539 respondents between June and August 2017 indicated that there would be a dramatic increase in tourism demand if a sealed road-link between Karratha and Tom Price was available, from local residents, inter- and intra-state tourists and overseas visitors, largely due to increased visitation to the National Park (Karijini and Millstream-Chichester National Parks). The road is currently viewed as dangerous and unsafe for travellers, with many preferring to take the long route (i.e. via Northwest Coastal and Great Northern Highways) or skip destinations (e.g. Millstream-Chichester National Park) due to poor road conditions. Sealing the road to remove the safety risk and create a more time-efficient route between destinations was forecast to increase demand by more than 70% per annum in the short term, which would stabilise at or around an annual growth rate of 20-30%.

Key visitor destinations that would benefit from greater connectivity along the road include:

### Warlu Way

The Warlu Way is a major tourism marketing initiative, providing a visitor experience unique to the Pilbara (Figure 6). It is a tourist road route designed to showcase the area's distinctive natural landscape with an emphasis on Aboriginal culture and history. The route currently traverses Stage 3 and 4 (Stage 4A, crossing Hamersley Rd, and Stage 4B) which are gravel – restricting the number of visitors able to travel the full Warlu trail. As a result, many travellers bypass the Karijini National Park leg and only visit Onslow en-route to Karratha and/or Port Hedland (the coastal route). Others take the inland route, visiting Karijini National Park via Tom Price and then backtracking via Newman to Port Hedland, bypassing Karratha and Millstream-Chichester National Park.

Sealing Stages 3 and 4 of the Karratha-Tom Price Road will connect the coastal and inland routes, creating an integrated tourism product accessible to all vehicle types. This will allow tourists to experience the whole Warlu Way, without choosing between Karratha/Millstream-Chichester and Karijini. This has enormous potential to attract additional visitors, particularly those without 4WDs.

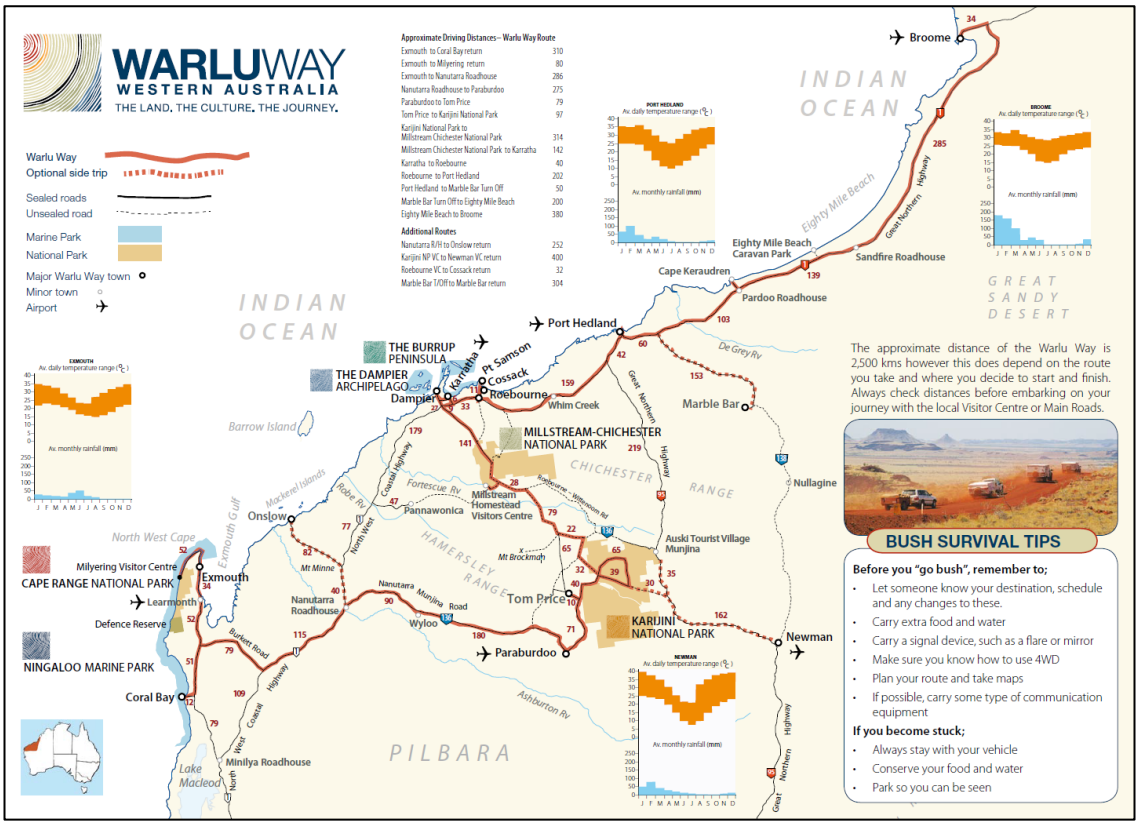



**Figure 6 Warlu Way Tourist Route**

Source: Australia's North West (2017)

## National Parks

The rugged natural landscape of the Pilbara is a major tourism drawcard, with Karijini National Park typically attracting 300,000 tourists annually and 70,000 visiting Millstream-Chichester National Park.

Visitors are unable to travel easily between these national parks without leaving sealed roads. The only sealed route between the two is a lengthy (>550 km) journey via North West Coastal Highway or Great Northern Highway. Without the sealing of the Karratha-Tom Price Road, tourists are have less incentive to visit both national parks, restricting the region's ability to effectively capitalise on the rising popularity of nature tourism.

Increased tourism in the region will provide an incentive to increase investment at both national parks. The improvement of internal roads, increased tours, site amenities and accommodation options are some of the investment avenues that may be realised by the increase in tourism visitation.

## Aboriginal Cultural Tourism - Camping With Custodians

Aboriginal cultural tourism is an important element in delivering the State's commitment to double visitor expenditure to $12 billion from 2010 levels in the current *Tourism WA 2020 Tourism Strategy*. According to the Western Australian Indigenous Tourism Operators Council (WAITOC), 66% of leisure visitors to WA *would* participate in an Aboriginal cultural experiences if they were readily available, compared with the 20% of leisure visitors to WA who *do* participate.

Camping with Custodians is a contemporary Aboriginal cultural activity that allows visitors to camp on Aboriginal lands and experience Aboriginal culture. This camping encourages the visitor to learn about the lifestyle, history, heritage and culture of the Aboriginal people in WA.

The initiative developed by Tourism WA to promote opportunities in the region for Aboriginal people through a greater involvement in the local tourism industry. The provision of employment opportunities for Aboriginal peoples and communities is a key driver of economic sustainability of communities.

There are two Aboriginal communities within the Shire of Ashburton that have formal Community Layout Plans which include dedicated areas for tourism camping activities. Yet, while the Wakathuni community, 20 km south-east of Tom Price, and Innawonga (Bellary), 40 km south-east of Tom Price, have the capacity to undertake the initiative, a critical mass of tourists is required to stimulate start-up strategies.

#### International Tourism

The City of Karratha is also seeking to progress a Singapore international flight initiative which would fly direct to Karratha twice weekly from mid-2018[15]. The expected aircraft type is the Embraer E175, which has a capacity of 88 seats. Assuming two capacity flights per week (176 passengers), this has the potential to generate 9,856 additional visitors per annum, yielding 68,992 night stays, which would increase tourism demand in the region and direct traffic toward destinations en-route to Tom Price. The availability of international flights will increase flow-on demand for accommodation, food and beverage, structured tours, retail and transportation. International flights may provide the key stimulus to initiate Camping with Custodians in the Wakathuni and Innawonga communities.

The road sealing would open up new tourist destinations between Karratha and Tom Price – for instance, Millstream-Chichester and Karijini National Parks – particularly for those who are time constrained and/or restricted by travel arrangements (e.g. international tourists traveling return between Karratha and Singapore or caravaners not equipped for travel on gravel roads). It is forecast that both the average spend per tourist and annual tourist demand will rise in the area, with both direct and indirect benefits (including employment) for the regional economy.

### 3.1.3 Agribusiness and Renewable Energy

The Pilbara Development Commission recently used the land-use simulation tool ALCES[16] to explore economic development opportunities in the Pilbara. The simulation identified very large areas within Fortescue River basin that containing the soil types, climatic conditions and ground water appropriate for a range agribusinesses (Figure 7). Most of the identified areas are also ideally suited for solar farm establishment, providing a local, low-cost energy source to power irrigated cropping land development and produce processing. The sealing of the Karratha-Tom Price Road will provide direct road access to the Karratha Airport and Dampier Port creating opportunities for State and international export.

[15] Karratha Airport, *City of Karratha secures international and East Coast flights,* accessed 15 December 2017, available at: http://karrathaairport.com.au/international-flights

[16] ALCES available from https://alces.ca/

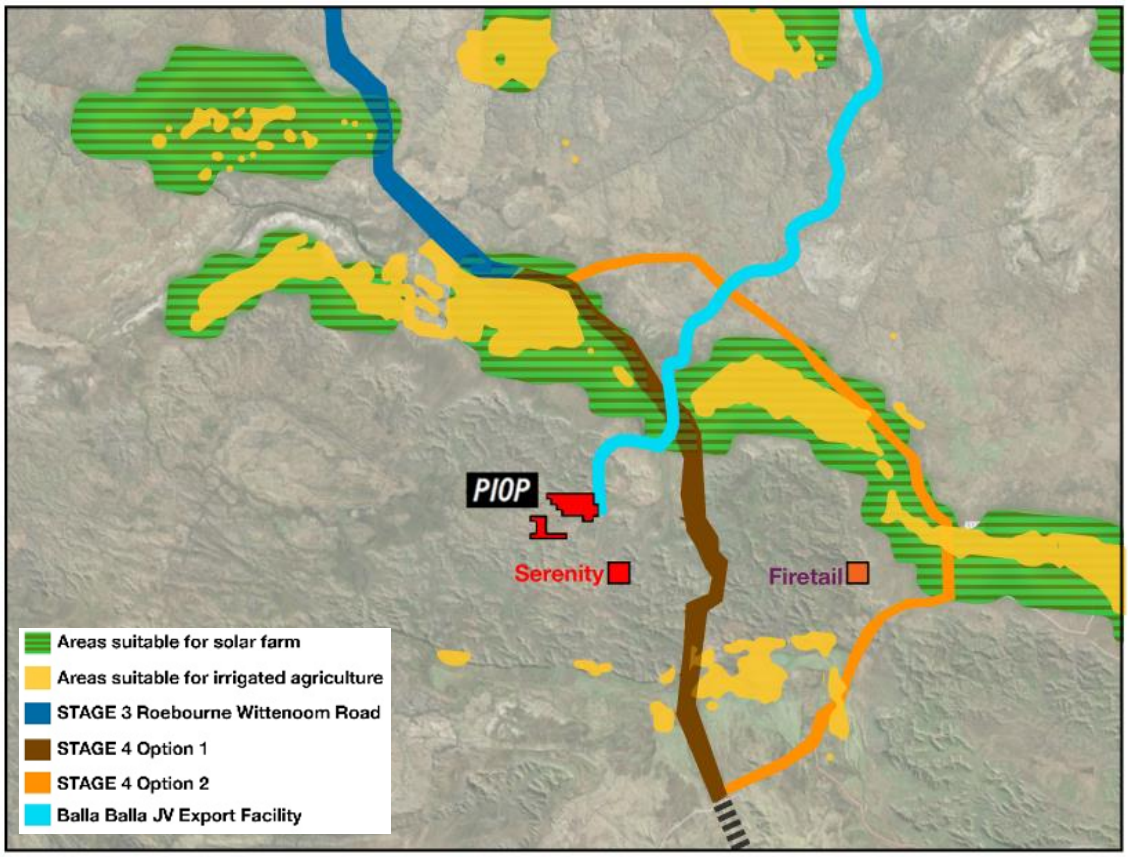



**Figure 7 Example of Opportunities Mapped by ALCES with regards to Areas Suitable for Irrigated Agriculture or Solar Farming**

Source: Pilbara Development Commission

## 3.2 Improved Road Safety

Road safety will be improved simply by shifting existing traffic from a gravel road to a sealed road. A decrease in total vehicle movements, including heavy vehicle movements, on unsealed roads will reduce the number of accidents and injuries that occur in the region.

There is evidence that heavy vehicles in Australia are proportionally more involved in accidents than other road vehicles. Additionally, accidents involving trucks often result in more serious injuries or fatalities than accidents not involving heavy vehicles. Transport for NSW data indicates that, while heavy vehicles comprise only 2.4% of NSW motor vehicle registrations and 7.1% of kilometres travelled by all NSW vehicles, heavy vehicles are involved in 21% of all road fatalities.[17]

Victorian data shows that people involved in heavy vehicle accidents experience very high levels of trauma, and that involvement of the heavy vehicles in crashes increases the safety risk for other road users. In particular, accidents involving heavy vehicles account for:

- 18% of road deaths; and
- 10% of serious injuries.[18]

Similarly, a study by the American Trucking Association found that, although the crash rate for trucks was lower than for motor vehicles, the rate of fatalities was higher. In 2009, 1.0% of truck

[17] http://roadsafety.transport.nsw.gov.au/stayingsafe/drivers/heavyvehicledrvers/index.html

[18] *Towards Zero*, discussion paper on road safety, Road Safety Victoria, June 2015

crashes in the United States resulted in a fatality, compared to 0.5% for car crashes. Of the fatalities resulting from truck crashes, 76% were occupants of another vehicle and 9% were pedestrians or bicyclists.[19]

There has been one fatality as a result of heavy vehicle interaction in past 5 years, in which a car attempted to overtake another vehicle on the gravel section. With the view ahead obscured by dust kicked up by the gravel road, this car collided head-on with a truck approaching from the opposite direction.

Safety along the Karratha-Tom Price Road will improve substantially once the hazards involved in travelling on gravel roads is removed. With the projected increase in traffic volumes in the future, and the mix of traffic including a substantial number of heavy vehicles, road safety will be a critical issue for the region.

## 3.3 Improved Transport Network Efficiency

The upgrade to Karratha-Tom Price Road will support improvements in the efficiency of the transport network between Karratha, Tom Price and the broader Pilbara region. In particular, efficiencies will be realised through reduced travel times between Karratha and Tom Price and to other destinations on-route (commercial and recreational) and reduced vehicle maintenance costs.

This project is identified by the Department of Transport (DoT) in the Western Australian Regional Freight Transport Network Plan[20] and defined as "*Complete the missing link in the Karratha-Tom Price Road: Millstream to Nanutarra – Munjina Road*" which forms part of the PortLink Freight Strategy.

As shown in Table 1 the current travel time between Karratha and Tom Price on a sealed road is more than 6 hours, whereas via Karratha-Tom Price Road this time is halved, being approximately 3 hours. Hence, the Karratha-Tom Price Road already offers a significant time saving, but is marred and often avoided due to the 155 kms of gravel surface. Sealing this alignment will reduce travel time by a further 17%.

Respondents identified that vehicle maintenance costs are exacerbated by the road being gravel, both for public and industry. Public using the road are at a heightened risk of vehicle damage, with the road being notorious for blowing tyres. Tyre businesses in Tom Price commented that a huge volume of vehicles attend their premises with damage tyres as a result of commute along Karratha-Tom Price Road.

[19] American trucking Association, Relative Contribution/Fault in Car-Truck Crashes, February 2013

[20] Department of Transport. Western Australian Regional Freight Transport Network Plan. Available from http://www.transport.wa.gov.au/Freight-Ports/regional-freight-plan.asp

# 4. Project Options Analysis

Three Options for upgrading Karratha-Tom Price Road were assessed against the base case, or "do nothing" scenario:

- **Option 1** – Seal Stage 3 only (intersection of Warlu Road and Roebourne-Wittenoom Road to the junction of the Rio Tinto Rail Access Road);
- **Option 2** – Seal Stage 3 and Stage 4A (Stage 3 and then a section along the Rio Tinto Rail Access Road); and
- **Option 3** – Seal Stage 3 and Stage 4B (Stage 3 and Roebourne-Wittenoom Road to Fortescue Crossing Road and Nanutarra-Munjina Road).

These Options were evaluated against:

1. Social impact;
2. Environmental impact; and
3. Economic impact.

Each option was rated according to its impact to the Karratha, Tom Price and the wider Pilbara region. The analysis is discussed further in this following section.

## 4.1 Social Impacts

### 4.1.1 Stakeholder Identification and Consultation

Consultation encompassed over 145 stakeholders from 58 organisations. The organisations are listed in Appendix A. A high level summary of interest in the project, key issues, attitude/position to the project is outlined in Table 6.

### Table 6 Stakeholder and Issues Identification

| Stakeholder Category | Nature of interest | Key issues | Attitude/position to the project | Consultation Mediums |
|---|---|---|---|---|
| Private mining bodies with land tenements in the area | • Ability to use the road to facilitate operations<br>• Impact on private networks | • Opportunity to source local workforce<br>• Transport safety<br>• Control of private transport network<br>• Ability to service current rail networks | Overall supportive of the project – some stating subject to timing of project | Engaged key parties through email, phone calls and face-to-face |
| Local community groups | Impact on interactions between communities in the Pilbara | • Increase in recreational and educational opportunities for residents | Supportive of the project | Engagement with community through face-to-face dialogue, presentations and presence at local events. |
| Pastoral groups along the road | Exposure to traffic along route | • Restricted access for livestock to cross road<br>• Anti-social behaviours may develop to increased traffic in the area | Overall supportive of the project, but preference for Stage 4A | Reached out through emails and phone calls to a number of cattle stations with only feedback from one |
| Local industry | The sealing of the road affecting business | • Business opportunities<br>• Increased competition<br>• Potential increase in business through tourism and traffic passing through town<br>• Decrease freight cost | Supportive of the project | Engagement via face-to-face dialogue, presentations and presence at local events. |
| Government services | Impact on staff travel | • Increase in safety for staff travelling<br>• Decrease cost and time for regional trips<br>• Increase ability for collaboration | Overall supportive of the project | Consultation through email, phone and meetings. |

| Stakeholder Category | Nature of interest | Key issues | Attitude/position to the project | Consultation Mediums |
|---|---|---|---|---|
| Local residents | Access to services and social infrastructure | • Health, education and recreational opportunities<br>• Town and area economic sustainability<br>• Liveability | Supportive of the project | Consultation through mediums such as email, phone and meetings to supplement published community reports.<br>It should be noted that is based on qualitative feedback only. |
| Tourists travelling in the region | Access to region and tourist options | • Recreational and holiday experience<br>• Ease of travel through the region | Supportive of the project | Consultation with tourism bodies responsible for the region through email, phone and face-to-face meetings |
| Local government | Impact on interactions between communities in the Pilbara | • Economic Diversity<br>• Amenity and lifestyle<br>• Cost of living<br>• Liveability<br>• Growth | Supportive of the project | Consultation through email, phone and meetings. |
| Traditional Owners | Native Title and Cultural Heritage | • Easier access to traditional land and sacred areas[21]<br>• Potential for increased cultural awareness<br>• Business opportunities | No response | Consultation attempted through email, phone and meetings but no response was received. |

[21] Issue comments identified in discussion with tourism stakeholders. These need to be verified in discussion with Traditional Owners

### 4.1.2 Summary of Social Impacts

Based on the high level analysis, there were seven positive impacts identified for the Town of Tom Price and eleven positive impacts identified for the City of Karratha. These social impacts, summarised in Table 7, include:

- Economic diversity and future sustainability – maintain the economic diversity of the region (tourism, agriculture, mining, energy, freight and logistics);
- Local business opportunities;
- Demographic change – increase in integrational population and better management of transient population coming to town both as visitors and as FIFO/DIDO workforce;
- Environment – maintain the world heritage natural assets and environmental stewardship;
- Lifestyle and amenity – balancing town growth with community lifestyle;
- Social infrastructure – accessibility of social infrastructure and specialist services;
- Community cohesion and local employment – education, training, employment and recreation for options; and
- Road safety and maintenance.

The social impact assessment of sealing Karratha-Tom Price Road (Appendix A) identified one negative impact as the potential for increased demand to reduce housing availability and affordability. However, given the current reduction in accommodation due to the downturn in the mining industry, this impact is considered to be negligible to low.

Stakeholders also suggested that the Traditional Owners may be negatively impacted by the improved accessibility of traditional land and sacred areas, though positively impacted by increased cultural awareness and business opportunities. Although the Traditional Owners were contacted, no response has been received, so these impacts have not been included in the summary of social impacts.

### Table 7 Summary of Social Impacts and Significance

| Impact Indicators | Impact | Stakeholders | Nature of Impact | Impact Significance *Tom Price* | Nature of Impact | Impact Significance *Karratha* |
|---|---|---|---|---|---|---|
| Local employment opportunities | Due to skills requirements, the resources workforce is predominantly employed on a FIFO and or DIDO basis that currently offers limited direct employment opportunities for the locals. Should the BBI, FMG or other resource construction projects commence, there is a potential positive impact.<br>• Temporary increase in population during construction phase due to presence of non-resident workforce in the region<br>• Temporary or permanent increase in population during the operations phase due to in-migration of workforce<br>• Increase in local employment and business opportunities | Local community<br>Local workforce<br>Key stakeholders | Neutral | Low | Positive | Medium |
| Local business opportunities | Potential for increased business due to increased accessibility of the region and surrounds<br>Decrease cost of freight for businesses<br>Increased competition for businesses in Tom Price | Local businesses | Positive | Medium | Positive | Medium |
| Economic diversity – impacts on other local industries | Potential positive impact on tourism<br>Improved access with two airlines providing frequent services. Potential for positive impact should an international airline service Karratha<br>Local businesses and operations servicing tourists | Key stakeholders | Positive | High | Positive | High |
| | | Tourism | Positive | High | Positive | Medium |
| | | Local businesses | Positive | Medium | Positive | Medium |
| Workforce drawn from other industries and local businesses | Increase in services may see a shift in local workforce | Local workforce pool<br>Local industries and small businesses | Neutral* | Low | Positive | Medium |
| Cost of living in the community | Rising cost of living is an issue in the community, but it is a factor of living in the region (local allowances counteract cost) | Local community | Neutral* | Low | Neutral | Low |
| Community values – crime, safety and anti-social behaviour | Increase in anti-social behaviour in certain areas due to greater accessibility and higher traffic volumes<br>Potential changes to quiet rural lifestyle | Local community | Neutral* | Low | Neutral | Low |

| Impact Indicators | Impact | Stakeholders | Nature of Impact | Impact Significance *Tom Price* | Nature of Impact | Impact Significance *Karratha* |
|---|---|---|---|---|---|---|
| | NB – nature of impact has been assessed neutral – not enough statistical data to verify | | | | | |
| Demographic change | Potential increase in population through opening of mines, associated services | LGAs | Positive | Low | Positive | Medium |
| Community cohesion and social networks | Impacts on the recreational values and use of the region<br>Ability for greater community interactions through recreation or social events | Local community | Positive | High | Positive | Medium |
| Vulnerable/ disadvantaged groups | Potential for greater access to opportunities | Disadvantaged groups | Neutral | Low | Neutral | Low |
| Amenity and lifestyle | Greater access to cultural events held for residents in other towns<br>Changes to visual amenity, noise levels considered to be minor | - | Positive | High | Positive | Medium |
| Traffic safety | Safer roads with decreased dust clouds<br>Reduction in road incidents and accidents<br>Decreased maintenance costs | Freight Users<br>Residents<br>Workers of local industries<br>Tourists<br>Key stakeholders | Positive | High | Positive | Medium |
| Availability and affordability | Increase in demand for short term and long term housing and accommodation<br>Consequent impacts on housing availability and affordability, with a potential for increased demand to reduce housing availability – however, given the current downturn in the towns, this is considered to be low impact. | Local community<br>Housing developers<br>Social housing providers | Negative | Low | Negative | Low |
| Health, medical and emergency services | Increased demand on existing social infrastructure services and facilities Greater access to medical services in Karratha for Tom Price residents. Residents are able to travel for medical purposes with less impact on families. | Hospital<br>Emergency services | Positive | High | Neutral | Low |
| Native title and cultural heritage | No known significant historic, cultural or heritage areas affected by the proposed sealing of the road. | Aboriginal community | Neutral | Low | Neutral | Low |

| Impact Indicators | Impact | Stakeholders | Nature of Impact | Impact Significance *Tom Price* | Nature of Impact | Impact Significance *Karratha* |
|---|---|---|---|---|---|---|
| Employment opportunities and business opportunities | Limited employment or business opportunities for local Aboriginal community in town centres; however, there is a potential positive impact in the tourism and mining sectors should Balla Balla or other resource projects commence construction. | Aboriginal community | Positive | Low | Positive | Low |
| Impacts on other industries | Potential to facilitate growth in other industries such as agriculture and pastoralism | Non-mining industries | Positive | Low | Neutral | Low |

### 4.1.3 Social Impact Rating

Based on the above findings, Table 8 provides a social impact comparison and rating for each option. Option 1 was rated medium as Karratha and Tom Price will remain separated by unsafe and/or time consuming route options – limiting social benefits. Option 2 and 3 were rated high as the road link will be completed in full and all social benefits will be realised.

**Table 8 Social Impact Comparison**

| Option | Impacts | Impact Rating |
|---|---|---|
| Option 1<br>(Stage 3) | Numerous social benefits realised (e.g. local employment opportunities, business development, and road safety).<br>Only realised for Stage 3.<br>The objective of the project, being a complete linkage between Karratha and Tom Price, is not met. Tom Price and Karratha still separated by unsafe and/or time consuming route options. | Medium |
| Option 2<br>(Stage 3 and 4A) | All social benefits realised.<br>The objective of the project, being a complete linkage between Karratha and Tom Price, is met. Tom Price and Karratha no longer separated by unsafe and/or time consuming route options. | High |
| Option 3<br>(Stage 3 and 4B) | All social benefits realised.<br>The objective of the project, being a complete linkage between Karratha and Tom Price, is met. Tom Price and Karratha no longer separated by unsafe and/or time consuming route options. | High |

## 4.2 Environmental Impacts

### 4.2.1 Summary of Environmental Impacts

A preliminary environment and heritage constraints assessment for the proposed sealing of Stage 3 and Stage 4 of the Karratha-Tom Price Road was undertaken in January 2017. This evaluation considered the environmental context and constraints for the proposed road construction project, including previous approvals, existing constraints and further requirements for assessment or approval. The constraints assessment is provided in Appendix B, with key findings summarised below.

**Stage 3 and Stage 4A** of Karratha-Tom Price Road was previously assessed and approved by the Environmental Protection Authority (EPA) in April 2005 under Ministerial Statement 677, and this remains valid[22]. Therefore, no further State referral or approval is required for Stage 3 or Stage 4A, unless any changes are made to the original project approved by the EPA. There will be a requirement for new or updated environmental management plans to be approved by the Department of Environmental and Water Regulation (DWER) or DPaW. The project was also discussed with the (then) Department of Environment and Heritage for possible referral to the Commonwealth under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) in 2006. Advice received was that, due to limited risks to Matters of National Environmental Significance (MNES) there was no requirement to refer the project under the EPBC Act. However, the letter stated that this would need to be reviewed if there were any significant changes to the project, or if the EPBC Act requirements changed.

**Stage 4B** was not assessed under the State or Commonwealth referral/approval process for Option 2. If Option 3, including Stage 3 and Stage 4B, emerges as the preferred alignment,

[22] As advised by EPA in March 2017

referral to the EPA and the Department of Environment and Energy (DotEE) will be required, and likely trigger a new or amended State approval. Preliminary discussions with EPA in May 2017 suggest that submission of a Section 45C to amend Ministerial Statement 677 may be sufficient.

Biological and heritage surveys will be required for either alignment to ensure all appropriate approvals or permits are obtained and that no impacts occur to conservation significant flora/fauna or Aboriginal heritage matters.

Table 9 summarises the potential constraints identified and provides recommendations to manage these constraints, including likely approvals. Key constraints, including heritage sites or environmentally sensitive areas, are depicted in Figure 8. Order of costs to obtain likely environmental approvals, including further studies, is discussed in Section 4.2.2.

**Table 9 Potential Environment and Heritage Constraints Summary and Recommendations**

| Constraint | Stage 3 | Stage 4A | Stage 4B | Discussion | Recommendations and further work | Approval triggers |
|---|---|---|---|---|---|---|
| Acid sulfate soils | | ✓ | ✓ | Low risk, but risk likely to increase with excavations along the Fortescue River. | ASS preliminary investigation recommended to determine the need for specific ASS management. | No approvals required. |
| Asbestos containing materials | ✓ | | ✓ | The presence or possible-presence of asbestos poses a risk to human health and must be managed accordingly. | Asbestos preliminary investigation recommended to determine the need for specific asbestos management. Discussions with the Department of Health are recommended. | No approvals required. |
| Conservation reserves and areas | ✓ | | | Stage 3 intersects the Millstream-Chichester National Park. The Project will require excision from the Park. | Further discussions with land manager DPaW are recommended. | Changes to Class A reserves (e.g. excision or reduction in area of the reserve) require the agreement of both Houses of Parliament.<br>Likely to trigger the following approvals:<br>• Section 97A, Section 101 Licence under the *Conservation and Land Management Act 1984* (CALM Act);<br>• Regulation 4 authority under the *Conservation and Land Management Regulations 2002* (CALM Regulations); and<br>• Section 91 Licence under the *Land Administration Act 1997* (LA Act) |
| Conservation of significant vegetation | ✓ | | | Stage 3 intersects one Priority 1 ecological community. | No further assessment or consideration is required for approvals associated with the PEC. The presence of the PEC should be considered in the updated management plan, and impacts to this vegetation type should be minimised. | No approvals likely. |

| Constraint | Stage 3 | Stage 4A | Stage 4B | Discussion | Recommendations and further work | Approval triggers |
|---|---|---|---|---|---|---|
| Environmentally Sensitive Areas | ✓ | ✓ | | Stage 4A intersects an ESA near Mount Sheila. Stage 3 also intersects an ESA at Millstream-Chichester National Park. | Additional baseline surveys recommended to quantify impacts to ESA.<br>Impacts to ESAs should be discussed with DWER. | Approval under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations) may be required.<br>This factor may also be considered under Part IV, as part of the significance assessment process. |
| Conservation significant flora | ✓ | ✓ | ✓ | One Threatened (Rare) listed flora is likely to be present within the Stage 4 road corridors.<br>Priority flora species are likely to be present across all stages. | Further assessment of Threatened (Rare) flora may be required. | If listed communities or flora taxa are present, they may trigger the following approvals:<br>• EP Act: factor may be considered under Part IV, as part of the significance assessment process, or under Part V of the EP Act as part of a clearing permit application.<br>• EPBC Act: potential assessment if impact considered significant.<br>No further action is required for the Priority flora. Any Priority plants that are identified in the project area should be avoided if possible, or their loss minimised. Borrow sites (which may be outside the corridor) will need to be individually assessed. |
| Weeds | ✓ | ✓ | ✓ | Weeds (mostly creekline species) have been recorded within the Karratha-Tom Price Road envelope.<br>DPaW (Karratha) has recommended that weed mapping is updated for any areas proposed to be disturbed to ensure that the baseline weed condition is understood. DPaW expect that no new weeds are introduced or existing weeds are spread as a result of road construction. | Undertake a weed survey prior to commencement of construction.<br>A site-specific Construction Environmental Management Plan (CEMP) that includes weed management is recommended for the Project. | No approvals required. |

| Constraint | Stage 3 | Stage 4A | Stage 4B | Discussion | Recommendations and further work | Approval triggers |
|---|---|---|---|---|---|---|
| Fauna | ✓ | ✓ | ✓ | Based on the updated fauna constraints analysis, there is potential to impact the feeding and/ or breeding habitats of two Federally-listed fauna species: Northern Quoll (Endangered) and Bilby (Vulnerable), as well as the Pilbara Olive Python (Vulnerable).<br>This project has not been formally referred to the DotEE under the EPBC Act, and there is a possibility that the impacts of the project may now trigger a requirement to refer. Due to updates to fauna significance, these triggers were not present in 2003. | The risk of impacts to listed rare fauna should be discussed with the DotEE to determine whether they consider further detailed surveys and a formal referral should be undertaken.<br>There is potentially a requirement to further assess suitable habitat for the presence of the Northern Quoll (Endangered), Pilbara Olive Python (Vulnerable) and Bilby (Vulnerable). Due to their preferred habitat types, these species could possibly be present in the area. | Impacts to EPBC Act-listed fauna known to or potentially occurring in the project area may trigger the need for referral to the DotEE.<br>Impacts to WC Act and Priority-listed fauna known to or that potentially may occur in the project area may need to be considered under Part IV of the EP Act, as part of the significance assessment process, or under Part V of the EP Act as part of a clearing permit application. |
| Surface water and drainage | ✓ | ✓ | ✓ | Construction within Priority 1 and Priority 2 water resource protection areas. An agreement with the DoW and Water Corporation to re-construct the road may be required. | Preliminary discussion with the Department of Water / Water Corporation is recommended. | Impacts on water quality and ecological values - factor may be assessed under Part IV of the EP Act. |
| | ✓ | ✓ | ✓ | Various river banks will be disturbed during construction of the road. | Discussions with DoW are recommended. | A Permit to interfere with bed and banks will be required under the RIWI Act. |
| Wetlands | | | ✓ | One Nationally Important Wetland, the Fortescue Marshes (WA066), was identified within 10 km of Stage 4B. | Preliminary discussion with the DotEE, DPaW and DoW is recommended – although unlikely to be impacted by the road alignment. | No approvals likely as not in conflict with Stage 4B. |
| Aboriginal heritage | ✓ | ✓ | ✓ | A search of the DAA Aboriginal Heritage Inquiry System identified 22 sites in direct alignment with the KTP routes | Consultation with local Aboriginal people connected to the area is recommended.<br>The results of this consultation will determine if additional investigations/approvals will be required.<br>Further detailed surveys may be required to determine the requirement for heritage approval(s). | Approval under Section 18 of the *Aboriginal Heritage Act 1972* may be required for the Project.<br>Factor may be assessed under Part IV of the EP Act as part of the significance assessment process, or under Part V of the EP Act as part of a clearing permit application. |

| Constraint | Stage 3 | Stage 4A | Stage 4B | Discussion | Recommendations and further work | Approval triggers |
|---|---|---|---|---|---|---|
| Non-Aboriginal Heritage | | | ✓ | One heritage property is located in alignment with Stage 4B, Tambrey Station. | Care must be taken to ensure that no impacts from construction works occur at the Tambrey Station buildings. | No approvals are likely to be required for Tambrey Station. |

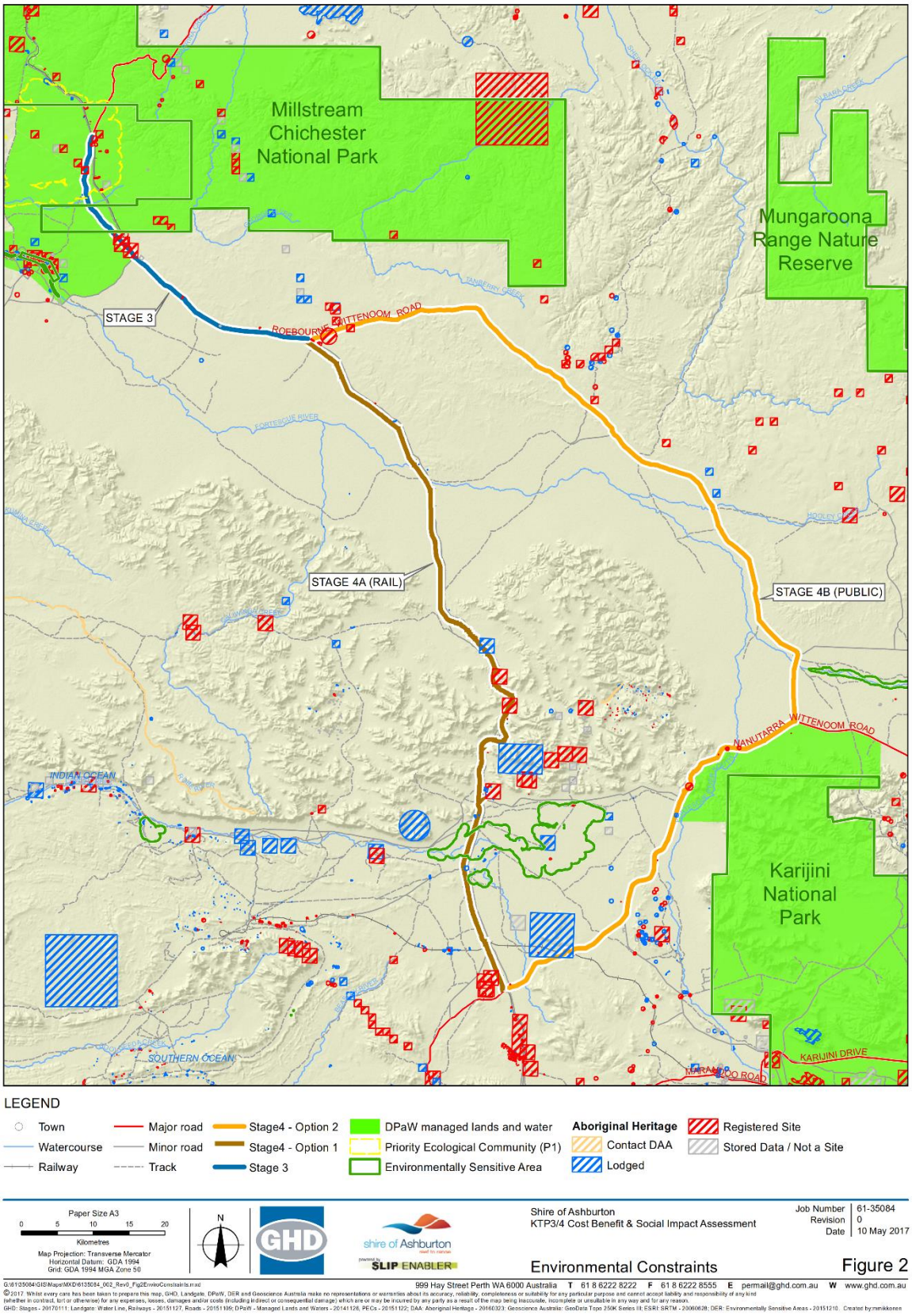



**Figure 8 Environment and Heritage Constraints**

### 4.2.2 Orders of Cost for Approvals and Further Work

The order of costs presented in Table 10 are based on a preliminary appraisal of the work likely to be required under a best case scenario to: investigate and document environmental and heritage components of the road; deliver the required detail for State or Commonwealth approvals; and commence detailed design. These approvals / actions were identified based on a desktop assessment only and will depend largely upon the outcomes of discussions with the relevant governing bodies or preliminary investigation findings. The recommended work will build on previous assessments and the current review and desktop assessment (refer to Appendix B). However, it is possible that the regulators (State and Commonwealth) may require a higher level of assessment than anticipated, leading to higher costs than those estimated below.

Due to the large number of variable factors, figures presented in Table 10 must be regarded as indicative only and subject to change. The estimate does not constitute a quotation for the work.

**Table 10 Environmental and heritage assessment and approval orders of cost.**

| Approval/ Assessment | Comment | Relevant Option(s) | Cost (ex GST) |
|---|---|---|---|
| State Issues | Discussions with EPA and possible Section 45C to amend Ministerial Statement 677.<br>Likely require preparation of an initial impact assessment for conservation significant flora/fauna and this may require some field work (see *Biological Survey*).<br>Cost and time will depend upon the outcomes of initial discussion with EPA. | **Option 3**<br>Option 1 and Option 2 were assessed and approved under Ministerial Statement 677 | **$17,000** Initial impact assessment<br>**$1,500** Liaison with EPA<br>**$5,000** Section 45C |
| Commonwealth issues | Initial discussion and possible referral to DotEE. To facilitate discussions, this may require an initial impact assessment, as per the *State issues*.<br>Cost and time will depend upon the outcomes of initial discussion and potential outcome of a referral with DotEE. | **Option 3**<br>Option 1 and Option 2 were discussed with DotEE but were not assessed, due to limited risks to MNES. | **$1,500** Liaison with DotEE<br>**$2,000** referral to DotEE (if required) |
| Clearing Permit | Discussions with DWER and Clearing Permit Application.<br>Likely require preparation of an initial impact assessment for conservation significant flora/fauna, as per the State | **All Options** | **$1,500** Liaison with DWER<br>**$5,000** DWER Clearing Permit Application |

| Approval/ Assessment | Comment | Relevant Option(s) | Cost (ex GST) |
|---|---|---|---|
| | issues. This may require some field work (see *Biological Survey*).<br>Cost and time will depend upon the outcomes of initial discussion with DWER. | | |
| Changes to Class A reserves | The Project may require excision from the Millstream-Chichester National Park. This may require approval under the CALM Act or LA Act.<br>Cost and time will depend upon the outcomes of initial discussion with Land Manager DPaW. | **All Options**<br>Stage 3 explicitly | **$1,500** Liaison with DPaW<br>**Section 97A, Section 101 Licence**<br>**Regulation 4 authority**<br>**Section 91 Licence** |
| Bed and Banks Permits | These may be obtained as a group, depending upon how many river/creek crossings there are. Requires construction information and exact locations. Cost is dependent upon the number of permits required. | **All Options** | **$12,000+** |
| Aboriginal Heritage Survey and Section 18 approval | Cost/time will depend upon the number of sites within the construction areas and the costs of consultation and archaeological survey, which can vary significantly depending on the level of involvement of the local Aboriginal groups. | **All Options** | **$180,000+** |
| Acid sulfate soils preliminary investigation | Preliminary investigation to determine the need for specific ASS management.<br>Cost/time will depend upon the number of sites within the construction areas intersecting areas of potential ASS. | **Option 2 and 3** | **$4,000** Preliminary investigation<br>**$5,000** Preparation of an ASS Management Plan |
| Asbestos preliminary investigation | Asbestos preliminary investigation within the road envelope to determine the need for specific asbestos management, including discussions with the Department of Health.<br>Cost/time will depend upon the number of sites inspected within the construction areas. | **Option 1 and 3** | **$4,000** Preliminary investigation<br>**$1,500** Liaison with DoH<br>**$5,000** Preparation of an Asbestos Management Plan |

| Approval/ Assessment | Comment | Relevant Option(s) | Cost (ex GST) |
|---|---|---|---|
| Biological Survey | Undertaking of a detailed biological survey to assess the existing environment, presence of rare flora/fauna, MNES and weeds.<br>Cost/time will depend upon detail of the survey required and number of seasons to be completed. | **All Options** | **$200,000** |
| Construction Environmental Management Plan | A CEMP will be required for the project. Likely to be approved by the local DPaW but under the DWER regulations. | **All Options** | **$5,000** |

### 4.2.3 Environmental Impact Rating

Table 11 provides an environmental impact comparison and rating based on the above findings. Option 1 was rated low – significant environmental/heritage constraints are likely to exist but can be managed to mitigate risk of impact. Options 2 and 3 are likely subject to more constraints than Option 1 and are thus rated medium, though significant constraints can similarly be managed to mitigate risk of impact.

**Table 11 Environmental Impact Comparison**

| Option | Impacts | Impact Rating |
|---|---|---|
| Option 1<br>(Stage 3) | • Ten (10) potential constraints identified<br>• Likely to have significant environmental and heritage issues including potential impacts to Millstream-Chichester National Park and 1 Priority 1 Ecological Community (PEC)<br>• Presence or possible presence of 9 conservation significant flora and 6 conservation significant fauna<br>• Presence of 6 Aboriginal heritage sites<br>• Potential issues with blue asbestos<br>• Likely to require approvals/permits | Low |
| Option 2<br>(Stage 3 and 4A) | • Ten (10) potential constraints identified<br>• Likely to have significant environmental and heritage issues including potential impacts including potential impacts to Millstream-Chichester National Park, 1 PEC and 1 Environmental Sensitive Area (ESA)<br>• Presence or possible presence of 25 conservation significant flora and 25 conservation significant fauna<br>• Presence of 13 Aboriginal heritage sites<br>• Risk of acid sulphate soils in Fortescue River<br>• Potential issues with blue asbestos<br>• Likely to require approvals/permits | Medium |
| Option 3<br>(Stage 3 and 4B) | • Thirteen (13) potential constraints identified<br>• Likely to have significant environmental and heritage issues including potential impacts to Millstream-Chichester National Park and 1 PEC | Medium |

| Option | Impacts | Impact Rating |
|---|---|---|
| | • Presence or possible presence of 30 conservation significant flora and 28 conservation significant fauna<br>• Presence of 13 Aboriginal heritage sites<br>• Potential issues with blue asbestos<br>• Likely to require approvals/permits, including a new or amended Ministerial Statement<br>• The route will require considerably more land than Option 1 or 2 | |

## 4.3 Economic Impacts

### 4.3.1 Project Financials and Funding

High level cost estimates for the capital and operational expenditure for each option are presented in Table 12. These high level cost estimates are described further in Appendix F. Potential funding sources are listed in Table 13.

**Table 12 Project Options - Cost Estimates**

| Option | Capital Cost ($) (excl. GST) | Operational cost (p.a.) | Description |
|---|---|---|---|
| Option 1 (Stage 3) | $70.23M | Operation (road maintenance) estimated at 1% of capital cost | $70.23M for Stage 3 only |
| Option 2 (Stage 3 and 4A) | $301.77M | As for Stage 3 | $70.23M for Stage 3 and $231.54M for Stage 4A |
| Option 3 (Stage 3 and 4B) | $393.32M | As for Stage 3 | $70.23M for Stage 3 and $323.09M for Stage 4A |

**Table 13 Funding Options, Realised and Potential**

| Source | Reasoning | Likely contributions ($) (million) |
|---|---|---|
| State Government | Economic and part social benefit | $50M Stage 3 |
| New resource project proponent | Direct financial benefit | $15M Stage 3 |
| State Government | Economic, tourism & social benefit | $240M Stage 4A |
| New regional tourism levy fund | New tourism operations | $15M over 15 years |

### 4.3.2 Summary of Economic Impacts

Key areas of economic development and growth which stand to benefit from the road upgrade project include: (1) access and development of stranded deposits, (2) tourism growth, and (3) social impacts.

#### Stranded Deposits

As discussed in Section 3.1.1, significant iron ore deposits exist in alignment with Karratha-Tom Price Road, which will likely be developed if transport options improve. This includes the BBI Project, FMG's Western Hub and Rio Tinto's mines. There are many other junior miners en route with stranded deposits due to limited and costly transport options. The sealing of the road will increase the viability of developing these stranded deposits, which would boost economic activity in the region.

#### Tourism

A sealed road link (Option 2 or 3) between Karratha and Tom Price will offer a safer and more time efficient route between destinations. This is forecast to increase tourist through traffic by more than 70% per annum ongoing in the short term, which would stabilise at or around 20-30% growth per annum. The road sealing would open up new tourist destinations between Karratha and Tom Price – for instance, Millstream-Chichester and Karijini National Parks – particularly for those who are time constrained and/or restricted by travel arrangements (e.g. international tourists traveling return between Karratha and Singapore or caravaners not equipped for travel on gravel roads).

Ultimately, sealing of the road will change tourist behaviour and shape future tourism growth in the region. Tourist route options will be expanded as attractions are "linked" and become more accessible. It is forecast that both the average spend per tourist and annual tourist demand will rise in the area, with both direct and indirect benefits (including employment) flowing through the regional economy.

#### Social Impacts

Stakeholder consultation identified a number of costs and community benefits to sealing the road (Option 2 and 3), including reduced freight costs, and improved access to the higher standard of healthcare and education in Karratha. Though difficult to quantify monetarily, social benefits are expected to be delivered in the following areas:

- *Freight Operation to Tom Price* – Tom Price freight operators commented that improved road condition will reduce vehicle operation costs.
- *Health* – Department of Health representatives commented that there would be little change in staff movement cost by the road being sealed as they will continue to FIFO. Patient costs (and private) will reduce through vehicle operating costs and travel time cost.
- *Education* – Department of Education representative commented that a sealed link has the potential to reduce training costs with less 'down time' on running training courses.

### 4.3.3 Economic Impact Rating

Table 14 provides an economic impact comparison and rating based on the above findings. Option 1 was rated high due to the economic impact of BBI relative to the capital cost of upgrading Stage 3. Option 2 and 3 were rated medium due to the high capital expenditure relative to the likely economic impact.

**Table 14 Economic Impact Comparison**

| Option | Impacts | Impact Rating |
|---|---|---|
| Option 1<br>(Stage 3) | High economic impact from development of stranded deposits.<br>Medium capital cost.<br>Medium tourism and social benefits - Tom Price and Karratha still separated by unsafe and/or time consuming route options. | High |
| Option 2<br>(Stage 3 and 4A) | High economic impact from development of stranded deposits.<br>High capital cost.<br>High tourism and social impacts – full benefits realised due to completion of safe and time effective route options. | Medium |
| Option 3<br>(Stage 3 and 4B) | High economic impact from development of stranded deposits.<br>High capital cost<br>High tourism and social impacts – full benefits realised due to completion of safe and time effective route options. | Medium |

## 4.4 Benefit Cost Analysis

A benefit-cost analysis (BCA) was performed to evaluate the overall impact of social, environmental and economic benefits and costs related to the project.

This evaluation followed the *Austroads – Guide to Project Evaluation* guidelines and considered:

- Capital cost forecasts for each Option;
- Operational cost forecast for road maintenance;
- Externality cost for private and commercial vehicles;
- Current road usage; and
- Forecast road usage for both private and commercial vehicles for all Options, including consideration of activated mining, tourism and social benefits.

The methodology and assumptions underpinning the analysis are described in Appendix C.

### 4.4.1 Summary of BCA

The resulting BCR for each Option at three discount rates is presented in Table 15. Costs and Benefits are discounted at equivalent rates for the purposes of this project. The Base Case is not included as all values are measured in comparison to the Base Case.

**Table 15 Option Benefit Cost Ratios and 4%, 7% and 10% Discount Rates**

| Option | 4% | 7% | 10% |
|---|---|---|---|
| Option 1 | 1.072 | 0.330 | 0.170 |
| Option 2 | 1.706 | 0.899 | 0.510 |
| Option 3 | 1.228 | 0.658 | 0.388 |

Note: A discount rate of 7% is the standard for Government sponsored projects.

Option 2 has the highest BCR of 0.899 at the standard 7% discount rate for government projects. The higher results for Option 2 and 3 are the result of lower travel time and vehicle operating costs, stranded mines impacts, and the increased tourist demand along both routes, if the route was sealed, even though the capital costs for these options are substantially higher than Option 1. The difference between Options 2 and 3 is largely a function of the lower capital cost of Option 2 compared to Option 3 when both options generate similar benefits.

Under a slightly more aggressive tourist demand assumption in the final fifteen years of the analysis period, a BCR of >1.00 would be achievable for Option 2 at 7% discount rate.

The BCA considered five elements in the total build-up of the BCR for Option 2:

- Base transport impact + 0.302
- Tourism impact + 0.177
- Stranded mines impact + 0.402
- Social benefits impact + 0.002
- Construction impact + 0.016

Resulting in the Benefits Cost Ratio of 0.899.

The outcomes for the Options is a function of the two key input variables: high capital expenditure and the low increase in road utilisation. Although tourist traffic is forecast to grow strongly, it is not of a magnitude to overcome the very high capital cost of sealing Karratha-Tom Price Road.

## 4.5 Integrated Analysis and Options Ranking

Table 16 provides a high level summary of the various options assessments detailed so far. This summary also integrates the qualitative benefit-cost analysis with the qualitative multi-criteria analyses, to provide a ranking of the project options.

**Table 16 Results of the Options Analysis**

| | Option 1 | Option 2 | Option 3 |
|---|---|---|---|
| Analysis period (years) | 30 | 30 | 30 |
| Capital costs ($M) | $70.23M | $301.77M | $393.32M |
| Operational costs ($M) | $23.4M | $96.6M | $125.9M |
| **Benefit-Cost Analysis (of monetary costs and benefits discounted at 7%)** | | | |
| PV of benefits ($M) | $9.1M | $248.7M | $246.7M |
| PV of costs ($M) | $27.7M | $276.6M | $374.9M |
| Benefit cost ratio (7%) | **0.330** | **0.899** | **0.658** |
| **Multi-criteria analysis** | | | |
| Social impact | Medium | High | High |
| Environmental impact | Low | Medium | Medium |
| Economic impact | High | Medium | Medium |
| **Overall ranking** | **3** | **1** | **2** |

# 5. Summary and Recommendation

The existing Karratha-Tom Price Road compromises safe and time-efficient regional travel and associated community benefits, limits economic development and diversification, and inflates road and vehicle maintenance costs, which negatively affects local residents and businesses in Karratha, Tom Price, Paraburdoo and the wider Pilbara region.

Upgrading Karratha-Tom Price Road to the recommended Option 2, at a cost of $301.77M, is a valuable opportunity to significantly reduce the impacts associated with the lack of a safe and time-efficient route between Karratha and Tom Price. This will benefit residents, businesses and visitors to the Pilbara, and improve transport network efficiency to aid economic development and diversification.

It is estimated that Option 2, with a benefit-cost ratio of 0.899, will realise $248.7M in present-value benefits at a 7% discount rate.

There is strong community support for this project, and it is strongly aligned with National and State strategic aims. It has a social impact assessment of High.

It is recommended that Option 2 is approved and that the Karratha-Tom Price Road upgrade can proceed.

# 6. References


Australia's NorthWest (2017). Warlu Way Map. Retrieve April 2017, from http://www.australiasnorthwest.com/Destinations/The_Pilbara/The_Warlu_Way/Warlu_Way_map

Australian Soil Resource Information System (ASRIS) (2017) Australian Soil Resource Information Viewer, retrieved January 2017, from http://www.asris.csiro.au/index_ie.html.

Bamford, M J (2002). Karratha to Tom Price Highway; Karratha to Nanutarra-Munjina Road Section.

Beard, JS (1979). Vegetation Survey of Western Australia: Perth Map and Explanatory Memoir 1:250,000 series, Perth, Vegmap Publications.

Bureau of Meteorology (BoM) (2017). Climate Data Online, retrieved January 2017, from http://www.bom.gov.au/climate/data/.

Department of Aboriginal Affairs (DAA) (2017). Aboriginal Heritage Inquiry System, retrieved January 2017, from http://maps.dia.wa.gov.au/AHIS2/default.aspx.

Department of Agriculture and Food Western Australia (DAFWA) (2007). Soil-landscape mapping in South-western Australia, Perth, Department of Agriculture and Food.

Department of Environment Regulation (DER) (2017). Clearing Permit System, retrieved January 2017, from https://cps.der.wa.gov.au/main.html.

Department of Environment Regulation (DER) (2017b). Contaminated Sites Database, retrieved January 2017, from https://secure.dec.wa.gov.au/idelve/css/

Department of Parks and Wildlife (DPaW) (2017). NatureMap: Mapping Western Australia's Biodiversity, retrieved January 2017, from http://NatureMap.dec.wa.gov.au/.

Department of the Environment and Energy (DotEE) (2017a). Environmental Protection and Biodiversity Conservation Act 1999 Protected Matters Search Tool Results, retrieved January 2017, from http://www.environment.gov.au/epbc/pmst/index.html.

Department of the Environment and Energy (DotEE) (2017b). Interim Biogeographic Regionalisation of Australia, Version 7, retrieved January 2017, from http://www.environment.gov.au/topics/land/nrs/science-maps-and-data/australias-bioregionsibra.

Department of Water (D0W) (2007). Water Quality Protection Note, no. 83. Infrastructure corridors near sensitive water resources.

Department of Water (DoW) (2010). Millstream Water Reserve: Drinking water source protection plan, West Pilbara water supply. Department of Water, Perth.

Department of Water (DoW) (2017). Geographic Data Atlas, retrieved January 2017 from, http://www.water.wa.gov.au/idelve/dowdataext/index.jsp.

Environmental Protection Authority (EPA) (2005). Ministerial Statement No 00677, Road from Karratha to Tom Price, Shires of Karratha and Ashburton.

GHD (2015). Karratha Tom Price Road Stage 3 – Input to preliminary business plan. Report for the Shire of Ashburton. May 2015.

GHD (2016). Karratha Tom Price Road Stage 3 – Gap Analysis. Report for the Shire of Ashburton. April 2016.

Government of Western Australia (GoWA) (2015). Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full report), Current as of June 2015, Perth Western Australia, Department of Environment and Conservation, retrieved January 2017, from https://www2.landgate.wa.gov.au/web/guest/downloader.

Government of Western Australia (GoWA) (2017). Heritage Council InHerit database, retrieved January 2017, from http://inherit.stateheritage.wa.gov.au.

Jones, S. (2007). Acid Sulfate Soil Risk Map - Pilbara Coastline. Department of Environment and Conservation, retrieved January 2017, from https://www2.landgate.wa.gov.au/

Main Roads Western Australia (MRWA) (2003). Karratha-Tom Price Road, Karratha to Nanutarra-Munjina Road Section, Consultative Environmental Review. Assessment No. 1244. Main Roads, January 2003.

Mattiske, EM and Havel, JJ (1998). Vegetation Mapping in the South West of Western Australia, Department of Conservation and Land Management, Perth.

National Native Title Tribunal (2017). Native TitleVision, retrieved January 2017, from http://www.ntv.nntt.gov.au/ntv.asp.

PDC (2016) Pilbara Tourism Activation Infrastructure. Pilbara Development Commission / RFF. October 2016.

Pracsys (2015) Karratha-Tom Price Road – Concept approval report. Report for the Shire of Ashburton. May 2015

PRC (2015) Activating Tourism in Difficult Times. Pilbara Regional Council. 2015 SEGRA Conference Presentation.

REMPLAN (2016). Pilbara Economic Profile. Available from http://www.economicprofile.com.au/pilbara.

Shepherd, DP, Beeston, GR, and Hopkins, AJM (2002). Native Vegetation in Western Australia – Extent, Type and Status, Resource Management Technical Report 249, Department of Agriculture, Western Australia.

TRA (2013). Evaluating the Caravan Park and Self-contained traveller sector in Western Australia. Tourism Research Australia. October 2013.

TRA (2016a). National and International Visitor Survey. Tourism Research Australia. Available from https://www.tra.gov.au/tra-online.html.

TRA (2016b). Australia's North West Expenditure. Tourism Research Australia. Unpublished.

# Appendices

# **Appendix A** – Social Impact Assessment

# Shire of Ashburton

## Karratha-Tom Price Road Stages 3 and 4

## Appendix A

## Social Impact Assessment

September 2017

# Table of contents



# Table index



# Figure index

# 1. Introduction

## 1.1 Scope of Work

GHD has prepared a high-level social impact assessment (SIA) for the proposed sealing of Stage 3 and Stage 4 of the Karratha-Tom Price Road. The SIA was undertaken as a desktop exercise and supplemented by structured consultation with key stakeholders and the community groups as listed in Appendix A.

## 1.2 Study Area

Given this study investigates the potential economic, social, and environmental impacts in sealing the Karratha to Tom Price Road, the SIA focused on the towns and immediate areas surrounding the proposed routes, Karratha and Tom Price.

## 1.3 Assumptions and Limitations

This report: has been prepared by GHD for Shire of Ashburton and may only be used and relied on by Shire of Ashburton for the purpose agreed between GHD and the Shire of Ashburton as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Shire of Ashburton arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section(s) 4 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Shire of Ashburton and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

# 2. Scoping

A preliminary scoping of social issues was undertaken to develop an understanding of the range of issues that may need to be assessed as part of this study. While not precluding the potential for additional issues to arise at the impact identification stage, this preliminary scoping of issues ensured a full appreciation of activities in the communities was considered and allowed for targeted baseline studies and secondary research for impact and opportunities identification.

It is understood that issues identified may include both real and perceived issues, that is, impacts that may have actually occurred, or may be perceived to occur by stakeholders. Both types of impacts are important as each can influence the overall sense of wellbeing as well as decisions made by, and choices perceived to be available to, stakeholders.

GHD undertook a detailed review of publicly available reports, documentation made available by the Shire of Ashburton (SoA), City of Karratha (CoK) and Pilbara Development Commission (PDC) and information provided by key stakeholders to develop the following list of key social impact indicators relevant to the study area.

### Economic Development

- Local employment opportunities
- Local business development opportunities
- Economic diversity – impacts on other local industries (tourism and agribusiness)
- Cost of living in the community

### Community Values, Lifestyle and Amenities

- Community values – crime, safety and anti-social behaviour
- Demographic change
- Community cohesion and social networks
- Amenity and lifestyle
- Community/Stakeholder Engagement and Relations
- Traffic safety
- Impacts on disadvantaged groups. The ABS defines relative socio-economic disadvantage in terms of "*people's access to material and social resources, and their ability to participate in society*" (ABS, 2004). Disadvantage is considered as a relative condition rather than an absolute disadvantage. Some examples of people considered disadvantaged are single parents, persons living alone, children below 15 years of age and adults over 65 years of age, Indigenous Australians and people with disabilities. According to the ABS disadvantage is measured by the Socio-Economic Index of Disadvantage for Areas (SEIFA). SEIFA index for each study area community is discussed in their community profile (Section 3.3). Impacts on vulnerable groups is discussed in the context of SEIFA index score for each community.

### Housing and Accommodation Impacts

- Availability and affordability

### Social Infrastructure and Services

- Health and medical services

- Emergency services
- Education and training services

### Aboriginal Aspects

- Native title and cultural heritage
- Employment opportunities and business opportunities

### Cumulative Impacts

- Cost of living and housing availability and affordability
- Social infrastructure including emergency services

## 2.1 Community Profile

The purpose of a social profile is to provide an understanding of the existing social and cultural conditions and characteristics of the communities identified in the study area. It is essentially a 'snapshot' of the community created at a certain point in time in the life of the community and where possible data trends/projections are taken into consideration.

A range of social indicators were identified to describe the social and cultural values of the community and create a snapshot in time. The selection of social indicators to develop the community profile was carried out in two steps:

Step 1 The widely recognised community wellbeing framework developed by Community Indicators Victoria was used to underpin the selection of social indicators. This framework provides a number of community wellbeing measures designed to identify and communicate economic, social, environmental, democratic and cultural trends and outcomes. The community wellbeing framework was considered appropriate as information collected for indicators under the framework enhances knowledge, responsiveness, effectiveness and accountability of industry and government, promotes better management and provides basis for engaging key partners in dialogue and action for improving community outcomes (Community Indicators Victoria 2007).

Step 2 Indicators from the wellbeing framework were overlayed with the issues identified during the scoping exercise of this study to select the final list of social indicators relevant to the objectives of this study.

Figure 1 outlines the key community wellbeing indictors that were used to inform the community profiles for Karratha and Tom Price.


**Figure 1 Community Wellbeing Indicators**

A combination of qualitative and quantitative secondary information sources were researched to develop the community profile. Some of the information sources used to compile the profiles are listed below:

- ABS Census data
- Projections and estimates from ABS and WA Department of Planning
- Previous reports on the study area
- Current regional and local community plans
- Websites and publications of state agencies covering health, education, housing, communities and emergency services
- Media reports
- Planning schemes

## 2.2 Impact and Opportunity Identification and Assessment

The conceptual framework developed by van Schooten *et al.* (2003) for identifying social impacts was used as a guide for this SIA. This conceptual model was particularly chosen because it makes a clear distinction between social change processes and social impacts.

A social change process is described by van Schooten *et al.* (2003) as being able to be measured objectively, independent of the local context. Social change processes are set in motion by project activities or policies and can lead to several iterations of change (first, second and third order changes) and each of these can lead to social impacts occurring. van Schooten *et al.* (2003) explain that the ways in which social change processes are perceived, given meaning or valued, depend on the societal context in which various societal groups act. Some sectors of society, or groups in society, are able to adapt quickly and exploit the opportunities of a new situation. Others (for example various disadvantaged groups) are less able to adapt and will bear most of the negative consequences of change. Therefore, social impacts are implicitly context dependent.

A social impact is described by van Schooten *et al.* (2003) as something that is actually experienced by humans in either a corporeal (physical) or cognitive (perceptual) sense and results directly from the social change processes that are invoked by a project (direct social impacts). It is important to note that in many cases, perceived impacts are as important as actual (measurable) impacts as people may modify their behaviours or experience discomfort

simply because of a perceived impact. Indirect social impacts are a result of changes in the biophysical environment. To apply this framework:

- Population growth or the presence of construction and operation workers, are social change processes that may lead to 'first order' social impacts
- Economic development which increases the number of tourists in a particular area can influence land use and water quality, which in turn can have indirect social impacts through a reduction in agricultural production and, subsequently, on income level for smallholder farms is an example of second and third order social impacts.

Social impacts are described in terms of:

- The change or effect created/influenced in the conditions or characteristics of the study area communities as a result of sealing the preferred route activities, and
- The extent to which this change may impact stakeholders or social infrastructure, having regard to:
  - The characteristics of each community grouping; and
  - The current status of community services and infrastructure.

In this case impact identification was not predictive. It is not within the scope of this study to undertake and quantify predicative impact assessment based on future and/or potential operational scenarios.

# 3. Study Areas

## 3.1 Tom Price

Tom Price sits within the Shire of Ashburton and is approximately 747 metres above sea level, making it the highest town in Western Australia. The town is located inland, at the edge of the Hamersley Range. It is close to the Karijini and Millstream national parks and settled at the base of Mount Nameless

Due to its mining history, Tom Price has reportedly been one of the most affluent non-metropolitan regions in Australia. The official population of Tom Price as of the 30th June 2016, was 4,195 (-1.29% as compared to 2014).

The Shire of Ashburton's Gross Regional Product is estimated at $15.51 billion, which represents 6.0% of the state's GSP (Gross State Product).

### 3.1.1 Community Lifestyle

Tom Price is characterised by a relaxed lifestyle, safe community environment, small town atmosphere and friendly spirit according to the Shire of Ashburton *Strategic Community Plan 2012 -2022*. When asked about what residents like about living in the area; the relative quietness of the location, the “small town atmosphere”, the proximity to Karijini and connection to country were the major perceived advantages. The variety of recreation opportunities including the outdoor lifestyle, camping and community spirit, beautiful scenery, Aboriginal and cultural heritage and world renowned festivals (e.g. Karijini Experience and Nameless Festival) were also highly valued by the community).

Tom Price has a diverse population, the majority of who are engaged in the mining industry.

### 3.1.2 Existing Community Issues and Opportunities

A number of opportunities and challenges for growth and development in Tom Price have been identified in the Shire of Ashburton *Strategic Community Plan 2012-2022*. Areas of opportunity within the town include:

- Strong tourism industry, particularly during the winter months;
- World heritage natural assets and environmental stewardship, with a community that is proud of and seeks to protect and enhance its natural environment;
- Diverse social connections and networks; and
- Aboriginal partnerships.

While there are several opportunities that can be harnessed to promote and enhance Tom Price there are a number of challenges identified that restrict growth and development. Some challenges occurring within the town include:

- Remoteness of the town;
- Rising costs of living, particularly housing affordability;
- Balancing town growth with community lifestyle; achieving sustainable growth whilst retaining its community spirit and lifestyle/small town values;
- Poor communications infrastructure;
- Growing the town in a sustainable manner, ensuring economic diversity and plentiful work opportunities for the future:

  - Seasonal nature of key industries and jobsl; and
  - Continued investment in the growth of other key industries for the town (especially tourism), particularly through additional infrastructure;
- Opportunities for youth, particularly in terms of employment, tertiary education/training, and recreation/culture;
- Limited access to and availability of medical services and specialist health services; and
- Access to social services, in particular, aged care.

## 3.2 Karratha

On 1 July 2014 the Shire of Roebourne became the City of Karratha. Karratha, an isolated city, is located approximately 1,535 kilometres north of Perth and 850 kilometres south of Broome on the North West Coastal Highway. The City is considered a great base for exploring Millstream Chichester National Park, Karijini National Park and the 42 islands of the Dampier Archipelago.

Karratha's economic base includes the iron ore operations, sea-salt mining, ammonia export operations, liquefied natural gas and cattle and sheep grazing, with some fishing and tourism. The official population of City of Karratha as of the 30th June 2016, was 26,211 (-0/01% as compared to 2015)

The City of Karratha's Gross Regional Product is estimated at $16.74 billion, which represents 6.5% of the state's GSP (Gross State Product).

### 3.2.1 Community Lifestyle

Over the last five years, City of Karratha has experienced significant investment in infrastructures and services. This investment has resulted in large housing and commercial developments and the establishment an economically diverse community that complements the main economic activities of iron ore and petroleum exports.

Karratha's growing facilities and resource hub include a selection of schools, medical facilities, the largest shopping centre in the region and is the main service centre to the west Pilbara due to its strategic location, deep-water access and proximity to offshore gas reserves. It is characterised by a mix of amenities and outdoor lifestyle, which is complemented by beaches and stunning natural surrounds according to the City's *Strategic Community Plan 2016 -2026*.

### 3.2.2 Existing Community Issues and Opportunities

A number of opportunities and challenges for growth and development in Karratha have been identified in the City's *Operational Economic Development Strategy 2014 -2016*. Areas of opportunity within the City include:

- Improvement of local supply chain opportunities;
- Local manufacturing and prefabrication to minimise transportation and labour costs;
- Collaboration between public and private sectors to advise of, plan for and implement utility infrastructure;
- Strong tourism industry, particularly during the winter months;
- Diverse social connections and networks; and
- Aboriginal partnerships.

While there are several opportunities that can be harnessed to promote and enhance Karratha there are a number of challenges identified that restrict growth and development. Some challenges occurring within the town include:

- Rising costs of living, particularly housing affordability;
- Disproportionate small business sector;
- High development costs due to cyclone rating, transportation costs for materials, high costs of contractors, expensive base materials;
- Housing affordability;
- Skilled workforce - The ability to attract and retain skilled workers. This is particularly impacting on the government, non-government and small business sectors;
- Cost of Living - Karratha is the second most expensive town in regional WA to live and work after Port Hedland; and
- Tyranny of distance – dislocation from markets and major locations.

## 3.3 Community Profile Tom Price and Karratha

Table 1 below summaries the community profiles of both Karratha and Tom Price. This profile data was used as an input to the SIA ratings.

**Table 1 Community Profile Summary**

| 2011 Census | Tom Price | City of Karratha | Regional WA | Western Australia |
|---|---|---|---|---|
| Median Age | 31 | 32 | 37 | 36 |
| Median weekly household income | $2,747 | $2,745 | $1,234 | $1,405 |
| Couples with children | 39% | 30% | 27% | 31% |
| Older couples without children | 1% | 1% | 8% | 8% |
| Medium and high density Housing | 10% | 22% | 10% | 20% |
| Households with a mortgage | 2% | 11% | 27% | 36% |
| Median weekly rent | $43 | $119 | $185 | $302 |
| Households renting | 79% | 57% | 33% | 28% |
| Non-English speaking backgrounds | 5% | 8% | 6% | 14% |
| University attendance | 2% | 1% | 1% | 4% |
| Bachelor or Higher degree | 11% | 11% | 10% | 18% |
| Vocational | 33% | 26% | 23% | 19% |
| Unemployment | 0.7% | 2.2% | 4.2% | 4.7% |
| SEIFA index of disadvantage 2011 | 1087 | 1060 | 980 | 1021 |

## 3.4 Social Impact Assessment Ratings

To assist in assessing potential impacts on each town and identified communities and provide a rating scale to the impacts, each of the impacts identified in the Table 2 was crossed tabulated with the following criteria:

- Nature of the Impact – Impact identified as community / stakeholder aspiration.
- Significance of the Impact – Impact identified as community / stakeholder needs based on community / stakeholder profile.

The ratings used in the table are:

| Nature of the impact | | |
|---|---|---|
| Neutral – no potential positive or negative impact | Positive – potential opportunity and / or benefit | Negative – potential risk that would need to be considered |

| Significance of the impact | | |
|---|---|---|
| Low – no potential major change | Medium – potential moderate change | High -- potential major change |

**Table 2 Summary of Social Impacts and Significance**

| Impact Indicators | Impact | Stakeholders | Nature of Impact | Impact Significance *Tom Price* | Nature of Impact | Impact Significance *Karratha* |
|---|---|---|---|---|---|---|
| Local employment opportunities | Due to skills requirements, the resources workforce is predominantly employed on a FIFO and or DIDO basis that currently offers limited direct employment opportunities for the locals. Should the BBI, FMG or other resource construction projects commence, there is a potential positive impact.<br>• Temporary increase in population during construction phase due to presence of non-resident workforce in the region<br>• Temporary or permanent increase in population during the operations phase due to in-migration of workforce<br>• Increase in local employment and business opportunities | Local community<br>Local workforce<br>Key stakeholders | Neutral | Low | Positive | Medium |
| Local business opportunities | Potential for increased business due to increased accessibility to the region and surrounds<br>Decrease cost of freight for businesses<br>Increased competition for businesses in Tom Price | Local businesses | Positive | Medium | Positive | Medium |
| Economic diversity – impacts on other local industries | Potential positive impact on tourism<br>Better access with two airlines providing frequent services. Potential for positive impact should an international airline service Karratha<br>Local businesses and operations servicing tourists | Key stakeholders | Positive | High | Positive | High |
| | | Tourism | Positive | High | Positive | Medium |
| | | Local businesses | Positive | Medium | Positive | Medium |
| Workforce drawn from other industries and local businesses | Increase in services may see a shift in local workforce | Local workforce pool<br>Local industries and small businesses | Neutral* | Low | Positive | Medium |
| Cost of living in the community | Rising cost of living is an issue in the community, but it is a factor of living in the region (local allowances counteract cost) | Local community | Neutral* | Low | Neutral | Low |
| Community values – crime, safety and anti-social behaviour | Increase in anti-social behaviour in certain areas due to greater accessibility and higher traffic volumes<br>Potential changes to quiet rural lifestyle<br>NB – nature of impact has been assessed neutral – not enough statistical data to verify | Local community | Neutral* | Low | Neutral | Low |

| Impact Indicators | Impact | Stakeholders | Nature of Impact | Impact Significance *Tom Price* | Nature of Impact | Impact Significance *Karratha* |
|---|---|---|---|---|---|---|
| Demographic change | Potential increase in population through opening of mines, associated services | LGAs | Positive | Low | Positive | Medium |
| Community cohesion and social networks | Impacts on the recreational values and use of the region<br>Ability for greater community interactions through recreation or social events | Local community | Positive | High | Positive | Medium |
| Vulnerable/ disadvantaged groups | Potential for greater access to opportunities | Disadvantaged groups | Neutral | Low | Neutral | Low |
| Amenity and lifestyle | Greater access to cultural events held for residents in the other towns<br>Changes to visual amenity, noise levels considered to be minor | - | Positive | High | Positive | Medium |
| Traffic safety | Safer roads with decreased dust clouds<br>Impact on road incidents and accidents<br>Maintenance costs | Freight Users<br>Residents<br>Workers of local industries<br>Tourists<br>Key stakeholders | Positive | High | Positive | Medium |
| Availability and affordability | Increase in demand for short term and long term housing and accommodation<br>Consequent impacts on housing availability and affordability, with a potential for increased demand leading to decreased housing availability however given the current downturn in the towns this is considered to be low impact. | Local community<br>Housing developers<br>Social housing providers | Negative | Low | Negative | Low |
| Health, medical and emergency services | Increased demand on existing social infrastructure services and facilities Greater access to medical services in Karratha for Tom Price residents. Residents are able to travel for medical purposes with less impact on families. | Hospital<br>Emergency services | Positive | High | Neutral | Low |
| Native title and cultural heritage | No known significant historic, cultural or heritage areas affected by the proposed sealing of the road. | Aboriginal community | Neutral | Low | Neutral | Low |
| Employment opportunities and business opportunities | Limited employment or business opportunities for local aboriginal community in town centres however there is a potential positive impact in the tourism sector and mining should Balla Balla or other resource projects commence construction. | Aboriginal community | Positive | Low | Positive | Low |

| Impact Indicators | Impact | Stakeholders | Nature of Impact | Impact Significance *Tom Price* | Nature of Impact | Impact Significance *Karratha* |
|---|---|---|---|---|---|---|
| Impacts on other industries | Potential to facilitate growth in other industries such as agriculture and pastoralists | Non-mining industries | Positive | Low | Neutral | Low |

# 4. Summary

The social impact assessment of sealing of the Karratha-Tom Price road identified one negative impact with a significance rating of negligible to low (Table 2). The negative impact relates largely to housing availability and affordability with a potential for increased demand leading to decreased housing availability. However, given the current reduction in accommodation due to the downturn in the mining industry, this is considered negligible

Based on the high level analysis the following positive impacts were identified for Tom Price and Karratha:

- Economic diversity and future sustainability – maintain the economic diversity of the region (tourism, agriculture, mining, energy freight and logistics);
- Local business opportunities;
- Demographic change – increase in integrational population and better management of transient population coming to town both as visitors and as FIFO/DIDO workforce;
- Environment – maintain the world heritage natural assets and environmental stewardship;
- Lifestyle and amenity and community cohesion - balancing town growth with community lifestyle;
- Social infrastructure – accessibility to social infrastructure and specialist services;
- Community cohesion and local employment – educations, training, employment and recreation for options; and
- Road safety and maintenance.

# 5. References

ABS. 2004. *Measures of Australia's Progress, 2004*.

ABS. 2011 (I). *2033.0.55.001 - Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2011*.

ABS. 2011 *Census Community Profile – Karratha and Tom Price*

AEC *Group Pilbara Tourism Product Development Plan 2014*

CoK *Operational Economic Development Strategy 2014 -2016*

CoK *Strategic Community Plan 2016 -2026*.

Curtin University *Pilbara 2050*

*DOP* Pilbara Planning and Infrastructure Framework 2012

DoP *Regional HotSpots Land Supply updates 2011, 2015*

PDC *Pilbara Regional Blueprint 2014*

PDC Strategic Plan 2014-2017

Pracsys *Shire of Ashburton Karratha-Tom Price Road 2016*

Shire of Ashburton *Strategic Community Plan 2012 -2022*.

Van Schooten, M., F. Vanclay & R. Slootweg. 2003. *Conceptualizing Social Change Processes and Social Impacts.* In *International Handbook of Social Impact Assessment: Conceptual and Methodological Advances*

Western Australia Police. 2014. *Crime Statistics*.

GHD

Unit 186 Pelago East Apartment
26 Sharpe Avenue
KARRATHA WA 6714

T: 61 8 9185 0703 E: ty.hibberd@ghd.com



G:\61\35084\WP\REP-B_June Version\6135084-REP-B_Appendix A_Social Impact Assessment.docx

Document Status

| Revision | Author | Reviewer | | Approved for Issue | | |
|---|---|---|---|---|---|---|
| | | Name | Signature | Name | Signature | Date |
| B | M. Papachristos | P Tilley | P Tilley* | N. Hanrahan | | 05/09/2016 |
| | | | | | | |
| | | | | | | |

* Denotes signed original on file

www.ghd.com

# **Appendix B** – Environment and Heritage Constraints Assessment

# Shire of Ashburton

## Karratha-Tom Price Road Stages 3 and 4

## Appendix B

## Environment and Heritage Constraints Assessment

September 2017

# Table of Contents



# Table Index

# Figure Index

# 1. Introduction

## 1.1 Purpose of this Report

GHD has prepared a preliminary environment and heritage constraints assessment for the proposed sealing of Stage 3 and Stage 4 of the Karratha-Tom Price Road. There are two options for Stage 4 - 4A or 4B. The purpose of the assessment was to identify, assess and report on the environmental context and constraints for sealing Stage 3 and Stage 4A or 4B. The assessment was considered with relation to previous approvals, existing constraints and any further requirements for assessment or approval.

## 1.2 Scope of Works

The constraints assessment of the proposed road construction zone, including Stages 3, 4A and 4B, were considered and updated with relation to:

- Previous approvals.
- Existing environmental constraints.
- Existing heritage constraints.
- Further requirements for assessment or approval.

Karratha-Tom Price Road, including Stages 3, 4A and 4B, is herein the ‘project’ or ‘project area’ (unless Stage specific). The three stages are shown in Figure 1.

## 1.3 Methodology

The assessment included:

- Literature review of relevant reports including Bamford (2002), MRWA (2003) and GHD (2016).
- Desktop searches of publically available databases (Table 1).
- Preparation of a constraints assessment based on the literature review and desktop searches.

The desktop assessment of the project area and the potential constraints of the proposed works was undertaken by viewing GIS spatial files and reviewing relevant reports and publically available, government managed databases. The information sources used in this assessment to provide advice are presented in Table 1.

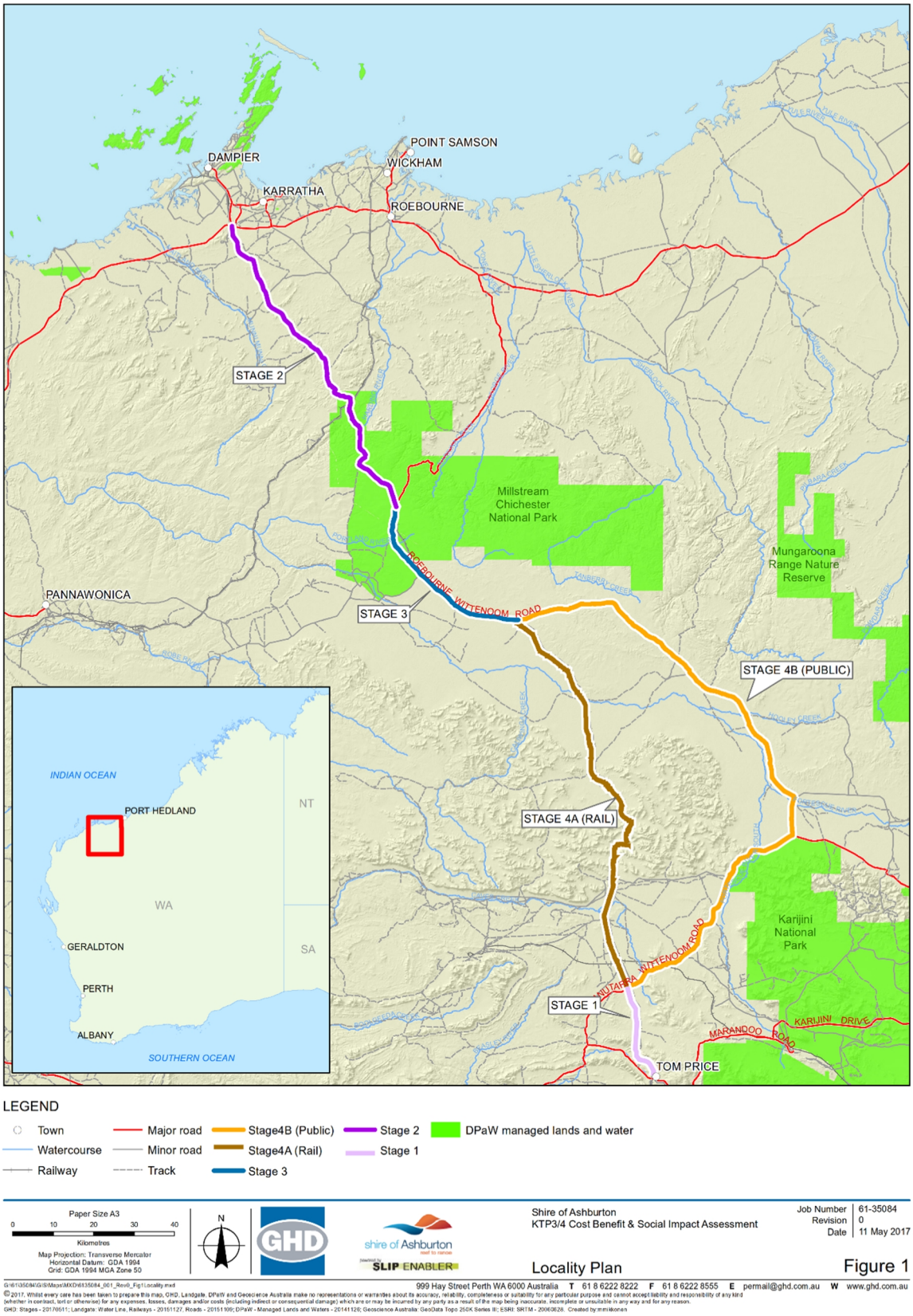



**Figure 1 Karratha-Tom Price Road locality**

**Table 1 Information sources**

| Aspect | Information Source |
|---|---|
| Climate | Bureau of Meteorology Climate Data Online (BoM 2017) |
| Geology, landform and soils | Soil-landscapes in South-western Australia (DAFWA 2007) |
| Acid Sulphate Soils | Australian Soil Resources Information System (ASRIS 2017) |
| Land use and reserves | DPaW Estate spatial dataset<br>Shire of Ashburton Planning Scheme |
| Environmentally Sensitive Areas | DER Clearing Permit System (DER 2017a) |
| Vegetation | Beard vegetation mapping (1979)<br>Statewide Vegetation Statistics (Government of Western Australia 2015b) |
| Threatened and Priority Ecological Communities | DPaW Threatened Ecological Community (TEC) and Priority Ecological Community (PEC) spatial dataset<br>Department of the Environment and Energy (DotEE) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)<br>Protected Matters Search Tool (DotEE 2017a) |
| Conservation Significant Flora and Fauna | DPaW *NatureMap* database (DPaW 2017)<br>DPaW Threatened and Priority Fauna database (TPFL)<br>Western Australian Herbarium database (WAHERB)<br>DotEE *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (DotEE 2017a) |
| Surface water and Groundwater | DoW Geographic Data Atlas (DoW 2017)<br>Geomorphic Wetland dataset (Hill *et al.* 1996) |
| Contaminated sites | DER Contaminated Sites Database (DER 2017b) |
| Heritage | Department of Aboriginal Affairs (DAA) Heritage Inquiry System Search Tool (DAA 2017)<br>EPBC Act Protected Matters Search Tool (DotEE 2017a)<br>Heritage Council InHerit database (GoWA 2017a) |
| Native Title | Native TitleVision (National Native Title Tribunal 2017) |
| Matters of National Environmental Significance (MNES) | EPBC Act Protected Matters Search Tool (DotE 2017a) |

## 1.4 Relevant Legislation Requirements

Key Commonwealth and Western Australian environmental legislation that may be relevant to the project is outlined in Table 2. This constraints assessment identifies (but does not apply for) additional clearances required under legislative requirements, including those required under the following Acts.

**Table 2 Key environmental legislation relevant to the Project**

| Legislation | Responsible agency | Aspect |
|---|---|---|
| **Commonwealth legislation** | | |
| *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) | DotEE | Matters of National Environmental Significance (MNES) including threatened flora and fauna |
| *Native Title Act 1993* | National Native Title Tribunal | Native title |
| **State legislation** | | |
| *Aboriginal Heritage Act 1972* | Department of Aboriginal Affairs (DAA) | Archaeological and ethnographic sites |
| *Biosecurity and Agricultural Management Act 2007* (BAM Act) | Department of Agriculture and Food Western Australia (DAFWA) | Weeds and feral animals |
| *Conservation and Land Management Act 1984* (CALM Act) | DPaW | Use, protection and management of public lands and waters and its flora and fauna |
| *Contaminated Sites Act 2003* | Department of Environment Regulation (DER) | Management of contaminated sites |
| *Environmental Protection Act 1986* (EP Act) | Environmental Protection Authority (EPA) (Part IV)<br>DER (Part V) | Environmental impact assessment and management |
| *Environmental Protection (Noise) Regulations 1997* | DER | Noise standards |
| *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* | DER | Clearing of native vegetation |
| *Heritage of Western Australia Act 1990* | Heritage Council of Western Australia | European heritage protection |
| *Land Administration Act 1997* (LA Act) | Department of Regional Development (DRD) | Administration of State Land |
| *Rights in Water and Irrigation Act 1914* (RIWI Act) | Department of Water (DoW) | Access to and use of water resources; protection and management of river flows and drainage |
| *Soil and Land Conservation Act 1945* | DAFWA | Protection of soil and prevention/management of soil erosion |
| *Wildlife Conservation Act 1950* (WC Act) | DPaW | Protection of native wildlife |

## 1.5 Relevant Conservation Criteria

Species of significant flora and fauna are protected under both Commonwealth and State legislation. Any activities that are deemed to have a significant impact on species that are recognised by the EPBC Act, and/or the WC Act can warrant referral to the DotEE and/or the EPA.

The Commonwealth conservation level of flora and fauna species and their significance status is assessed under the EPBC Act. The significance levels for fauna used in the EPBC Act are those recommended by the International Union for the Conservation of Nature and Natural Resources (IUCN).

Threatened species have been published as Specially Protected under the WC Act 1950, and listed under Schedules 1 to 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora. The schedules align with the categories of the EPBC Act.

Threatened species are those are species which have been adequately searched for and are deemed to be, in the wild, either rare, at risk of extinction, or otherwise in need of special protection, and have been gazetted as such.

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened flora or fauna.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

For the purposes of this assessment, all species listed under the EPBC Act, WC Act and DPaW Priority species are considered conservation significant.

**Table 3 Conservation categories and definitions for *EPBC Act* listed flora and fauna species**

| Conservation category | Definition |
|---|---|
| Extinct | Taxa not definitely located in the wild during the past 50 years |
| Extinct in the Wild | Taxa known to survive only in captivity |
| Critically Endangered | Taxa facing an extremely high risk of extinction in the wild in the immediate future |
| Endangered | Taxa facing a very high risk of extinction in the wild in the near future |
| Vulnerable | Taxa facing a high risk of extinction in the wild in the medium-term |
| Near Threatened | Taxa that risk becoming Vulnerable in the wild |
| Conservation Dependent | Taxa whose survival depends upon ongoing conservation measures. Without these measures, a conservation dependent taxon would be classified as Vulnerable or more severely threatened |
| Data Deficient (Insufficiently Known) | Taxa suspected of being Rare, Vulnerable or Endangered, but whose true status cannot be determined without more information |
| Least Concern | Taxa that are not considered Threatened |

**Table 4 Conservation codes and descriptions for WA flora and fauna**

| Code | Conservation Category | Description |
|---|---|---|
| ***Wildlife Conservation Act 1950*** | | |
| S1 | Schedule 1 | Flora or Fauna that is rare or is likely to become extinct, as critically endangered fauna or fauna |
| S2 | Schedule 2 | Flora or Fauna that is rare or is likely to become extinct, as endangered fauna or fauna |
| S3 | Schedule 3 | Flora or Fauna that is rare or is likely become extinct, as vulnerable fauna or fauna |
| S4 | Schedule 4 | Flora or Fauna presumed to be extinct |
| S5 | Schedule 5 | Migratory birds protected under an international agreement |
| S6 | Schedule 6 | Fauna that is of special conservation need as conservation dependent fauna |
| **DPaW Priority Listed** | | |
| 1 | Priority One: Poorly-known taxa | Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey. |
| 2 | Priority Two: Poorly-known taxa | Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey. |
| 3 | Priority Three: Poorly-known taxa | Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey. |
| 4 | Priority Four: Rare, Near Threatened and other taxa in need of monitoring | (a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.<br>(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.<br>(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy. |

## 1.6 Assumptions and Limitations

This report: has been prepared by GHD for Shire of Ashburton and may only be used and relied on by Shire of Ashburton for the purpose agreed between GHD and the Shire of Ashburton as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Shire of Ashburton arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section(s) 3.7 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Shire of Ashburton and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

# 2. Previous Environmental Assessment and Approval

## 2.1 Stage 3 and 4A

### 2.1.1 State Assessment

Stage 3 and 4A were previously assessed and approved by the Environmental Protection Authority (EPA) in April 2005 under Ministerial Statement 677 (EPA, 2005). EPA in May 2017 advised the Ministerial Statement 677 remains valid[1]. As such, no further State referral or approval is required for Stage 3 and 4A, unless any changes were made to the original project approved by the EPA.

There will however be a requirement for new or updated environmental management plans (EMPs) to be approved by the Department of Environment Regulation (DER) or DPaW. As part of the construction of Stage 2 of the Karratha-Tom Price Road, the Millstream Alliance developed a series of EMPs, which were required to be approved by the then Department of Environment and Conservation (DEC). The approval requirements of the plans were mainly due to the route of the road through 40 km of Millstream Chichester National Park, which also included two major river crossings and a number of very high fills and deep cuttings. These EMPs will need to be updated to include Stage 3 and 4A.

### 2.1.2 Commonwealth Assessment

Stage 3 and 4A of the project was discussed with the (then), Department of Environment and Heritage for possible referral to the Commonwealth under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) in 2006. Advice was received that, due to limited risks to Matters of National Environmental Significance (MNES) there was no requirement to refer the project under that act (letter received). However, the letter stated that this would need to be reviewed if there were any significant changes to the project, or if the EPBC Act requirements changed.

## 2.2 Stage 4B

Stage 4B was not assessed under the State or Commonwealth referral/approval process for Stage 3 and 4A. If Stage 4B were chosen as the preferred alignment, further referral and approval may be required. Preliminary discussions with EPA in May 2017 suggest that submission of a Section 45C to amend Ministerial Statement 677 may be sufficient. The Section 45C application will require adequate supporting information to evaluate potential risks to the environmental and controls to mitigate these risks. An EMP for Stage 4B will also be required. This EMP will need to be approved by the DER or DPaW.

[1] Jennifer Fortune, Environmental Officer, Environmental Protection Authority. Email received 11 May 2017.

# 3. Updated Environmental Assessment

An updated assessment of the environmental issues relating to the design and construction of project is required. Under assessment guidelines provided by the EPA, it is considered that ecological surveys older than five years are out of date. The requirement for updated information is needed for:

- Update of species and communities listed under both Commonwealth and State environmental legislation and their significance in the project area;
- Update of environmental constraints and issues for management plans; and
- Possible requirements for permits to take Rare Flora.

Key environmental constraints, including heritage or environmentally sensitive areas, are shown in Figure 2.

## 3.1 Physical Environment

### 3.1.1 Soils and Landform

The project area is contained almost entirely within the Fortescue plain - the broad valley of the Fortescue River that lies between the Chichester and Hamersley Ranges. This is an undulating, variable landscape with soils ranging from thin sands and loams over rock to gravelly loams, sandy-loams and red-brown cracking clays. There are numerous, shallow, gullies from small creeks and tributaries which cross the existing road in general low relief.

### 3.1.2 Acid Sulfate Soils

A review of the ASRIS risk mapping indicates that the majority of the project is located within an area that has a low to extremely low probability of occurrence of acid sulfate soils (ASS) with a low to very low degree of confidence (ASRIS 2017). The Fortescue River valley is however identified as having a high to moderate risk of ASS beyond 3m of the natural soil surface (Jones 2007) and hence works likely to disturbed this waterway may need to consider ASS risk.

### 3.1.3 Asbestos Containing Materials

Robyn Richardson (pers. comm.)[2] and the Shire of Ashburton have commented on there being asbestos in piles at various locations along Stage 4B. Anecdotal evidence suggests that the material is raw blue asbestos, which was transported in hessian bags from the Wittenoom Mine to Roebourne between the early part of the 20th Century until the mine was closed in 1966. The material was transported in hessian bags loaded onto open semi-trailers along the length of the Roebourne–Wittenoom Road. It appears that bags have occasionally fallen off the trucks and remained in place on the side of the road. Over time the bags have perished to leave small piles of raw blue asbestos.

### 3.1.4 Potential Impacts

The project will potentially result in impacts to the physical environment. These impacts are expected to occur during the construction phase and include:

[2] Robyn Richardson, Station Manager, Mt Florence Station, 12th April 2017.

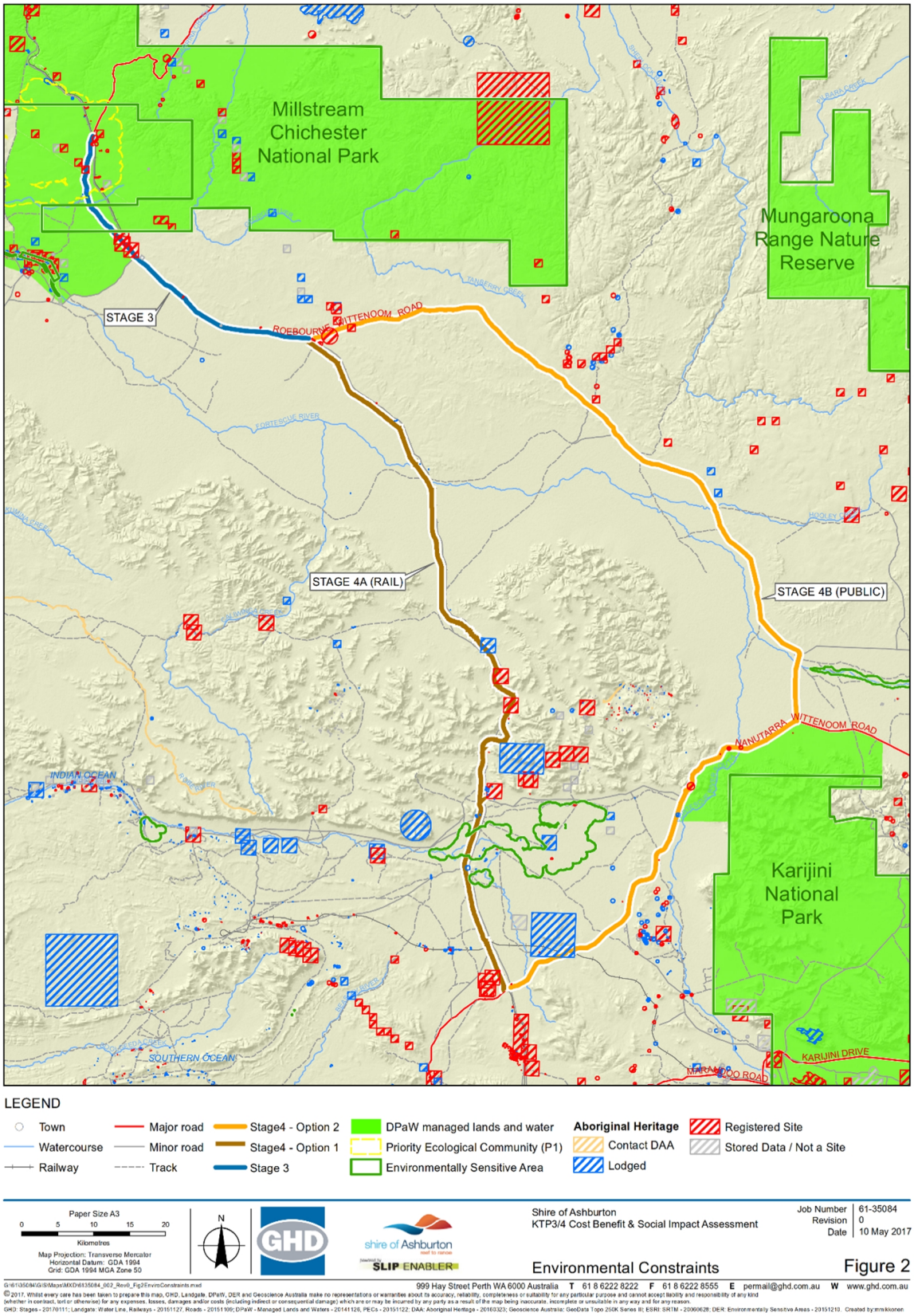



**Figure 2 Environment and heritage constraints**

- Risk of water and wind erosion as a consequence of the proposed works. Excavation areas with lighter-texture soils (e.g. sandy soils) are likely to be vulnerable to water and wind erosion. Areas dominated by dispersive soils (e.g. clay soils) may also be prone to water erosion, particularly during high intensity rainfall events.
- Undisturbed ASS do not pose a risk, and only become an issue where excavation occurs. As Project works for Stage 4A or 4B potentially include excavation on the banks of the Fortescue River, ASS has a higher probability of becoming an environmental issue of concern.
- The presence or possible-presence of asbestos poses a risk to human health.

## 3.2 Land Use

### 3.2.1 Conservation Reserves

Stage 3 of the project intersects one National Park, the Millstream Chichester National Park. Approximately 5 km of the road runs through the Millstream Chichester National Park, which is under the control of the Conservation Commission and managed by the DPaW.

Any operations within a national park will require the approval of DPaW.

### 3.2.2 Environmentally Sensitive Areas

One ESA near Mount Sheila intersects Stage 4A. The ESA is located near Mount Sheila approximately 20 km north of Nanutarra Road. Millstream Chichester National Park, which Stage 3 intersects, is also an ESA.

### 3.2.3 Land Use Planning Matters

Both Stage 4 alignment intersect pastoral stations, Hamersley Station on Stage 4A and Coolawanya Station on Stage 4B. The project also crosses various mining tenements held by organisations including Rio Tinto Iron Ore, Fortescue Metals Group, Forge Resources, Rockford Metals, Hancock Prospecting, Polaris Metals and ESports Mogul Asia Pacific Limited. Discussions with these tenement holders will be required and possible approvals.

### 3.2.4 Potential Impacts

The Project is likely to result in impacts to the surrounding land use. Stage 3 intersects the Millstream Chichester National Park and may require excision from the Park, resulting in the permanent loss of National Park area including associated native vegetation and fauna habitat. Other impacts to the National Park may include an increase in existing threats such as weeds. Loss of vegetation will also occur as a result of clearing within a designated ESA along Stage 4A. Loss of vegetation within these areas will however be limited by restricting construction to the existing road envelope.

## 3.3 Vegetation and Flora

### 3.3.1 Regional Biogeography

The Project is located in the Pilbara bioregion and Chichester and Fortescue sub-regions as described by the Interim Biogeographic Regionalisation of Australia (IBRA) (DotEE 2017b).

### 3.3.2 Vegetation Communities

Broad scale (1:250,000) pre-European vegetation mapping indicates that 14 vegetation associations are present within the project area, 4 intersecting Stage 3, 6 intersecting Stage 4A and 10 intersecting Stage 4B. The extent of these vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by DPaW (latest update May 2016 – Government of Western Australia 2016). As shown in Table 5, the current extents of all vegetation associations at the State level are greater than 99 per cent of their calculated pre-European extent, and therefore above the 30 percent threshold level.

**Table 5 Pre-European vegetation communities in alignment with Stage 3, 4A and 4B.**

| Vegetation Association | Description | Remaining (%) | Presence | | |
|---|---|---|---|---|---|
| | | | Stage 3 | Stage 4A | Stage 4B |
| 18 | Low woodland; mulga (*Acacia aneura*) | 99.76 | | | X |
| 29 | Sparse low woodland; mulga, discontinuous in scattered groups | 99.95 | | | X |
| 82 | Hummock grasslands, low tree steppe; snappy gum over Triodia wiseana | 99.51 | | X | X |
| 111 | Hummock grasslands, shrub steppe; Eucalyptus gamophylla over hard spinifex | 99.92 | | | X |
| 151 | Sedgeland; sedges with open low trees; coolabah over various sedges | 99.95 | | | X |
| 173 | Hummock grasslands, shrub steppe; kanji over soft spinifex & *Triodia wiseana* on basalt | 99.72 | X | | X |
| 175 | Short bunch grassland - savanna/grass plain (Pilbara) | 99.56 | X | X | X |
| 562 | Mosaic: Low woodland; mulga in valleys / Hummock grasslands, open low tree-steppe; snappy gum over *Triodia wiseana* | 100.00 | | | X |
| 565 | Hummock grasslands, low tree steppe; bloodwood over soft spinifex | 99.99 | | X | |
| 567 | Hummock grasslands, shrub steppe; mulga & kanji over soft spinifex & *Triodia basedowii* | 99.66 | | | X |
| 607 | Hummock grasslands, low tree steppe; snappy gum & bloodwood over soft spinifex & *Triodia wiseana* | 99.84 | X | X | X |
| 644 | Hummock grasslands, open low tree steppe; mulga & snakewood over soft spinifex & *Triodia basedowii* | 99.52 | | X | |
| 645 | Hummock grasslands, shrub steppe; kanji & snakewood over soft spinifex & *Triodia wiseana* | 99.99 | | X | |
| 646 | Hummock grasslands, shrub steppe; snakewood over *Triodia basedowii* | 100.00 | X | | |

### 3.3.3 Conservation Significant Vegetation Communities

There are no Threatened ecological communities (TECs) previously recorded or likely to be present within the project area. However, the vegetation along the northern 7-8 km of Stage 3 of the road has been mapped as a Priority 1 ecological community (PEC) - 'Four plant assemblages of the Wona Land System (previously 'Cracking clays of the Chichester and Mungaroona Range')'.

### 3.3.4 Conservation Significant Flora

Searches of the EPBC Act PMST and DPaW NatureMap database identified the presence or potential presence of 35 conservation significance flora taxa within a 10 km buffer of the road footprint.

The desktop searches recorded:

- One taxa, *Lepidium catapycnon* (Hamersley Lepidium), listed as Vulnerable under the EPBC Act;
- Six Priority 1 taxa;
- Seven Priority 2 taxa;
- Eighteen Priority 3 taxa; and
- Three Priority 4 taxa.

These are shown in Table 6.

**Table 6 Summary of species known or likely to occur within the project area.**

| Species | Conservation Status | | Presence | | |
|---|---|---|---|---|---|
| | EPBC Act | DPaW | Stage 3 | Stage 4A | Stage 4B |
| *Lepidium catapycnon* (Hamersley Lepidium) | V | | | X | X |
| *Astrebla lappacea* (Wheat Mitchell) | | P3 | | X | |
| *Barbula ehrenbergii* | | P1 | | | X |
| *Calotis latiuscula* | | P3 | | X | |
| *Dampiera anonyma* | | P3 | | X | X |
| *Dipteracanthus chichesterensis* | | P1 | | | X |
| *Eragrostis surreyana* | | P3 | | X | X |
| *Eremophila magnifica* subsp. *velutina* | | P3 | | X | |
| *Euphorbia australis* var. *glabra* | | P2 | X | X | X |
| *Euphorbia inappendiculata* var. *inappendiculata* | | P2 | | | X |
| *Euphorbia inappendiculata* var. *queenslandica* | | P1 | | X | X |
| *Fimbristylis sieberiana* | | P3 | | | X |
| *Glycine falcata* | | P3 | | | X |
| *Gompholobium karijini* | | P2 | | | X |
| *Goodenia nuda* | | P4 | X | X | X |
| *Goodenia* sp. East Pilbara (A.A. Mitchell PRP 727) (O'Meara's Goodenia) | | P3 | | X | X |
| *Helichrysum oligochaetum* | | P1 | | X | |
| *Iotasperma sessilifolium* | | P3 | | X | X |
| *Josephinia* sp. Marandoo (M.E. Trudgen 1554) | | P1 | | X | X |
| *Livistona alfredii* (Millstream Fan-palm) | | P4 | | | X |
| *Nicotiana heterantha* | | P1 | | | X |
| *Oldenlandia* sp. Hamersley Station (A.A. Mitchell PRP 1479) | | P3 | X | X | X |
| *Paspalidium retiglume* | | P2 | X | X | X |
| *Pentalepis trichodesmoides* subsp. *hispida* | | P2 | X | | |
| *Polymeria distigma* | | P3 | | X | |
| *Rhagodia* sp. Hamersley (M. Trudgen) | | P3 | | X | X |
| *Rhynchosia bungarensis* | | P4 | | | X |
| *Scaevola* sp. Hamersley Range basalts (S. van Leeuwen 3675) | | P2 | | X | X |
| *Solanum albostellatum* | | P3 | X | | X |
| *Stackhousia clementii* | | P3 | | X | X |
| *Swainsona thompsoniana* | | P3 | | X | X |
| *Teucrium pilbaranum* | | P2 | X | | X |

| Species | Conservation Status | | Presence | | |
|---|---|---|---|---|---|
| | EPBC Act | DPaW | Stage 3 | Stage 4A | Stage 4B |
| *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) | | P3 | X | X | X |
| *Triodia basitricha* (Pilbara Curly Spinifex) | | P3 | X | X | X |
| *Whiteochloa capillipes* | | P3 | | | X |
| **TOTAL** | | | **8** | **22** | **29** |

* Status (see Section 1.5 for full explanation)

EPBC Act – Species listed as one or more of the following: Mi = migratory species, Ma = marine species, Vu = Vulnerable, En = Endangered

DPaW Status – Species listed as Priority (P) 1, 2, 3 or 4

### 3.3.5 Weeds

Construction of Stage 2 of the Karratha to Tom Price Road required detailed assessment and management of high risk weeds, particularly within the Millstream Chichester National Park. This was requested by DPaW as part of the approval of the National Park Management Plan. Two key weeds were of concern; Ruby Dock (*Acetosa vesicaria*) and Kapok (*Aerva javanica*) and these were mapped and controlled, where possible. NatureMap (2017) indicates a small number of weeds recorded within a 10 km radius of the existing road. One of these *Vachellia farnesiana* (Mimosa Bush) is a tall shrub which proliferates in drainage lines and is a problem for stock.

A detailed assessment of weeds has not been undertaken for Stages 3, 4A or 4B and will likely be required by DPaW (Michelle Corbellini, Parks and Wildlife, pers. comm.).

### 3.3.6 Potential Impacts

The Project will result in the direct loss of native vegetation as a result of constructing the road.

The Project will potentially result in a range of impacts on vegetation including:

- A reduction in the extent of native vegetation from the local and regional area;
- Potential loss of PECs or flora taxa listed under the EPBC Act or listed as Priority taxa by DPaW;
- Introduction and/or spread of existing weeds into the road footprint and adjacent vegetation;
- Reduction in the viability of vegetation resulting from the loss or disruption of ecological functions; and
- Other indirect impacts such as dust.

## 3.4 Fauna

### 3.4.1 Previous Assessment

A fauna survey was undertaken by Bamford (2002) of Option 2 (Stage 3 and 4A) of the Karratha-Tom Price Road. This survey included extensive field surveys and trapping over a period of 10 days. Studies focussed on the Fortescue Plain, due partly to the dry conditions at the time and the likely presence of more fauna in the vicinity of the Fortescue River.

The survey identified that:

- The vertebrate fauna of the overall study area (complete Karratha to Tom Price road area) is predicted to include seven species of freshwater fish, nine frog species, 96 reptile species, 139 bird species and 41 mammal species. With the exception of fish (confined to watercourses) and frogs, the Fortescue plain has the highest species richness within each taxonomic group, although the Rocky hills and to some extent the Southern plains support species with restricted distributions.
- There are species of fish, reptiles, birds and mammals that are of conservation significance, with most of these present or expected to be present in the rocky hills and/or the Fortescue plain. Major watercourses and associated fringing vegetation are also important.
- The following potential impacts upon fauna, particularly with reference to species of conservation significance, were identified:
    - Loss of habitat, likely to be most significant with habitats that are poorly represented in the region, such as those associated with watercourses;
    - Increased numbers of roadkills, particularly significant for species such as the Pilbara Olive Python;
    - Changes in fire frequency, increases in abundance of introduced predators and increased levels of disturbance associated with increased human activity in the area.

### 3.4.2 Conservation Significant Fauna Species

Searches of the EPBC Act PMST and DPaW NatureMap database identified the presence/ potential presence of 19 conservation significance fauna taxa within a 10 km buffer of the project area. The desktop searches recorded:

- The Critically Endangered
- Three species listed as Endangered under the EPBC Act, including the Northern Quoll (*Dasyurus hallucatus*) (which is also listed as Endangered under the WC Act.
- Four species listed as Vulnerable under the WC Act.
- Ten Priority species listed by DPaW.
- Eleven species listed as Migratory under the EPBC Act.

Table 7 provides a list of potentially occurring conservation significant species in the project areas (Stage 3, 4A and 4B), based on records found on NatureMap, sourced January 2017.

**Table 7 Summary of Conservation Significant species known or likely to occur within the project area**

| Species | Conservation Status* | | | Presence | | |
|---|---|---|---|---|---|---|
| | EPBC Act | WC Act | DPaW | Stage 3 | Stage 4A | Stage 4B |
| **FISH** | | | | | | |
| Fortescue Grunter (*Leiopotherapon aheneus*) | | | P4 | | | x |
| **BIRDS** | | | | | | |
| Fork-tailed Swift (*Apus pacificus*) | Ma,Mi | | | | x | x |
| Maidenhair (*Adiantum capillus-veneris*) | | | P2 | | | x |
| Eastern Great Egret (*Ardea modesta*) | Ma | | | x | x | x |
| Curlew Sandpiper (*Calidris ferruginea*) | Cr,Ma, Mi | | | | x | x |
| Oriental Plover (*Charadrius veredus*) | Ma,Mi | | | | x | x |
| Grey Falcon (*Falco hypoleucos*) | | Vu | | | x | |
| Peregrine Falcon (*Falco peregrinus*) | | OSP | | | x | x |
| Oriental Pratincole (*Glareola maldivarum*) | Ma,Mi | | | | x | x |
| Barn Swallow (*Hirundo rustica*) | Ma,Mi | | | | x | x |
| Rainbow Bee-eater (*Merops ornatus*) | Ma,Mi | | | x | x | x |
| Grey Wagtail (Motacilla cinerea) | Ma,Mi | | | | x | x |
| Yellow Wagtail (*Motacilla flava*) | Ma,Mi | | | | x | x |
| Osprey (*Pandion haliaetus*) | Ma,Mi | | | | x | x |
| Night Parrot (*Pezoporus occidentalis*) | En | | | | x | x |
| Glossy Ibis (*Plegadis falcinellus*) | Ma,Mi | | | | | x |
| Australian Painted Snipe (*Rostratula australis*) | En | | | | x | x |
| **REPTILES** | | | | | | |
| Spotted Skink (*Ctenotus uber subsp. johnstonei*) | | | P2 | | | x |
| Pilbara Olive Python (*Liasis olivaceus subsp. barroni*) | | Vu | | | x | x |
| Lined Soil-crevice Skink (*Notoscincus butleri*) | | | P4 | x | x | x |
| Pilbara Barking Gecko (*Underwoodisaurus seorsus*) | | | P2 | | x | x |
| **MAMMALS** | | | | | | |

| Species | Conservation Status* | | | Presence | | |
|---|---|---|---|---|---|---|
| | EPBC Act | WC Act | DPaW | Stage 3 | Stage 4A | Stage 4B |
| Northern Quoll (*Dasyurus hallucatus*) | En | En | | x | x | x |
| Spectacled Hare-wallaby (*Lagorchestes conspicillatus* subsp. *leichardti*) | | | P3 | | x | x |
| Short-tailed Mouse (*Leggadina lakedownensis*) | | | P4 | x | x | x |
| Western Pebble-mound Mouse (*Pseudomys chapmani*) | | | P4 | | x | x |
| Long-tailed Dunnart (*Sminthopsis longicaudata*) | | | P4 | | x | x |
| Ghost Bat (*Macroderma gigas*) | | | P4 | | x | x |
| Greater Bilby (*Macrotis lagotis*) | | Vu | | | x | x |
| Orange Leafnosed-bat (*Rhinonicteris aurantia*) | | Vu | | x | x | X |
| **TOTAL** | | | | **6** | **25** | **28** |

* Status (see Section 1.5 for full explanation)

EPBC Act – Species listed as one or more of the following: Mi = migratory species, Ma = marine species, Vu = Vulnerable, En = Endangered

WC Act - Species listed as Schedule (S) 1 – 6

DPaW Status – Species listed as Priority (P) 1, 2, 3 or 4

### 3.4.3 Potential Impacts

The project will result in the direct loss of native vegetation and associated fauna habitat as a result of constructing the road.

The most likely potential impacts to fauna as a consequence of the proposed project are:

- Habitat loss through direct clearing.
- Death or injury of fauna during clearing, construction and operation: fauna injury and death may result from vehicle strikes or fall injuries associated with excavation.
- Impacted aquatic health due to pollution or increased turbidity (owing to construction adjacent to, and crossing, surface water bodies) leading to lose of aquatic habitat/fauna
- Secondary impacts from noise, dust and vibration during construction.

## 3.5 Hydrology

### 3.5.1 Proclaimed Water Resources

- The entirety of Stage 3 and the northern 10 km (approximately) of Stage 4A and 4B runs through the Priority 1 (P1) Millstream water resource area, proclaimed under the *Country Areas Water Supply Act 1947 (WA)*.
- The majority of the remaining Stage 4A route occurs within the Priority 2 (P2) Millstream water resource.

- Approximately 20 km of Stage 4B occurs within the P2 Millstream water resource.

### 3.5.2 Surface Water and Drainage

Each stage was considered in relation to waterways or drainage lines crossings, listed below from north to south.

Stage 3 crossings:

- Portland River, Dawsons Creek and the upper reaches of Kanjenjie Creek, all of which flow into the Fortescue River to the south.
- These above creeks and rivers are ephemeral (i.e. there is surface flow only following significant rains).They may however have underground flows, along paleo-channels beneath the current riverbeds.

Stage 4A crossings:

- The main stream of the Fortescue River, a permanent watercourse.
- The ephemeral Weelumurra Creek.
- One (1) small, unnamed creek.

Stage 4B crossings:

- The main stream of the Fortescue River, including the south branch.
- Three (3) small, unnamed creeks and drainage lines.

South of the Portland River the catchments are broken into a series of small but defined watersheds in gently rolling low hills. There are numerous small, unnamed creeks and drainage lines crossing the existing Roebourne – Wittenoom Road, generally flowing from north to south and perpendicular to the road.

### 3.5.3 Wetlands

#### *International and Nationally Important Wetlands*

One (1) Nationally Important Wetland was identified within 10 km of Stage 4B, the Fortescue Marshes (WA066). The site comprises the mostly contiguous floodplain (lakes, marshes, pools) in the middle reaches of the Fortescue River; included are Powellinna Pool, Gnalka Gnoona Pool, Gidyea Pool, Chaddelinna Pool, Mungthannannie, Cook Pool and Moorimoordinia Pools (DotEE 2017b).

#### *Geomorphic Wetlands*

No geomorphic wetlands occur within 10 km of the project.

### 3.5.4 Potential Impacts

The Project is unlikely to significantly alter the hydrological regime of the Fortescue River and smaller rivers/tributaries in the region. Potential impacts to hydrology include:

- Groundwater – If the project may require the taking of groundwater (e.g. the construction/installation of bores for construction water), permits will need to be obtained from the DoW.

- Surface Water – The project crosses the Fortescue River at various locations. The project is unlikely to alter the flow of the Fortescue River and existing surface water flow patterns in the region.
- Nationally Important Wetlands - Stage 4B comes within 10 km of the Fortescue Marshes but does not intersect this wetland and is unlikely to pose a risk of impacts.
- Erosion/sedimentation – During the construction and operational phases there is the potential for erosion and sedimentation, particularly following high intensity rainfall events.
- Pollution – Impacts associated with construction phase include the storage and handling of chemicals and hydrocarbons will require management to prevent pollution of the Fortescue River and existing surface water bodies in the region

## 3.6 Heritage

### 3.6.1 Previous Assessment

#### *Aboriginal Heritage*

The investigation for the Consultative Environmental Review indicated thirty sites of ethnographic significance that had been recorded within or close to the entire Karratha-Tom Price proposed road corridor (MRWA 2003). Of these, seven were on the opposite side of the Pilbara Rail Company railway from the proposed road and one was likely to be considerably to the east of the road alignment. Twelve additional sites had been recorded by R and O'Connor (ethnographic consultant) but were not yet on the Department of Indigenous Affairs sites register. They had been identified as being significant to local people in previous reports within the area.

The areas of the proposed corridors which were considered most at risk of intersecting ethnographic sites were:

- Within the vicinity of the Harding River;
- Between the Millstream turnoff and Camp Curlewis;
- In the Weelumurra Creek area of the Hamersley Range; and
- In the vicinity of the Hamersley Station homestead.

A considerable amount of further archaeological investigation was undertaken at sites in Stage 2, in order to achieve agreement with Aboriginal claimant groups and Section 18 approvals. In addition, other archaeological sites were identified during the construction phase and required approval to disturb, salvage works and monitoring.

#### *Non-Aboriginal Heritage*

The register of the National Estate and the Western Australian Heritage Council databases were investigated for registered or nominated non-Aboriginal (or European) heritage sites. These databases identify a number of heritage homesteads, geological sites and natural heritage sites within 10 km of the project area. However none fall within the 1 km search area of the project or will be indirectly affected. (MRWA 2003)

### 3.6.2 Updated Aboriginal Heritage

A search of the Department of Aboriginal Affairs' (DAA) Aboriginal Heritage Inquiry System in January 2017 identified twenty-two sites in direct alignment with the project, including six

intersecting Stage 3, seven intersecting Stage 4A and seven intersecting Stage 4B. These are summarised in Table 8. A number of other sites are present within a 500 m buffer of the road area but are not presented here.

**Table 8 Aboriginal heritage sites intersecting the Stages 3, 4A and 4B.**

| Name | Status | Type and Restrictions |
|---|---|---|
| **Stage 3** | | |
| KTP/FS11 | Lodged | Artefacts / Scatter |
| Eth 1 | Registered Site | Ceremonial, Quarry, Male Access Only |
| Eth 3 | Registered Site | Ceremonial, Quarry, Male Access Only |
| Eth 2 | Registered Site | Ceremonial, Quarry, Male Access Only |
| Powerline Survey 091 | Registered Site | Artefacts / Scatter |
| W3-11 Artefact Scatter | Registered Site | Artefacts / Scatter |
| W3-09 Artefact Scatter | Registered Site | Artefacts / Scatter |
| **Stage 4A** | | |
| RTC03-E1 | Lodged | |
| Weelamurra Creek Ceremonial Ground | Registered Site | Artefacts / Scatter, Ceremonial, Historical |
| MT MARGARET 96-1 (HAMERSLEY PLATEAU) | Registered Site | Modified Tree |
| Pangawinhanha | Lodged | Mythological, Named Place, Natural Feature |
| KTP/FS3 | Lodged | Artefacts / Scatter |
| RTC - 03-08 Artefact Scatter | Registered Site | Artefacts / Scatter |
| Tunkawanna Creek | Registered Site | Artefacts / Scatter |
| RTC - 03-10 Artefact Scatter | Registered Site | Artefacts / Scatter |
| **Stage 4B** | | |
| RED HILL/JUBADUNNA | Lodged | Mythological, Named Place |
| HAMERSLEY GORGE | Lodged | Artefacts / Scatter, Ceremonial, Water Source, Other |
| RIO TINTO GORGE | Registered Site | Painting |
| RIO TINTO GORGE | Registered Site | Artefacts / Scatter, Rockshelter, Arch Deposit, Other |
| HAMERSLEY GORGE ENGRAVING | Registered Site | Artefacts / Scatter, Engraving, Man-Made Structure, Painting |
| POWERLINE SURVEY 099 | Registered Site | Artefacts / Scatter |
| THAMBIRRIE OLD CAMP | Registered Site | Artefacts / Scatter, Ceremonial, Skeletal Material / Burial, Camp, Other: well |

### 3.6.3 Updated non-Aboriginal Heritage

A search of the register of National Heritage Places and the Western Australian InHerit database was undertaken. One heritage property is located in alignment with Stage 4B, Tambrey Station. Another, Millstream Homestead, is located within 10 km of Stage 3. These are summarised in Table 9:

**Table 9 Non-Aboriginal heritage sites**

| Property Name | Status | Location | Notes |
|---|---|---|---|
| **Stage 3** | | | |
| Millstream Homestead | State Heritage list<br>Municipal Inventory<br>Register of the National Estate<br>National Trust classified | On Fortescue River, approx. 10 km from Stage 3 | Now the Parks and Wildlife Visitor Centre |
| **Stage 4B** | | | |
| Tambrey Station | State Heritage list<br>Municipal Inventory<br>Register of the National Estate<br>National Trust classified | Approximately 300 m from Stage 3, near eastern end on Coolawanyah Station. | Ruined station homestead and outbuildings. |

## 3.7 Constraints Summary and Recommendations

Table 10 summarises identified potential constraints and provides recommendations to manage these constraints, including likely approvals. The recommendations refer to a number of required discussions with regulatory agencies and likely approvals, management plans or further studies.

**Table 10 Potential environment and heritage constraints summary and recommendations**

| Constraint | Stage 3 | Stage 4A | Stage 4B | Discussion | Recommendations and further work | Approval triggers |
|---|---|---|---|---|---|---|
| Acid sulfate soils | | ✓ | ✓ | Low risk, but risk likely to increase with excavations along the Fortescue River. | ASS preliminary investigation recommended to determine the need for specific ASS management. | No approvals required. |
| Asbestos containing materials | ✓ | | ✓ | The presence or possible-presence of asbestos poses a risk to human health and must be managed accordingly. | Asbestos preliminary investigation recommended to determine the need for specific asbestos management. Discussions with the Department of Health are recommended. | No approvals required. |
| Conservation reserves and areas | ✓ | | | Stage 3 intersects the Millstream-Chichester National Park. The Project will require excision from the Park. | Further discussions with land manager DPaW are recommended. | Changes to Class A reserves (e.g. excision or reduction in area of the reserve) require the agreement of both Houses of Parliament.<br>Likely to trigger the following approvals:<br>• Section 97A, Section 101 Licence under the *Conservation and Land Management Act 1984* (CALM Act);<br>• Regulation 4 authority under the *Conservation and Land Management Regulations 2002* (CALM Regulations); and<br>• Section 91 Licence under the *Land Administration Act 1997* (LA Act) |
| Conservation significant vegetation | ✓ | | | Stage 3 intersects one Priority 1 ecological community. | No further assessment or consideration is required for approvals associated with the PEC. The presence of the PEC should be considered in the updated management plan, and impacts to this vegetation type should be minimised. | No approvals likely. |

| Constraint | Stage 3 | Stage 4A | Stage 4B | Discussion | Recommendations and further work | Approval triggers |
|---|---|---|---|---|---|---|
| Environmentally Sensitive Areas | ✓ | ✓ | | Stage 4A intersects an ESA near Mount Sheila. Millstream-Chichester National Park, which Stage 3 intersects, is also an ESA. | Additional baseline surveys recommended to quantify impacts to ESA.<br>Impacts to ESAs should be discussed with DWER. | Approval under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations) may be required.<br>This factor may also be considered under Part IV, as part of the significance assessment process. |
| Conservation significant flora | ✓ | ✓ | ✓ | One Threatened (Rare) listed flora is likely to be present within the Stage 4 road corridors.<br>Priority flora species are likely to be present across all stages. | Further assessment of Threatened (Rare) flora may be required. | If listed communities or flora taxa are present, they may trigger the following approvals:<br>- EP Act: factor may be considered under Part IV, as part of the significance assessment process, or under Part V of the EP Act as part of a clearing permit application.<br>- EPBC Act: potential assessment if impact considered significant.<br>No further action is required for the Priority flora. Any Priority plants that are identified in the project area should be avoided if possible, or their loss minimised. Borrow sites (which may be outside the corridor) will need to be individually assessed. |

| Constraint | Stage 3 | Stage 4A | Stage 4B | Discussion | Recommendations and further work | Approval triggers |
|---|---|---|---|---|---|---|
| Weeds | ✓ | ✓ | ✓ | Weeds (mostly creekline species) have been recorded within the KTP road envelop.<br>DPaW (Karratha) has recommended that weed mapping is updated for any areas proposed to be disturbed to ensure that the baseline weed condition is understood. There is an expectation from DPaW that no new weeds are introduced or existing weeds are spread as a result of KTP road construction. | Undertake a weed survey prior to commencement of construction.<br>A site-specific Construction Environmental Management Plan (CEMP), which includes weed management is recommended for the Project. | No approvals required. |
| Fauna | ✓ | ✓ | ✓ | Based on the updated fauna constraints analysis there is potential to impact on feeding and/ or breeding habitat of two Federally listed fauna species: Northern Quoll (Endangered) and Bilby (Vulnerable), as well as the Pilbara Olive Python (Vulnerable).<br>This project has not been formally referred to the DotEE under the EPBC Act, and there is a possibility that the impacts of the project may now trigger a requirement to refer. Due to updates to fauna significance, these triggers were not present in 2003. | The risk of impacts to listed rare fauna should be discussed with the DotEE to determine whether they consider further detailed surveys and a formal referral should be undertaken.<br>There is potentially a requirement to further assess suitable habitat for the presence of the Northern Quoll (Endangered), Pilbara Olive Python (Vulnerable) and Bilby (Vulnerable). Due to their preferred habitat types, these species could possibly be present in the area. | Impacts to EPBC Act-listed fauna known to or potentially occurring in the project area may trigger the need for referral to the DotEE.<br>Impacts to WC Act and Priority-listed fauna known to or potentially may occur in the project area may need to be considered under Part IV of the EP Act, as part of the significance assessment process, or under Part V of the EP Act as part of a clearing permit application. |
| Surface water and drainage | ✓ | ✓ | ✓ | Construction within Priority 1 and Priority 2 water resource protection areas. An agreement with the DoW and Water Corporation to re-construct the road may be required. | Preliminary discussion with the Department of Water / Water Corporation is recommended. | Impacts on water quality and ecological values - factor may be assessed under Part IV of the EP Act. |
| | ✓ | ✓ | ✓ | Various river banks will be disturbed during construction of the road. | Discussions with DoW are recommended. | A Permit to interfere with bed and banks will be required under the RIWI Act. |

| Constraint | Stage 3 | Stage 4A | Stage 4B | Discussion | Recommendations and further work | Approval triggers |
|---|---|---|---|---|---|---|
| Wetlands | | | ✓ | One Nationally Important Wetland was identified within 10 km of Stage 4B, the Fortescue Marshes (WA066). | Preliminary discussion with the DotEE, DPaW and DoW is recommended. Although unlikely to be impacted by the road alignment. | No approvals likely as not in conflict with Stage 4B. |
| Aboriginal heritage | ✓ | ✓ | ✓ | A search of the DAA Aboriginal Heritage Inquiry System identified twenty-two sites in direct alignment with the KTP routes | Consultation with local Aboriginal people connected to the area is recommended.<br>The results of this consultation will determine if additional investigations/approvals will be required.<br>Further detailed surveys may be required to determine the requirement for heritage approval(s). | Approval under Section 18 of the *Aboriginal Heritage Act 1972* may be required for the Project.<br>Factor may be assessed under Part IV of the EP Act as part of the significance assessment process, or under Part V of the EP Act as part of a clearing permit application. |
| Non-Aboriginal Heritage | | | ✓ | One heritage property is located in alignment with Stage 4B, Tambrey Station. | Care must be taken to ensure that no impacts from construction works occur at the Tambrey Station buildings. | No approvals are likely to be required for Tambrey Station. |

# 4. References


Australian Soil Resource Information System (ASRIS) (2017). *Australian Soil Resource Information Viewer*, retrieved January 2017, from http://www.asris.csiro.au/index_ie.html.

Bamford, M J (2002). *Karratha to Tom Price Highway; Karratha to Nanutarra-Munjina Road Section*.

Beard, J.S. (1979) *Vegetation Survey of Western Australia: Perth Map and Explanatory Memoir 1:250,000 series*. Perth, Vegmap Publications.

Bureau of Meteorology (BoM) (2017) *Climate Data Onlin.* Retrieved January 2017, from http://www.bom.gov.au/climate/data/.

Department of Aboriginal Affairs (DAA) (2017) *Aboriginal Heritage Inquiry System*. Retrieved January 2017, from http://maps.dia.wa.gov.au/AHIS2/default.aspx.

Department of Agriculture and Food Western Australia (DAFWA) (2007) *Soil-landscape mapping in South-western Australia*. Department of Agriculture and Food, Perth.

Department of Environment Regulation (DER) (2017) *Contaminated Sites Database*. Retrieved January 2017, from https://secure.dec.wa.gov.au/idelve/css/

Department of Parks and Wildlife (DPaW) (2007) *NatureMap: Mapping Western Australia's Biodiversity*. Retrieved January 2017, from http://NatureMap.dec.wa.gov.au/.

Department of the Environment and Energy (DotEE) (2017a) *Environmental Protection and Biodiversity Conservation Act 1999 Protected Matters Search Tool Results*. Retrieved January 2017, from http://www.environment.gov.au/epbc/pmst/index.html.

Department of the Environment and Energy (DotEE) (2017b) *Interim Biogeographic Regionalisation of Australia*, Version 7. Retrieved January 2017, from http://www.environment.gov.au/topics/land/nrs/science-maps-and-data/australias-bioregionsibra.

Department of Water (D0W) (2007) *Water Quality Protection Note, no. 83. Infrastructure corridors near sensitive water resources*.

Department of Water (DoW) (2010) *Millstream Water Reserve: Drinking water source protection plan, West Pilbara water supply*. Department of Water, Perth.

Department of Water (DoW) (2017) *Geographic Data Atlas*. Retrieved January 2017 from, http://www.water.wa.gov.au/idelve/dowdataext/index.jsp.

Environmental Protection Authority (EPA) (2005) *Ministerial Statement No 00677, Road from Karratha to Tom Price*. Shires of Karratha and Ashburton.

GHD (2016) *Karratha Tom Price Road Stage 3 – Gap Analysis*. Report for the Shire of Ashburton, April 2016.

Government of Western Australia (GoWA) (2015) *Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full report)*. Current as of June 2015, Perth Western Australia, Department of Environment and Conservation. Retrieved January 2017, from https://www2.landgate.wa.gov.au/web/guest/downloader.

Government of Western Australia (GoWA) (2017) *Heritage Council InHerit database*. Retrieved January 2017, from http://inherit.stateheritage.wa.gov.au.

Jones, S. (2007) *Acid Sulfate Soil Risk Map - Pilbara Coastline*. Department of Environment and Conservation. Retrieved January 2017, from https://www2.landgate.wa.gov.au/

Main Roads Western Australia (MRWA) (2003) *Karratha - Tom Price Road, Karratha to Nanutarra-Munjina Road Section, Consultative Environmental Review*. Assessment No. 1244. Main Roads, January 2003.

Mattiske, E.M. and Havel, J.J. (1998) *Vegetation Mapping in the South West of Western Australia*. Department of Conservation and Land Management, Perth.

National Native Title Tribunal (2017) *Native TitleVision*. Retrieved January 2017, from http://www.ntv.nntt.gov.au/ntv.asp.

Shepherd D.P., Beeston G.R. and Hopkins A.J.M. (2002) *Native Vegetation in Western Australia – Extent, Type and Status*. Resource Management Technical Report 249, Department of Agriculture, Western Australia.

GHD

Unit 186 Pelago East Apartments
26 Sharpe Avenue
KARRATHA WA 6714

T: 61 8 9185 0700 E: ktamail@ghd.com



G:\61\35084\WP\REP-B_June Version\6135084-REP-B_Appendix B_Environment and Heritage Constraints Assessment.docx

Document Status

| Revision | Author | Reviewer | | Approved for Issue | | |
|---|---|---|---|---|---|---|
| | | Name | Signature | Name | Signature | Date |
| B | T. Hibberd | A. Nagle | A Nagle* | N Hanrahan | | 05/09/2017 |
| | | | | | | |
| | | | | | | |

* Denotes signed original on file

www.ghd.com

# **Appendix C** – Benefit-Cost Analysis

# Shire of Ashburton

## Karratha-Tom Price Road Stages 3 and 4

## Appendix C

## Benefit-Cost Analysis

March 2018

# Table of contents



# Table index



# Figure index

# 1. Introduction

## 1.1 Background

The Karratha-Tom Price Road links the regional centres of Karratha and Tom Price. These communities are traditional mining towns and growing tourism destinations in the Pilbara region of Western Australia. The road provides crucial access and connectivity between these centres and nearby resources and tourism destinations. Yet, being unsealed, use of the road is restricted by its inability to safely sustain high volumes of traffic or freight. This adversely affects local residents and businesses of Karratha, Tom Price and the wider Pilbara region.

The development of the Karratha-Tom Price Road consists of four stages. Stages 1 and 2 were completed in 2003 and 2008 respectively. Stages 3 and 4 remain unsealed (gravel) and are the focus of this assessment.

Stage 3 includes a 48 km stretch from the intersection of Warlu Road and Roebourne-Wittenoom Road to the junction of the private Rio Tinto Rail Access Road. Meanwhile, two options are being considered for Stage 4:

- Stage 4A – a 107 km section adjacent to the private Rio Tinto Rail Access Road alignment
- Stage 4B – 165 km section along the Roebourne-Wittenoom Road to Fortescue Crossing Road and then to the Nanutarra-Bingarn Road intersection.

These Stages and construction cost estimates (Stages 3 and 4 only) calculated by GHD (2017) are summarised in Table 1 below.

Table 1 Karratha-Tom Price Road stages

| Stage | Pathway / Description | Approx. Length | Surface | Capital Cost (excl. GST) |
|---|---|---|---|---|
| Stage 1 | Bingarn Road | 24 km | Bitumen | N/A |
| Stage 2 | Karratha-Tom Price Road via Warlu Road | 88 km | Bitumen | N/A |
| Stage 3 | Roebourne-Wittenoom Road | 48 km | Gravel | $70.23M |
| Stage 4A | Rio Tinto Rail Access Road | 107 km | Gravel | $231.54M |
| Stage 4B | Roebourne Wittenoom Road to Fortescue Crossing to Nanutara-Munjina Road | 165 km | Gravel | $323.09M |

## 1.2 Purpose of this Report

This economic assessment and benefit cost analysis will demonstrate the expected impacts on the townships and wider Pilbara region if Stages 3 and 4 to upgrade or seal (i.e. bituminise) the gravel road is undertaken. Upgrades will reduce travel times, noise and pollution and the associated costs. They will also increase economic activity on the road, traveller safety and travel efficiency.

A Benefit-Cost Analysis (BCA) was used to express (where possible) both costs and benefits in monetary terms to provide a basis for direct comparison between several route options against a “do nothing” base case. These Options were:

- **Option 1** – Seal (i.e. bituminise) Stage 3 only at a capital cost of $70M (intersection of Warlu Road and Roebourne-Wittenoom Road to the junction of the Rio Tinto Rail Access Road).

- **Option 2** – Seal Stage 3 and Stage 4A at a capital cost of $302M (Stage 3 plus a section along the Rio Tinto Rail Access Road).
- **Option 3** – Seal Stage 3 and Stage 4B at a capital cost of $393M (Stage 3 plus Roebourne-Wittenoom Road to Fortescue Crossing Road and Nanutarra-Munjina Road)

The BCA approach/methodology and results are detailed in the following sections.

## 1.3 Scope and Limitations

This report has been prepared by GHD for Shire of Ashburton and may only be used and relied on by Shire of Ashburton for the purpose agreed between GHD and the Shire of Ashburton as set out in this report.

GHD otherwise disclaims responsibility to any person other than Shire of Ashburton arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Shire of Ashburton and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The Cost Estimates are a preliminary estimate only. Actual prices, costs and other variables may be different to those used to prepare the Cost Estimate and may change. Unless as otherwise specified in this report, no detailed quotation has been obtained for actions identified in this report. GHD does not represent, warrant or guarantee that the works can or will be undertaken at a cost which is the same or less than the Cost Estimate.

Where estimates of potential costs are provided with an indicated level of confidence, notwithstanding the conservatism of the level of confidence selected as the planning level, there remains a chance that the cost will be greater than the planning estimate, and any funding would not be adequate. The confidence level considered to be most appropriate for planning purposes will vary depending on the conservatism of the user and the nature of the project. The user should therefore select appropriate confidence levels to suit their particular risk profile.

# 2. Benefit-Cost Analysis

## 2.1 Approach

A benefit-cost analysis (BCA) was developed for three project Options (see Section 1.2) according to national and state guidelines, including the Austroads – *Guide to Project Evaluation*[1].

The BCA method discounts future costs and benefits to a present value, allowing for comparison of alternative courses of action by reference to the net benefits that they produce for the community as a whole.

Figure 1 outlines the general BCA approach used to compare a defined base case against potential project options.

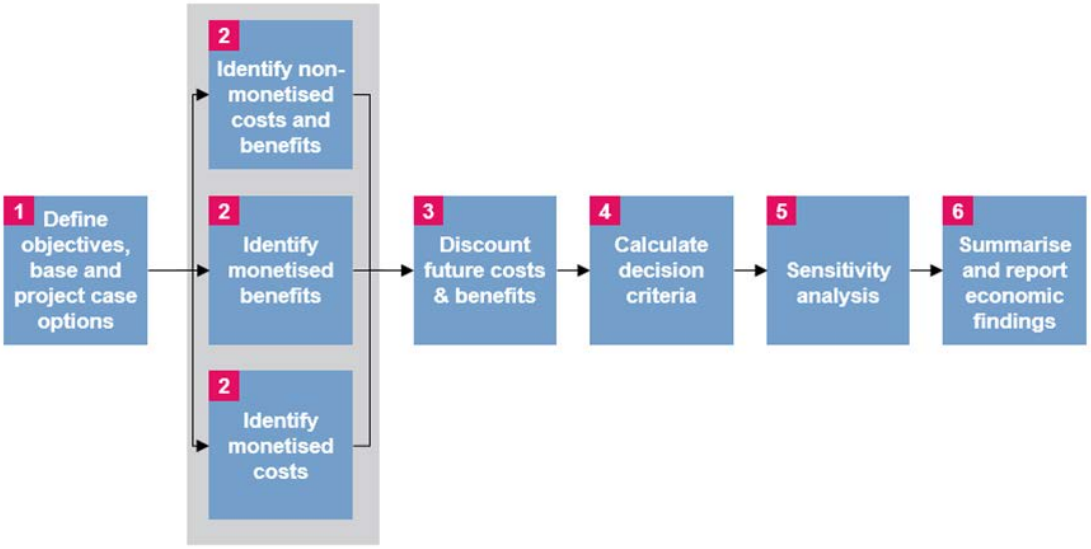



Figure 1 Rapid BCA approach

BCAs may be analysed at three levels (local, regional or State), but the key criteria for the inclusion of benefits is that the benefits are directly aligned to the capital expenditure. This is particularly important when including tourism impact, as new initiatives may *shift* (or redistribute) existing tourism expenditure rather than *increase* absolute levels of tourism expenditure.

## 2.2 Methodology

The process for developing a BCA is described in Table 2 below. In summary, the analysis produces a Benefits-Cost Ratio (BCR), which equates to the 'Present Value of Benefits' divided by the 'Present Value of Costs'. The following decision criterion are then applied to evaluate the feasibility of a project proceeding:

- BCR > 1.00 – if more than one option is considered, accept the project with the highest BCR greater than 1.00.
- BCR < 1.00 – re-evaluate project.

[1] Austroads Guide to Project Evaluation is available from http://www.austroads.com.au/road-construction/planning-evaluation/publications-resources/guide-to-project-evaluation

BCR is only one of the criteria that can be applied in making the decision to accept or reject a project, albeit an important one. A BCR greater than 1 indicates that a net benefit is being generated, and is the usual benchmark. However, when other considerations (usually strategic) are taken into account, projects with BCRs less than 1 may still be supported

Table 2 Process for developing the Benefit-Cost Analysis

| Task | Objective |
|---|---|
| 1 | **Defining objectives, base and project case options**<br>Define the objectives in addition to the base case and project case for comparison. (see Section 4 for details) |
| 2 | **Identification of benefits and costs**<br>Benefits and costs are identified, and where possible, quantified in monetary terms. These are the incremental costs and benefits expected of the project case against the base case. |
| 3 | **Discount future costs and benefits**<br>Generate appropriate measures of net economic worth, including the Benefit-Cost Ratio (BCR). |
| 4 | **Calculate decision criteria**<br>Interpret measures of net economic worth (also accounting for non-quantified costs and benefits) through the BCR as follows:<br>$BCR = \frac{PV(B - OC)}{PV(IC)}$<br>Where:<br>$PV(X)$ is the present value of all future impact streams discounted at the real discount rate;<br>$B$ is the sum of the benefits;<br>$OC$ is the operating costs; and<br>$IC$ is the investment cost. |
| 5 | **Sensitivity analysis**<br>Where appropriate, calculate decision criteria with a range of input values to present the sensitivity of the output values to inputs. |
| 6 | **Summarise and report economic findings**<br>Determine the preferred option by considering the relevant decision criteria as well as other non-quantified benefits or costs. |

## 2.3 Considerations

A key criteria in establishing the “boundary” for the BCA (especially when calculating benefits) is the attribution rule; that is, if there a clear nexus between the cost that is incurred and the benefit that is claimed. The analysis must determine whether the benefit would exist if the investment cost was not incurred. In some cases, behaviour may change as a result of the investment (e.g. tourist travel farther) but the lack of the investment would not remove the activity (tourism would still occur in similar numbers but not necessarily in the same area).

# 3. Economic Impact Analysis

Areas of economic development and growth identified during the consultation where benefits could be attributed to the road being sealed include:

1. Unlocking Stranded Mines
2. Tourism Uplift
3. Social Impacts

Known capital expenditure(s) or costs related to the road were incorporated into the BCA according to the Austroads guidelines.

## 3.1 Stranded Mines

Significant iron ore deposits exists to the south of the proposed road upgrades, which will become more accessible as transport options improved. Key projects include:

- Balla Balla Infrastructure (BBI) Project by Flinders Resources to develop the Pilbara Iron Ore Project (PIOP);
- Fortescue Metal Group's (FMG) proposed Western Mining Hub to replace their depleting Firetail Mine; and
- Rio Tinto's Koodaideri Mine – however, the extent to which the road upgrade will benefit the mining project is unclear, and has been considered minimal for the purposes of this analysis.

Each of these new mines involve significant construction works which would increase traffic demand for both the movement of construction material and the labour force. These mines can only be included in the benefit-cost analysis on the basis of the savings that the operators will make from using the upgraded road compared to alternate transport options (measured in net benefit per tonne). This requires a forecast of the mined output and estimated commencement of the project – which is likely to be brought forward if a sealed road becomes available.

## 3.2 Tourism

Survey data collected in 2017 indicates that a significant uplift in tourist demand would be realised if the Karratha-Tom Price Road was sealed (Metrix 2017). Sealing the road to remove the safety risk and create a more time-efficient route between destinations was forecast to increase demand by more than 70% per annum in the short term, which would stabilise at or around an annual growth rate of 20-30%.

The Singapore international flight initiative which would fly direct to Karratha twice weekly from mid-2018 would also increase international visitation to the region, with the potential to generate an additional 9,856 visitors per annum.

For modelling purposes, and considering the quantities derived from the recent Metrix survey results, the tourism growth forecast has been divided into three segments:

- Initial period (5 years) – annual growth of 40%;
- Medium term (6-15 years) – annual growth of 25%; and
- Longer term (stable demand) – annual growth of 5%.

Under these assumptions, the long term average tourist demand over 30 years is a compound annual growth rate (CAGR) of 16%, with over 1,200 tourists using the road on a daily basis in 30 years. Increased tourism demand from the international flight was also incorporated.

## 3.3 Social Impacts

Stakeholder consultation identified a number of costs and community benefits to sealing the road. Though difficult to quantify monetarily, and having a relatively low impact on the BCR outcome, these impacts include reduced freight costs, and improved access to the higher standard of healthcare and education in Karratha.

# 4. Inputs and Assumptions

Several options were assessed for the Karratha-Tom Price Road against a “do nothing” base case.

## 4.1 Economic Impacts

The following economic impact assumptions were made for each of the three options.

### 4.1.1 Base Case

- Stage 1 (Bingarn Rod) and Stage 2 (Karratha-Tom Price Road via Warlu Road) are sealed;
- Stages 3 and 4 remain gravel, as current;
- General traffic growth of 1.5% per annum; and
- Assumes that the BBI Project will commence (2020) as a FIFO based operation, requiring airport construction. The capital expenditure of constructing an airport (approx. $20M) was included as an offset, as it is understood that without a sealed road, the operational workforce will likely be FIFO.

### 4.1.2 Option 1 (Stage 3)

- BBI operation becomes DIDO removing the requirement for airport construction and increasing road traffic along Stage 3;
- Ore transportation by rail therefore no additional road usage impact;
- Road link only partially sealed therefore only minor increase in tourist traffic beyond current low growth; and
- Limited social benefits.

### 4.1.3 Option 2 (Stage 3 and Stage 4A)

- BBI operation becomes DIDO removing the requirement for airport construction and increasing road traffic across Stage 3;
- Construction and employment benefits through development of stranded mines (BBI Project, FMG’s Western Hub etc.);
- Initial period, medium term and longer term tourism growth assumed as detailed in **Section 3.2 *Tourism*** – includes impacts of international flight to Karratha; and
- Social benefits realised.

### 4.1.4 Option 3 (Stage 3 and Stage 4B)

- BBI operation becomes DIDO removing the requirement for airport construction and increasing road traffic across stage – although preference for sealing of Stage 4A;
- Construction and employment benefits through development of stranded mines (BBI Project, FMG’s Western Hub etc.);

- Initial period, medium term and longer term tourism growth assumed as detailed in **Section 3.2 *Tourism*** – includes impacts of international flight to Karratha – although a longer tourist route; and
- Social benefits realised – although a longer commute.

## 4.2 General Cost Parameters

Cost parameters for the BCA were adopted from Austroads (2012) *Project Evaluation Manual - Part 4*, adjusted for inflation to 2017 rates, and include:

- Vehicle Operating Costs adjusted for gravel or bitumen surfaces (e.g. cost savings for vehicle travel on sealed surfaces);
- Travel Time Costs adjusted for gravel or sealed surfaces (e.g. time savings for vehicle travel on sealed surfaces) and shorter route options (i.e. as opposed to current sealed routes via Northwest Coastal and Great Northern Highways); and
- Externality costs, which are the costs incurred in the wider environment. For example, greenhouse gas emission costs assume there are current and future costs required for mitigating or offsetting impacts. Some cost will continue to occur with the base case do nothing option - the BCR includes the cost of an increase - (or benefit from a decrease) - that would result from implementing options. These include:
    - Air pollution;
    - Greenhouse gas emissions;
    - Noise (not applied urban areas);
    - Soil and Water; and
    - Nature and Landscape

Traffic flow forecasts and associated costs were based on:

- Traffic count data provided by the client based on actual traffic counts; and
- Forecasted growth based on increased mining, tourism and private use.

Project forecasting occurs over the period between 2018 and 2050.

The applied costs parameters are summarised in Table 3 and discussed further in the following section.

Table 3 BCA Assumptions / Inputs applicable to each option

| Assumption | Cars | | | Truck Size | | |
|---|---|---|---|---|---|---|
| | Private | Additional Tourist | Commercial | Small Truck | Medium Truck | Large Truck |
| **Externalities ($ per km per annum)** | | | | | | |
| Air Pollution | $0.000139/km | | | $0.0134/km | | |
| GHG Emissions | $0.00688/km | | | $0.0312/km | | |
| Noise | - | | | - | | |
| Soil and Water | $0.0000646/km | | | $0.00144/km | | |
| Nature and Landscape | $0.00130/km | | | $0.0110/km | | |
| **Adjustments to Vehicle Speed (%)** | | | | | | |
| Base Case<br>Option 1 | 76 | 100 | 94 | 80 | 80 | 80 |
| Option 2<br>Option 3 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Adjustments to Vehicle Distance (%)** | | | | | | |
| All cases | 75 | 100 | 100 | 100 | 100 | 100 |

### 4.2.1 Vehicle Operating Costs

Each class of vehicle is assigned an operational “per km” cost. The costs tend to increase with vehicle size and reflect increasing fuel consumption. Commercial cars are issued on a fleet basis and cost less than private cars. Operating costs are listed in Table 4.

Table 4 Vehicle operational costs

| Car Type | $ / km |
|---|---|
| Car – Private | 0.380 |
| Car – Additional Tourist | 0.380 |
| Car – Commercial | 0.359 |
| Small Trucks (class 3) | 1.160 |
| Medium Trucks (classes 4 to 9) | 1.487 |
| Large Trucks (classes 10 to 12) | 1.750 |

### 4.2.2 Travel Time Costs

Travel time costs were calculated as a function of the options’ lengths, proposed surface (sealed or gravel) which impacts speed travel, and number of trips (including trip distance), extended by the specific travel cost per category (e.g. commercial time has a higher value than private (tourist) time).

#### Route Lengths and Properties

The road has been divided into a number of stages of varying distances, which have been incorporated into the BCA. The total distances (gravel sections only) considered for the various options are listed in Table 5.

Table 5 Option lengths (gravel only)

| Option | Distance |
|---|---|
| Base Case | N/A |
| Option 1 | 48 km |
| Option 2 | 155 km |
| Option 3 | 213 km |

#### Vehicle Trips

Base case vehicle trips are assumed to rise for each type of vehicle, as well as a one-off increases specific to forecast economic developments such as the BBI Project and FMG’s Western Hub between 2019 and 2020. The base case vehicle trips are expected to grow at 1.5% for private cars and the ‘additional tourist’ class, but not for other types of vehicle. Specific vehicle trip growth assumptions that reflect the change from the base rate of growth have been made for each option.

Vehicle classes also expected to have differing trip cycles. Private cars, for example, are assumed to travel the route once per trip cycle. Conversely, trucks of any size are assumed to take return trips as they must supply a destination and then return to their own depots.

If traveling via sealed roads only, tourist vehicles in the Base Case and Option 1 undertake a >550 km one-way trip between Karratha and Tom Price. Options 2 and 3 reduce these travel routes from >550 to 269 and 327 kilometres, respectively.

#### Adjustments to Vehicle Distance

Vehicles are assumed to travel a set path for each trip. Tourists are expected to travel a longer path, to account for sightseeing. These lengths vary depending on the proposed lengths of the new options.

Not all vehicles travel the full 269 km (or 327 km via Stage 4B) stretch of road. Private cars are typically assumed to travel 75% of this distance, reflecting their tendency to take trips to domestic dwellings, work or for private purposes. The distances travelled are assumed to grow proportionally and according to the increase in vehicle trips over the period to 2050.

#### Adjustments to Vehicle Speed

Given their various characteristics, vehicles are assumed to travel at different speeds across the proposed routes. Gravel roads are retained under the Base Case and Option 1 and the speed adjustment variable accounts for the increased time spent traveling on unsealed surfaces.

### 4.2.3 Externalities

Externalities (costs/benefits that are associated with either increased decreased use of an asset that impacts on the community but may not be a cost or saving for the transport operator) have been developed on a standard $ per unit basis. Due to the locality, noise externalities have not been considered.

Reduction of externalities in relation to base case (Air Pollution, Noise and Greenhouse Gas Emissions) are considered benefits.

## 4.3 Other Cost and Capital Expenditure

### 4.3.1 Road Operating and Maintenance Costs

Operating/maintenance costs for gravel versus sealed (bitumen) roads have been included in the analysis.

### 4.3.2 Airport Operational Expenditure

As the BBI Project is considering an airport and FIFO operation, airport expenditure has been incorporated into the BCA.

Airport operational expenditure is set at 1% of the upfront Capital Expenditure of the Airport. This is consistent with industry standards for an airport of this size and scale.

Flight operations are only required under the Base Case.

#### Base Case Capital Expenditure

In the Base Case, Airport Expenditure is forecast to cost $20 million as an upfront investment in 2018. An operational expenditure of $200,000 applies on a per annum basis. Flight specific operations are forecast at $40,000 per week over a 52-week year. This translates to an annual airport operational expenditure of $2.08 million.

If the road is not sealed, this base case expenditure will be incurred.

# 5. Results and Sensitivity Analysis

A discount rate of 7% was applied (as is the standard for Government sponsored projects). Sensitivity analysis was also carried out to measure option performance in terms of the BCR. The resulting BCR at three discount rates is presented in Table 6. Costs and Benefits are discounted at equivalent rates for the purposes of this project. The Base Case is not included as all values are measured in relation to the Base Case.

Table 6 Option Benefit Cost Ratios

| Option | 4% | 7% | 10% |
|---|---|---|---|
| Option 1 | 1.027 | 0.330 | 0.170 |
| Option 2 | 1.706 | 0.899 | 0.510 |
| Option 3 | 1.228 | 0.658 | 0.388 |

Option 2 has the highest positive BCR across the three discounting rate options (4%, 7%, 10%). The results for Option 2 and 3 are primarily driven by lower travel time and vehicle operating costs, stranded mines impacts, and the increased tourist demand along both routes if the road was fully sealed, even though the capital costs for Option 2 and Option 3 are substantially higher than Option 1. The difference between Options 2 and 3 is largely a function of the lower capital cost of Option 2 compared to Option 3 when both options generate similar benefits.

Under a slightly more aggressive long-term tourism growth assumption in the final 15 years of the analysis period, a BCR of >1.00 would be achievable (Table 7).

Table 7 Forecast tourism growth to 2033

| Tourist Growth | | | BCR | |
|---|---|---|---|---|
| 5 years @ | 10 years @ | 15 years @ | Option 2 | Option 3 |
| 40% | 25% | 5.0% | 0.899 | 0.658 |
| 40% | 25% | 6.0% | 0.930 | 0.686 |
| 40% | 25% | 7.0% | 0.963 | 0.716 |
| 40% | 25% | 8.0% | 1.000 | 0.750 |
| 40% | 25% | 9.0% | 1.041 | 0.766 |
| 40% | 25% | 10.0% | 1.086 | 0.826 |
| 40% | 25% | 15.0% | 1.386 | 1.096 |

The initial capital expenditure will have an employment impact during the construction period, with Options 2 and 3 likely to increase long term employment in the area as stranded mines become active. Employment impacts, construction and ongoing, are shown in Table 8.

Table 8 Employment impacts shown as the average number of jobs per annum

| Employment | Base | Option 1 | Option 2 | Option 3 | Comment |
|---|---|---|---|---|---|
| Direct | 34 | 118 | 507 | 661 | |
| Industrial | 18 | 63 | 270 | 352 | |
| Consumption | 10 | 36 | 156 | 204 | |
| Mining Construction | | 3,000 | 5,500 | 5,500 | Average - 3 years only |
| Mining Employment | | 900 | 2,100 | 2,100 | Average - ongoing |

The BCA considered five elements in the total build-up of the BCR for Option 2 (at 7%)

- Base transport impact + 0.302
- Tourism impact + 0.177
- Stranded mines impact + 0.402
- Social benefits impact + 0.002
- Construction impact + 0.016

The resulting Benefits Cost Ratio is 0.899.

# 6. Conclusions

The primary decision criterion to apply to an investment appraisal is whether the monetised benefits exceed the costs of the project, taking into account the initial capital cost and the ongoing operational cost (i.e., it has a BCR > 1.00).

Of the three options considered, Option 2 has the highest BCR of 0.899 at the standard discount rate of 7%. As this option delivers the greatest benefits at all discount rates and fulfils the project objectives – improving the full road linkage between Karratha and Tom Price – it is the recommended that this option is taken forward for further analysis.

Additionally, as Options 2 and 3 are largely the function of high capital expenditure and road utilisation, a slight positive shift in tourist demand during any of the three phases used to forecast the demand growth would likely lead to a BCR >1.00 for Option 2 at a 7% discount rate. Given the Karratha airport's likely stimulation of international demand, the opening up of stranded resources and improvements in travel efficiency, sealing the road will support the regional economy through employment and the facilitation of stronger community engagement.

GHD

Unit 186 Pelago East Apartments
26 Sharpe Avenue
KARRATHA WA 6714

T: 61 8 9185 0700 E: ktamail@ghd.com



G:\61\35084\WP\REP-B_June Version\6135084-REP-B_Appendix C_Benefit Cost Analysis.docx

Document Status

| Rev No. | Author | Reviewer | | Approved for Issue | | |
|---|---|---|---|---|---|---|
| | | Name | Signature | Name | Signature | Date |
| B | V Noutso T Hibberd | W van Lint | W van Lint* | N Hanrahan | | 05/09/2017 |
| C | W van Lint T Hibberd | W van Lint | W van Lint* | P Tilley | | 08/02/2018 |
| D | P Desborough | P Tilley | | P Tilley | | 08/03/2018 |

* Denotes signed original on file

www.ghd.com

# **Appendix D** – Stakeholders Engaged

| Organisation | Contact Medium | Date First Contacted | Response Received |
|---|---|---|---|
| 26 South Chiro | Meeting / Email / Phone | Feb-17 | Y |
| Ashburton Aboriginal Corporation | Email / Phone | Mar-17 | N |
| Australia Post | Email / Phone | Mar-17 | N |
| BBI Group | Meeting / Email / Phone | Feb-17 | Y |
| Brockman Mines | Email / Phone | Mar-17 | Y |
| Business Centre Pilbara | Meeting / Email | Feb-17 | Y |
| Centurion | Email / Phone | Mar-17 | N |
| Chamber of Commerce and Industry (WA) | Meeting | Jan-17 | Y |
| City of Karratha | Meeting / Email / Phone | Nov-16 | Y |
| Coolawanyah Station | Email / Phone | Mar-17 | Y |
| Curio Corner & Outback Spurs | Meeting | Feb-17 | Y |
| Curtin University | Email / Meeting | Mar-17 | Y |
| Department of Agriculture and Food (WA) | Phone | Jan-17 | Y |
| Department of Mines and Petroleum | Meeting / Email / Phone | Mar-17 | Y |
| Department of Parks and Wildlife (DPAW) | Telephone | Jan-17 | Y |
| Department of Transport | Email / Meeting | Nov-16 | Y |
| Department of Treasury | Email / Meeting | Nov-16 | Y |
| Department of Water | Phone | Dec-16 | Y |
| Eastern Guruma | Email / Phone | Jan-17 | N |
| Emu Creek Station | Email / Phone | Mar-17 | N |
| Environmental Protection Authority | Email / Phone | Mar-17 | Y |
| Fortescue Metal Group Limited | Email / Phone | Mar-17 | Y |
| Hamersley Station | Phone | Mar-17 | N |
| HealthKit | Meeting | Feb-17 | Y |
| Hooley Station | Email / Phone | Mar-17 | N |
| Karratha Chamber of Commerce and Industry (KCCI) | Meeting / Email / Phone | Jan-17 | Y |
| Karratha Senior High School | Email / Phone | Jan-17 | Y |
| Karratha Visitor Centre | Phone / Face-to-face | Jan-17 | Y |
| LE's Photography | Meeting | Feb-17 | Y |
| MacKenzie Freights | Email / Phone | Mar-17 | N |
| Main Roads WA | Meeting / Email / Phone | Dec-16 | Y |
| Main Roads WA, Regional Network Operations | Email / Phone | Nov-16 | Y |
| Murujuga Aboriginal Corporation | Email | Feb-17 | N |
| MKJ Transport | Meeting | Feb-17 | Y |
| Moore 2 Moore Fitness | Meeting | Feb-17 | Y |
| Mt Florence Station | Email | Mar-17 | Y |
| Muzzys Hardware + Beta Electrical | Meeting | Feb-17 | Y |

| Organisation | Contact Medium | Date First Contacted | Response Received |
|---|---|---|---|
| Nintirri Centre | Telephone / Email / Face-to-face | Nov-17 | Y |
| North West Mining & Civil (NWMC) | Meeting | Feb-17 | Y |
| Pilbara Auto 4x4 | Meeting | Feb-17 | Y |
| Pilbara Development Commission | Meeting / Email / Phone | Nov-16 | Y |
| Pilbara Education Regional Office | Email / Phone | Jan-17 | Y |
| Pilbara Food and Transport | Meeting | Feb-17 | Y |
| Pilbara Food Service | Email / Phone | Feb-17 | N |
| Regional Chambers of Commerce & Industry | Phone | Feb-17 | N |
| Regional Development Australia - Pilbara | Phone | Feb-17 | |
| Rio Tinto | Email / Phone | Nov-16 | Y |
| Rio Tinto - Rail Network Maintenance | Email / Phone | Feb-17 | Y |
| Shire of Ashburton | Meeting / Email / Phone | Nov-16 | Y |
| Starfish Swim School | Meeting | Feb-17 | Y |
| Sudexo | Email / Phone | Feb-17 | N |
| Toll | Email / Phone | Mar-17 | N |
| Tom Price Councillors | Meeting | Nov-16 | Y |
| Tom Price Tourist Park | Email / Phone | Feb-17 | Y |
| Tom Price Visitor Centre | Meeting | Jan-17 | Y |
| Tourism WA | Telephone / Email / Face-to-face | Jan-17 | Y |
| WA Country Health - Pilbara Health | Email / Phone | Jan-17 | Y |
| WALGA | Email / Phone | Jan-17 | Y |
| Westpac Tom Price | Phone | Feb-17 | Y |
| Wirlu-murra Yinjibarndi Aboriginal Corporation | Email / Phone | Feb-17 | N |

# **Appendix E** – Risk Assessment

## Risk Assessment

A Risk Assessment workshop was undertaken in conjunction with representatives of the Shire of Ashburton, City of Karratha and the Pilbara Development Commission. The objective was to identify the risks that are present in each stage of the project along with quantifying the significance of their impact.

Table E1 lists the significant risks that have been determined to have a high or extreme risk for the project and a short description. See Table E2 for the Risk Matrix used for risk level in the risk assessment.

There have been a number of controls identified for each risk and are detailed in Table E2. More definitive work is required and risk identification and mitigation will need to be an ongoing process throughout the planning process of the project.

### Table E1 Significant Risks

| Project Risks | Description |
|---|---|
| Funding and financial | Funding options rely heavily on external authorities and industry outside of SoA and CoK. |
| Failure to obtain approval from Rio Tinto for Stage 4A if selected | Discussions with RTIO are needed to occur to mitigate the risk of not being able to construct Stage 4A on or along the access road if chosen. |
| Lack of engagement with Aboriginal communities | Stakeholder interviews identified a potential negative impact toward the Traditional Owners due to easier access to traditional land and sacred areas and, potential positive impact for increased cultural awareness and business opportunities. Although numerous attempts were made to contact the Traditional Owners, no response was received making it difficult to comment on these impacts. As such, this element has not been included in the summary of social impacts. |
| Aligning with political and policy changes | Current government sentiment is in favour of Stage 3 going ahead to be aligned with other opportunities. Risk for undertaking of Stage 4. |
| Failure to align with potential mine expansions | Aligning Stage 3 works is critical feasibility to the road being used for a DIDO workforce for Balla Balla otherwise the alternative of an airstrip will be considered by Balla Balla. |
| Staging risk and which stage commences first | The project stages will be subject to the availability of funding for the roads or if stages will be constructed as stand-along projects. |
| Pastoral lease approvals | Approvals are subject to the final road alignment and if it overlaps on any pastoral lands. |
| Potential asbestos and waste deposits | This risk should be acknowledged and an asbestos risk management plan should be made to mitigate the risk. |
| Design risk | These risk will remain significant during the business case and should be addressed in future through a detailed geotechnical study and a detailed environment, heritage and planning study. |
| Lack of formal agreements | The road is likely to be Main Roads procured subject to discussions. |
| Lack of agreement on ownership and cost of a lesser standard road constructed | The road is likely to be a Main Roads procured project which will reduce these risks. |
| Legal and contractual risks | Who will manage deliver of the project. |
| Staging does not deliver desired outcomes | If the full road is not complete and the benefits are not fully realised. |
| LGAs cease to be aligned to the project | The priority of participants may change over time affecting the involvement of those participants. |
| Existing tourism infrastructure cannot accommodate increased demand | Insufficient infrastructure to accommodate an increased tourism demand |

## Table E2 Karratha-Tom Price Road Risk Matrix

# Karratha Tom Price Road Stage 3 & 4 Business Case and Social Impact Assessment
## Risk Workshop No.1

**RISK IDENTIFICATION**

| Ref No | Risk Description (including nature of impact on the business) | Controls | Maximum Consequence | Likelihood | Risk Level |
|---|---|---|---|---|---|
| | | | | | |
| **1.0** | **Funding and Financial** | | | | |
| 1.1 | Insufficient funds or approvals from government sources | Business case assessment | 5 | C | Extreme |
| 1.2 | Alignment of contributing funding sources | Nil | 4 | C | High |
| 1.3 | MRWA prioritisation of project | Liaison with MRWA | 5 | C | Extreme |
| 1.4 | Accuracy of cost estimates | Existing cost plans | 4 | C | High |
| 1.5 | Definition of road quality | GHD Road Design Reports | 4 | B | High |
| 1.6 | Lack of a mechanism to access corporate contributions | Existing working relationships | 4 | B | High |
| 1.7 | Lack of Ability of LGAs to contribute funding | Current budget position | 2 | C | Medium |
| 1.8 | Lack of funds for PDP and subsequent stages of the project | Nil | 4 | C | High |
| **2.0** | **Stakeholders** | | | | |
| 2.1 | Failure to obtain approval of access road alignment from Rio Tinto (if option is selected) | Current working relationship | 3 | A | High |
| 2.2 | Timing and commitment of stakeholders to the project (BBI) | Monitoring project announcements | 3 | C | Medium |
| 2.3 | Failure of RT to acknowledge the benefits to operations | Current working relationship | 3 | C | Medium |
| 2.4 | Failure of FMG to acknowledge the benefits to operations | Current working relationship | 2 | D | Low |
| 2.5 | Failure of BBI to acknowledge the benefits to operations | Current working relationship | 3 | C | Medium |
| 2.6 | Failure of other stranded deposit owners to acknowledge the benefits to operations | Current limited working relationship | 2 | D | Low |
| 2.7 | Lack of engagement with impacted Aboriginal groups | Current limited working relationship | 3 | C | Medium |
| 2.8 | Lack of engagement with impacted pastoral groups | Current limited working relationship | 4 | B | High |
| 2.9 | MRWA acceptance and support | Liaison at officer level | 5 | B | Extreme |
| 2.10 | Lack of continued bi-partisian politcal support | Current working relationship | 2 | D | Low |
| 2.11 | Aboriginal communities concern about increased inappropriate access | Nil | 4 | C | High |
| 2.12 | Tourism use projections unachieved (particularly international flights in Karratha) | Monitor tourism KPI's | 3 | D | Medium |
| **3.0** | **Program** | | | | |
| 3.1 | Aligning with political and policy changes | Monitoring Govt policies | 4 | C | High |
| 3.2 | Failure to align with potential mine expansions | Current working relationshups | 4 | B | High |
| 3.3 | Fails to contribute to the region's current tourism initiatives | Post project promotion of the project | 2 | D | Low |
| 3.4 | Staging risk and which stage commences first | SoA Infrastructure Services advice | 4 | B | High |
| 3.5 | Blowout in timing for obtaining approvals | Establish an approvals register | 3 | C | Medium |
| **4.0** | **Approvals - Planning and Environmental** | | | | |
| 4.1 | Stage 3 Millstream, DPaW approval | Early liaison with DPaW | 5 | D | High |
| 4.2 | Potential ETC areas and heritage sites (assuming exising road alignments) | Environmental study in planning stage | 3 | D | Medium |
| 4.3 | Pastoral lease approvals | Early liaison with Dept of Lands | 5 | C | Extreme |
| 4.4 | Currency of previous approvals | Review as part of Bus Case | 2 | C | Medium |
| 4.5 | Potential asbestos and waste deposits | Environmental study in planning stage | 4 | C | High |
| 4.6 | P1 water detection zone approvals | Early liason with Dept of Water | 2 | D | Low |
| 4.7 | Land tenure implications (for existing alignment) | Early liaison with Dept of Lands | 2 | C | Medium |
| 4.8 | Lack of support with impacted Aboriginal groups | Limited working relationship | 3 | C | Medium |
| 4.9 | Lack of support with impacted pastoral groups | Limited working relationship | 3 | D | Medium |
| **5.0** | **Design** | | | | |
| 5.1 | Agreement on the Stage 4 Option | Outcomes of this bus case | 5 | D | High |
| 5.2 | Standard for road road construction (All weather) | Assumptions in GHD reports | 4 | B | High |
| 5.3 | RAV rating agreement | Assumptions in GHD reports | 4 | B | High |
| 5.4 | Design for future ownership - MRWA acceptance | Liaison with MRWA | 4 | B | High |
| 5.5 | Confidence requirements for design cost | Cost plan revision after planning stage | 4 | C | High |
| 5.6 | Timeframe for design phase | Outcomes of this bus case | 2 | C | Medium |
| 5.7 | Failure to identify all of the sensitive sites/obstructions | Environmental study in planning stage | 3 | B | High |
| 5.8 | Life expectancy of the roads is insufficient | Assumptions in GHD reports | 5 | D | High |
| 5.9 | Stage 4 Option 1 - Rio Tinto design requirements | Current working relationship | 3 | A | High |
| **6.0** | **Procurement** | | | | |
| 6.1 | Project governance for design and construction phases | Outcome of bus case | 3 | D | Medium |

# Karratha Tom Price Road Stage 3 & 4 Business Case and Social Impact Assessment
## Risk Workshop No.1

**RISK IDENTIFICATION**

| Ref No | Risk Description (including nature of impact on the business) | Controls | Maximum Consequence | Likelihood | Risk Level |
|---|---|---|---|---|---|
| 6.2 | Lack of formal agreements | Develop during planning stage | 5 | C | Extreme |
| 6.3 | Alignment of multiple funding agencies | Develop during planning stage | 3 | B | High |
| 6.4 | Variablity of market conditions | Monitor current economic environment | 3 | C | Medium |
| 6.5 | Agreement on exact procurement model | | 2 | C | Medium |
| **7.0** | **Construction** | | | | |
| 7.1 | Acid-Sulphate soils - increase cost | Further study required | 1 | D | Low |
| 7.2 | Weather | Climatic history | 4 | B | High |
| 7.3 | Lack of information regarding geotechical (on chosen route) | Generic mapping information | 4 | B | High |
| 7.4 | Agreement on sequencing of stages | SoA Infrastructure Services group advice | 2 | D | Low |
| 7.5 | Temperaures for sealing | Climatic history | 2 | C | Medium |
| 7.6 | Water availability | Generic mapping information | 2 | E | Low |
| 7.7 | Borrow pits availability | Generic mapping information | 2 | E | Low |
| 7.8 | Traffic management complexities | SoA Infrastructure Services group advice | 2 | E | Low |
| 7.9 | Heritage findings | Generic mapping information | 2 | E | Low |
| **8.0** | **Operations and Maintenance Issues** | | | | |
| 8.1 | Lack of agreement on ownership | | 5 | C | Extreme |
| 8.2 | Costs if a lesser standard road is constructed | SoA Infrastructure Services group advice | 4 | B | High |
| 8.3 | Lack of understanding of ongoing maintenance cost of a sealed road | SoA Infrastructure Services group advice | 3 | D | Medium |
| 8.4 | Lack of ability to enter agreements with road maintenance | Nil | 3 | C | Medium |
| 8.5 | Resources to manage stakeholder agreements | SoA | 1 | E | Low |
| **9.0** | **Resourcing** | | | | |
| 9.1 | SoA staffing support and governance for both design and construction phase | Include the cost in the project budget | 1 | E | Low |
| 9.2 | Expertise and resources to secure stakeholder agreement | Include in feasbility budgets | 1 | E | Low |
| **10.0** | **Legal and Contractual** | | | | |
| 10.1 | Governance with multiple parties | Nil | 3 | B | High |
| 10.2 | Complexity of arrangements | Nil | 3 | B | High |
| 10.3 | Lack of expertise and resources for potential contractual disputes | SoA Infrastructure Services group advice | 2 | D | Low |
| **11.0** | **Reputational** | | | | |
| 11.1 | Poor provision for major tourism attractions | Liaison with DPaW & Tourism WA | 2 | D | Low |
| 11.2 | Inability to activate road (economic benefits fail to be realised) | Monitor tourism visitation | 2 | D | Low |
| 11.3 | Staging does not deliver outcomes (Incomplete sections of road) | Nil | 4 | A | Extreme |
| 11.4 | Failure to deliver on Indigenous Economic Opportunities | Monitor Indigenous involvement | 3 | C | Medium |
| **12.0** | **Political and Market** | | | | |
| 12.1 | LGAs cease to be aligned to the project | Liaison with City of Karratha | 4 | D | High |
| **13.0** | **Social and Economic** | | | | |
| 13.1 | Existing tourism infrastructure can not accommodate increased demand | Monitor current visitation | 3 | B | High |
| 13.2 | Failure to deliver on Indigenous Economic Opportunities | Monitor Indigenous involvement | 3 | C | Medium |
| 13.3 | Failure to capitalise on tourism economic growth opportunities | Monitor current visitation | 3 | C | Medium |
| 13.4 | Government services remain expensive to deliver | | 2 | C | Medium |
| **14.0** | **Safety** | | | | |
| | | | | | |
| | | **Total** | **7** | | **Extreme** |
| | | **Total** | **29** | | **High** |

# **Appendix F** – Cost Estimates

03 May 2017

Anika Serer
Executive Manager
Shire of Ashburton
PO Box 567
Tom Price WA 6751

Our ref: 61/35084/00 1486
Your ref:

Dear Anika

**Karratha to Tom Price Road**
**Project Budget Estimation for Stages 3 and 4**

As part of Karratha to Tom Price Road (KTP) Stages 3 & 4 Cost Benefit and Social Impact Assessment project, GHD has been requested to review the likely cost of construction for the road. Stage 3 has a fixed alignment, however Stage 4 has two options for consideration, Rail Alignment and Public Road Alignment, each of which has a different level of background information.

This letter presents the high level budget estimates for the works, and notes on the methodology undertaken.

The high level numbers are as follows:

- Stage 3 – 48 km long: $ 77 Million Dollars.
- Stage 4 – Option 1 Railway – 107 km long: $ 255 Million Dollars.
- Stage 4 – Option 2 Public Road - 165 km long: $ 355 Million Dollars.

## 1 Methodology

### 1.1 Stage 3 and Stage 4 (Option 1 – Railway)

The quantities for Stage 3 and Stage 4 (Option 1 – Railway) have been based on the geometric design prepared by the Millstream Link Alliance. The design cross section has been updated to provide a road more in line with current Main Roads WA Practice. The batter slopes less than 3 m high have been flattened from 1V:3H to 1V:4H to provide lower vehicle rollover risk. The road formation has been widened to meet current rural minimums being a 9 m seal on an 11 m formation.

Once the geometric model was updated to reflect these amendments, revised earthworks and pavement quantities were provided to the cost estimator.

**GHD Pty Ltd** ABN 39 008 488 373
Unit 186 26 Sharpe Ave Karratha WA 6714 Australia
**T** 61 8 9920 9407 **F** 61 8 9920 9499 **E** ktamail@ghd.com **W** www.ghd.com

The drainage requirements along the route were taken directly from the design previously prepared by the Millstream Link Alliance. There were few opportunities to reduce waterway treatments at this stage, and we would recommend that the next phase of project assessment test the level of service to be met in large storm events.

Earthworks embankment and pavement material haulage distances were estimated based on average hall lengths on similar projects in the Pilbara with some consideration of the regional geological mapping.

The Stage 3 alignment fundamentally follows the existing unsealed road and has limited earthworks requirements, nominally $450,000 per kilometre. In contrast the alignment for Stage 4 (Option 1 – Railway) in short sections it follows a secondary maintenance track on the east side of the Karratha Tom Price Railway, and has earthworks costs in the order of $750,000 per kilometre.

### 1.2 Stage 4 (Option 2 – Public Road)

There has not been any design development along the existing public road alignment to date. In the absence of any design, or detailed survey data, GHD undertook the following methodology:

- The existing public road alignment was taken from Main Roads WA GIS data set and checked against recent aerial photography provided by Shire of Ashburton. A horizontal alignment was then imported to our design software.
- The corners on the alignment were checked against a design speed of 110 km/hr to assess the length of realignment that may be required. This amounted to 34 km of the total 164 km length where the new road will depart from the existing by more than 5 m (completely new formation).
- The state wide 10 m interval contour data was obtained, and the road alignment overlain to assess where significant cut and fill operations may be warranted.
- This identified a 10 km section through the ranges including the Rio Tinto gorge where significant work is required.
- Finally, site photo records were reviewed to assess the condition of the current formation. It is clear from these records that the existing road is quite low, and is likely subject to inundation in many locations.
- Based on the site photo records and vertical contour data it was evident that the extent of cut and fill along the majority of the Stage 4 (Option 2 - Public Road) alignment would be very similar to the first 20 km of the Stage 4 (Option 1 – Railway) preliminary design.
- As such, the earthworks allowance for Stage 4 (Option 2 - Public Road) was assessed on a “per kilometre” rate equivalent to the start of Stage 4 (Option 1 – Railway).
- Earthworks and pavement material haulage distances were again assessed as similar to other Pilbara projects, with consideration that sections of the Stage 4 (Option 2 - Public Road) alignment are further from likely suitable gravel sources.

The result of the above methodology is that the Stage 4 (Option 2 - Public Road) has an earthworks costs in the order of $780,000 per kilometre.

It is understood that earlier assessments of Stage 4 (Option 2 - Public Road) have assumed the existing public road could be adopted on its existing alignment with little to no earthworks beyond construction of a sealed pavement. The study undertaken by GHD indicates that this assumption is unlikely to be realistic, and hence a greater allowance for earthworks is warranted.

With respect to drainage construction estimates, GHD undertook a detailed aerial photo review along Stage 4 (Option 2 - Public Road), with reference to site photography. At each waterway our engineers assessed its similarity to waterways along the Stage 4 (Option 1 – Railway) alignment and the level of treatment on similar crossings was adopted for the Stage 4 (Option 2 - Public Road). This resulted in an assessment that Stage 4 (Option 2 - Public Road) would require about 350 large culverts, 100 floodways. By comparison Stage 4 (Option 1 - Railway) requires about 250 large culverts and 25 floodways.

The crossing of the Fortescue River was assessed as potentially having less concentrated flow on the Stage 4 (Option 2 - Public Road) alignment than Stage 4 (Option 1 - Railway), and could be managed as a series of floodways and large culverts. As such, no allowance for a significant bridge has been made in the Stage 4 (Option 2 - Public Road) estimate. Such a bridge may warrant an allowance of $15 million dollars.

## 2 Estimate

The quantities derived from the above methodology have been reviewed by Davson Ward and a cost for delivery of the project options developed.

The details of the cost estimates are attached, including a list of conditions and exemptions underlying the estimate process.

These estimates include a project contingency allowance of 20%, however the level of detail available for each option is different and this impacts the level of uncertainty which should be allowed at this early stage.

These estimates do not make any comparative judgement on the level of uncertainty, and are based only on the quantities advice prepared by our engineering team.

A key finding of the estimating process is that the highest cost items for the construction are the embankment and pavement materials. Stage 4 (Option 2 – Public Road) is more than 50 km longer than Stage 4 (Option 1 – Railway), this is the key reason for the comparative cost difference between these options.

## 3 Conclusion

The preliminary cost estimates have been prepared with limited information, particularly Stage 4 (Option 2 - Public Road).

We strongly recommend the basis of design for Stage 3 and Stage 4 (Option 1 – Railway) be reviewed to bring these designs in line with current practice, and assess the service levels required at waterways.

Further, a preliminary design of the Stage 4 (Option 2 - Public Road) should be undertaken to confirm the volume of earthworks, and extent of waterway treatment. Particular attention should be given to the Fortescue River crossing on this option to confirm that a “no bridge” solution can indeed work.

These additional activities have the potential to reduce the project outturn cost, and will certainly provide a greater degree of confidence for project budget estimates.

Sincerely
GHD Pty Ltd

**Adam Wilmot**
Principal Design Manager – Roads

The Cost Estimate has been prepared for the purpose of high level comparison of development options and must not be used for any other purpose.

The Cost Estimate is a preliminary estimate only. Actual prices, costs and other variables may be different to those used to prepare the Cost Estimate and may change. Unless as otherwise specified in this report, no detailed quotation has been obtained for actions identified in this report. GHD does not represent, warrant or guarantee that the projects can or will be undertaken at a cost which is the same or less than the Cost Estimate.

Where estimates of potential costs are provided with an indicated level of confidence, notwithstanding the conservatism of the level of confidence selected as the planning level, there remains a chance that the cost will be greater than the planning estimate, and any funding would not be adequate. The confidence level considered to be most appropriate for planning purposes will vary depending on the conservatism of the user and the nature of the project. The user should therefore select appropriate confidence levels to suit their particular risk profile.

# PRELIMINARY COST INDICATION

## KARRATHA TO TOM PRICE ROAD (M065)
## STAGE 3 - CH 488.1 TO 536.1

## for Shire of Ashburton

GHD Job No:61-35084

**Job No.: A2985**

13 April, 2017

Davson+Ward
QUANTITY SURVEYORS & CONSTRUCTION COST CONSULTANTS

# KARRATHA TO TOM PRICE ROAD (M065)
# STAGE 3 - CH 488.1 TO 536.1

## CONDITIONS & EXCLUSIONS

**1.00 This Cost Indication is conditioned as follows:**

1.01 These prices are current as at April 1, 2017 and are based on the rate currently used in similar contracts for MRWA

1.02 No escalation of cost has been incorporated beyond April 1, 2017

**2.00 This Cost Indication excludes the cost of the following:**

2.01 Removal of asbestos

2.02 The value of Principal supplied items including searching for and stockpiling of embankment construction and pavement construction materials

2.03 Allowances of accelerated construction periods

2.04 Holding Costs and interest charges

2.05 Time extension costs

2.06 Legal fees

2.07 Allowances for charges and costs levied by Authorities, Councils and Service Bodies

2.08 Aboriginal heritage, cultural and native title issues

2.09 Environmental obligations and clearances

2.10 Geotechnical investigations

2.11 PTA administrative charges including corporate overheads, etc

2.12 Redevelopment work of surplus land prior to disposal

2.13 Loss of business claims

2.14 Increased costs due to labour shortages in the Region

2.15 Increase in tender prices due to the current over supply of work for Contractors

## KARRATHA TO TOM PRICE ROAD (M065)
## STAGE 3 - CH 488.1 TO 536.1
## GHD Job No: 61-35084

# SUMMARY

| | | |
|---|---|---|
| SCHEDULE No. 1 - GENERAL ITEMS (31% approx) | | $16,620,082.00 |
| SCHEDULE No. 2 - ROADWORKS | | |
| SERIES 300 - EARTHWORKS | $21,360,590.01 | |
| SERIES 400 - DRAINAGE | $12,656,502.20 | |
| SERIES 500 - PAVEMENT & SURFACING | $7,355,574.10 | |
| SERIES 600 - TRAFFIC FACILITIES | $996,350.75 | |
| SERIES 900 - MISCELLANEOUS | $2,340,151.00 | $44,709,168.06 |
| CONTINGENCY (20% approx.) | | $8,904,000.00 |
| GST EXCLUSIVE AMOUNT | | $70,233,250.06 |
| ESTIMATED GST PAYABLE | | $7,023,325.01 |
| **TOTAL OF PRELIMINARY COST INDICATION Dated April 13, 2017** | | **$77,256,575.07** |

# SCHEDULE No. 1 - GENERAL ITEMS

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **CONDITIONS OF CONTRACT** | | | | |
| GCC | **GENERAL CONDITIONS OF CONTRACT** | | | | |
| GCC.01 | Insurances in accordance with the General Conditions of Contract | Item | 1 | | Incl |
| GCC.02 | Contractor's superintendence during the execution of the Works | Item | 1 | $16,620,082.00 | $16,620,082.00 |
| GCC.03 | All charges, costs and obligations relating to the General Conditions of Contract not provided for elsewhere | Item | 1 | | Incl |
| | **SPECIAL CONDITIONS OF CONTRACT** | | | | |
| SCC.01 | All charges, costs and obligations relating to the Special Conditions of Contract not provided for elsewhere | Item | 1 | | Incl |
| | **SERIES 100 - GENERAL REQUIREMENTS** | | | | |
| 101.00 | **DESCRIPTION OF WORKS** | | | | |
| 101.01 | Provision of access for others to undertake work | Item | 1 | | Incl |
| 101.02 | Contractors programs | Item | 1 | | Incl |
| 101.03 | Project works sign | No. | | | Incl |
| | **102 SURVEY INFORMATION** | | | | |
| 102.01 | Survey information, control and setting out of the works | Item | 1 | | Incl |
| | **103 SITE FACILITIES** | | | | |
| | Contractors Site Facilities | | | | |
| 103.01 | Provision of Contractor's site facilities | Item | 1 | | Incl |
| 103.02 | Maintenance of Contractor's site facilities | Item | 1 | | Incl |
| 103.03 | Removal of Contractor's site facilities | Item | 1 | | Incl |
| | Superintendent's Site Facilities | | | | |
| 103.04 | Provision of the Superintendent site facilities | Item | 1 | | Incl |
| 103.05 | Maintenance of the Superintendent site facilities | Item | 1 | | Incl |
| 103.06 | Removal of the Superintendent site facilities | Item | 1 | | Incl |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | Superintendent's Living Facilities | | | | |
| 103.07 | Provision of the Superintendent living facilities | Item | 1 | | Incl |
| 103.08 | Maintenance of the Superintendent living facilities | Item | 1 | | Incl |
| 103.09 | Removal of the Superintendent living facilities | Item | 1 | | Incl |
| 103.10 | Superintendent's meals | M/day | | | Incl |
| | **104 ENTRY TO LAND** | | | | |
| 104.01 | Entry to land | Item | 1 | | Incl |
| | **105 WATER SUPPLIES** | | | | |
| 105.01 | Supply of water | Item | 1 | | Incl |
| | **106 UTILITIES AND SERVICES** | | | | |
| 106.01 | Liaison, programming, location and protection of utilities and services | Item | 1 | | Incl |
| 106.02 | Relocation of ? mains | Item | 1 | | Incl |
| 106.03 | Relocation of existing street lighting | Item | 1 | | Incl |
| | **SERIES 200 - MANAGEMENT REQUIREMENTS** | | | | |
| | **202 - TRAFFIC** | | | | |
| 202.01 | Traffic management | Item | 1 | | Incl |
| 202.02 | Traffic control devices | Item | 1 | | Incl |
| 202.03 | Traffic controllers | Item | 1 | | Incl |
| 202.04 | Construction, maintenance and removal of sidetracks, temporary driving surfaces and temporary pedestrian access | Item | 1 | | Incl |
| 202.05 | Maintenance of existing roads | Item | 1 | | Incl |
| | **203 - OCCUPATIONAL SAFETY AND HEALTH** | | | | |
| 203.01 | Occupational safety and health including safety plans and safety audits | Item | 1 | | Incl |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **204 - ENVIRONMENT** | | | | |
| 204.01 | Protection, preservation and monitoring of Aboriginal sites | Item | 1 | | Incl |
| 204.02 | Protection of flora and fauna | Item | 1 | | Incl |
| 204.03 | Fire prevention | Item | 1 | | Incl |
| 204.04 | Waste disposal | Item | 1 | | Incl |
| 204.05 | Dieback control | Item | 1 | | Incl |
| 204.06 | Protection of public and property | Item | 1 | | Incl |
| 204.07 | Pre-construction property inspections | No. | 1 | | Incl |
| 204.08 | Dust control | Item | 1 | | Incl |
| | To Summary | | | | $16,620,082.00 |

## SCHEDULE No. 2 - ROADWORKS

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **SERIES 300 - EARTHWORKS** | | | | |
| | **301 - CLEARING** | | | | |
| 301.01 | Site clearing | ha | 129.7 | $9,875.00 | $1,280,787.50 |
| | **302 - EARTHWORKS** | | | | |
| | TOPSOILING | | | | |
| | Topsoil Removal | | | | |
| 302.01 | Topsoil removal, ? deep | ha | 120.1 | $9,245.00 | $1,110,324.50 |
| | Topsoil Spreading | | | | |
| 302.03 | Respread topsoil, ? thick | ha | 103.3 | $5,675.00 | $586,227.50 |
| | UNSUITABLE MATERIAL | | | | |
| 302.04 | Excavation and removal of unsuitable material (PROVISIONAL QUANTITY) | m³ | 5,000 | $16.75 | $83,750.00 |
| 302.05 | Backfilling unsuitable material excavations with site excavated material or imported material (PROVISIONAL QUANTITY) | m³ | 5,000 | $17.50 | $87,500.00 |
| | EXCAVATION IN ROCK | | | | |
| 302.06 | Excavation and removal of rock | m³ | 85,000 | $26.50 | $2,252,500.00 |
| | EMBANKMENT CONSTRUCTION | | | | |
| 302.07 | Embankment foundation compaction | m² | 847,924 | $1.45 | $1,229,489.80 |
| 302.08 | Embankment construction using site excavated material and imported material | m³ | 770,197 | $15.68 | $12,076,688.96 |
| | SUBGRADE | | | | |
| 302.09 | Subgrade | m² | 516,955 | $2.85 | $1,473,321.75 |
| | **303 - PITS AND QUARRIES** | | | | |
| | EMBANKMENT MATERIAL BORROW PITS | | | | |
| 303.01 | Establishment of embankment material borrow pits | Item | 1 | $350,000.00 | $350,000.00 |
| 303.02 | Reinstatement of embankment material borrow pits | Item | 1 | $415,000.00 | $415,000.00 |
| 303.03 | Establishment of basecourse gravel material borrow pits | Item | 1 | $220,000.00 | $220,000.00 |
| 303.04 | Reinstatement of basecourse material borrow pits | Item | 1 | $195,000.00 | $195,000.00 |
| | To Summary | | | | $21,360,590.01 |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **SERIES 400 - DRAINAGE** | | | | |
| | **402 - SURFACE DRAINS AND LEVEES** | | | | |
| | SURFACE DRAINS AND LEVEES | | | | |
| 402.01 | Allow for surface drains and levees (Based on the area of sealing) | m2 | 383,434 | $5.25 | $2,013,028.50 |
| | **404 - CULVERTS** | | | | |
| | CULVERTS | | | | |
| | Corrugated Steel Pipes | | | | |
| 404.01 | 600 Diameter pipe culvert | m | 358 | $215.65 | $77,202.70 |
| 404.02 | 900 Diameter pipe culvert | m | 284 | $276.00 | $78,384.00 |
| 404.03 | 1200 Diameter pipe culvert | m | 351 | $335.00 | $117,585.00 |
| 404.04 | 1500 Diameter pipe culvert | m | 485 | $475.00 | $230,375.00 |
| 404.05 | 1800 Diameter pipe culvert | m | 192 | $678.00 | $130,176.00 |
| 404.06 | 2100 Diameter pipe culvert | m | 1,079 | $765.00 | $825,435.00 |
| 404.07 | 2250 Diameter pipe culvert | m | 186 | $986.00 | $183,396.00 |
| | Reinforced Concrete Box Sections | | | | |
| 404.08 | 1200 x 375 Box culvert | m | 147 | $575.00 | $84,525.00 |
| 404.09 | 1200 x 450 Box culvert | m | 287 | $725.00 | $208,075.00 |
| 404.10 | 1200 x 600 Box culvert | m | 56 | $900.00 | $50,400.00 |
| 404.11 | 1200 x 1200 Box culvert | m | 658 | $1,250.00 | $822,500.00 |
| | All Culverts | | | | |
| 404.04 | Selected bedding material | m³ | 1,951 | $250.00 | $487,750.00 |
| 404.05 | Extra over culverts for cement stabilised backfill | m³ | 6,006 | $455.00 | $2,732,730.00 |
| 404.06 | Reinforced concrete base slab and shear keys | m³ | 125 | $2,765.00 | $345,625.00 |
| 404.07 | Reinforced concrete insitu end treatment | m³ | 75 | $2,765.00 | $207,375.00 |
| | **406 - ROCK PROTECTION** | | | | |
| 406.01 | 750 Thick Light Class Rock protection to embankments of floodways | m² | 1,440 | $125.00 | $180,000.00 |
| 406.02 | 1000mm Thick 1/4 Tonne Class Rock protection to embankments of floodways | m² | 10,770 | $150.00 | $1,615,500.00 |
| 406.03 | 220 Thick cement stabilised basecourse to embankments of floodways | m² | 28,995 | $22.00 | $637,890.00 |
| 406.04 | Rock protection to culvert inlet / outlet | m3 | 200 | $76.00 | $15,200.00 |
| 406.05 | Rock protection to CSP culvert inlet / outlet | m3 | 225 | $76.00 | $17,100.00 |
| 406.06 | Rock protection to CSP culvert inlet / outlet | m3 | 1,500 | $76.00 | $114,000.00 |
| 406.07 | Plain concrete edge wall to floodway | m3 | 539 | $2,750.00 | $1,482,250.00 |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | To Summary | | | | $12,656,502.20 |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **SERIES 500 - PAVEMENT & SURFACING** | | | | |
| | **501 - PAVEMENTS** | | | | |
| | BASECOURSE | | | | |
| 501.01 | 150mm Thick gravel basecourse | m² | 351,549 | $9.50 | $3,339,715.50 |
| 501.02 | 220mm Thick gravel basecourse to floodways and floodway approaches | m² | 80,946 | $12.60 | $1,019,919.60 |
| | PAVEMENT STABILISATION | | | | |
| 501.03 | Extra over gravel pavement for cement stabilisation, 220 deep to Floodways and floodway approaches | m² | 80,946 | $12.50 | $1,011,825.00 |
| | **503 - BITUMINOUS SURFACING** | | | | |
| | ROADWORKS | | | | |
| | Primerseal | | | | |
| 503.01 | Single coat primerseal with BAR of ? litres/m² and ?mm aggregate | m² | 393,434 | $3.50 | $1,377,019.00 |
| | Seal | | | | |
| 503.03 | First coat seal with BAR of ? litres/m² and 14mm aggregate | m² | 80,946 | $3.65 | $295,452.90 |
| 503.06 | Second coat seal with BAR of ? litres/m² and 10mm aggregate | m² | 80,946 | $3.85 | $311,642.10 |
| | To Summary | | | | $7,355,574.10 |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **SERIES 600 - TRAFFIC FACILITIES** | | | | |
| | **601 - SIGNS** | | | | |
| 601.01 | Allowance for signage (based on area of primerseal) | m2 | 393,434 | $0.25 | $98,358.50 |
| | **602 - GUIDE POSTS** | | | | |
| 602.01 | Guide post (Based on area of basecourse) | m2 | 432,495 | $0.15 | $64,874.25 |
| | **603 - ROAD SAFETY BARRIER SYSTEMS** | | | | |
| | BARRIER | | | | |
| 603.01 | Wire rope Barrier | m | 370 | $125.00 | $46,250.00 |
| | **604 - PAVEMENT MARKING** | | | | |
| | ROAD PAVEMENT MARKINGS | | | | |
| 604.01 | Allowance for linemarking (based on area of primerseal) | m2 | 393,434 | $2.00 | $786,868.00 |
| | To Summary | | | | $996,350.75 |
| | **SERIES 900 - MISCELLANEOUS** | | | | |
| | **900 - PARKING BAYS AND REST AREAS** | | | | |
| 900.01 | Allowance for parking bays and rest areas (Based on area of primerseal) | m2 | 393,434 | $1.50 | $590,151.00 |
| | **AT GRADE RAIL CROSSING** | | | | |
| 900.02 | Allow the Provisional sum of $1,150,000.00 (One million one hundred and Fifty Thousand dollars) for the cost of an at grade rail crossing complete | P.S. | 1 | $1,150,000.00 | $1,150,000.00 |
| | **SERVICE RELOCATIONS** | | | | |
| 900.03 | Allow the Provisional sum of $600,000.00 (Six hundred Thousand dollars) for the cost ofWestern Power and Telstra service relocations | P.S. | 1 | $600,000.00 | $600,000.00 |
| | To Summary | | | | $2,340,151.00 |

# PRELIMINARY COST INDICATION

## KARRATHA TO TOM PRICE ROAD (M065)
## STAGE 4 - OPTION 1 - RAILWAY

## for Shire of Ashburton

GHD Job No: 61-35084

**Job No.: A2985**

19 April, 2017

Davson+Ward
QUANTITY SURVEYORS & CONSTRUCTION COST CONSULTANTS

# KARRATHA TO TOM PRICE ROAD (M065)
# STAGE 4 - OPTION 1 - RAILWAY

## CONDITIONS & EXCLUSIONS

**1.00 <u>This Cost Indication is conditioned as follows:</u>**

1.01 These prices are current as at April 1, 2017 and are based on the rate currently used in similar contracts for MRWA

1.02 No escalation of cost has been incorporated beyond April 1, 2017

**2.00 <u>This Cost Indication excludes the cost of the following:</u>**

2.01 Removal of asbestos

2.02 The value of Principal supplied items including searching for and stockpiling of embankment construction and pavement construction materials

2.03 Allowances of accelerated construction periods

2.04 Holding Costs and interest charges

2.05 Time extension costs

2.06 Legal fees

2.07 Allowances for charges and costs levied by Authorities, Councils and Service Bodies

2.08 Aboriginal heritage, cultural and native title issues

2.09 Environmental obligations and clearances

2.10 Geotechnical investigations

2.11 PTA administrative charges including corporate overheads, etc

2.12 Redevelopment work of surplus land prior to disposal

2.13 Loss of business claims

2.14 Increased costs due to labour shortages in the Region

2.15 Increase in tender prices due to the current over supply of work for Contractors

## KARRATHA TO TOM PRICE ROAD (M065)
## STAGE 4 - OPTION 1 - RAILWAY
## GHD Job No: 61-35084

# SUMMARY

| | | |
|---|---|---|
| SCHEDULE No. 1 - GENERAL ITEMS (31% approx) | | $47,533,968.85 |
| SCHEDULE No. 2 - ROADWORKS | | |
| SERIES 300 - EARTHWORKS | $81,226,803.34 | |
| SERIES 400 - DRAINAGE | $24,075,276.75 | |
| SERIES 500 - PAVEMENT & SURFACING | $14,295,136.10 | |
| SERIES 600 - TRAFFIC FACILITIES | $4,664,352.69 | |
| SERIES 900 - MISCELLANEOUS | $29,073,814.50 | $153,335,383.38 |
| CONTINGENCY (20% approx.) | | $30,667,076.68 |
| GST EXCLUSIVE AMOUNT | | $231,536,428.90 |
| ESTIMATED GST PAYABLE | | $23,153,642.89 |
| **TOTAL OF COST INDICATION** | | **$254,690,071.79** |

# SCHEDULE No. 1 - GENERAL ITEMS

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **CONDITIONS OF CONTRACT** | | | | |
| GCC | **GENERAL CONDITIONS OF CONTRACT** | | | | |
| GCC.01 | Insurances in accordance with the General Conditions of Contract | Item | 1 | | Incl |
| GCC.02 | Contractor's superintendence during the execution of the Works | Item | 1 | $47,533,968.85 | $47,533,968.85 |
| GCC.03 | All charges, costs and obligations relating to the General Conditions of Contract not provided for elsewhere | Item | 1 | | Incl |
| | **SPECIAL CONDITIONS OF CONTRACT** | | | | |
| SCC.01 | All charges, costs and obligations relating to the Special Conditions of Contract not provided for elsewhere | Item | 1 | | Incl |
| | **SERIES 100 - GENERAL REQUIREMENTS** | | | | |
| 101.00 | **DESCRIPTION OF WORKS** | | | | |
| 101.01 | Provision of access for others to undertake work | Item | 1 | | Incl |
| 101.02 | Contractors programs | Item | 1 | | Incl |
| 101.03 | Project works sign | No. | | | Incl |
| | **102 SURVEY INFORMATION** | | | | |
| 102.01 | Survey information, control and setting out of the works | Item | 1 | | Incl |
| | **103 SITE FACILITIES** | | | | |
| | Contractors Site Facilities | | | | |
| 103.01 | Provision of Contractor's site facilities | Item | 1 | | Incl |
| 103.02 | Maintenance of Contractor's site facilities | Item | 1 | | Incl |
| 103.03 | Removal of Contractor's site facilities | Item | 1 | | Incl |
| | Superintendent's Site Facilities | | | | |
| 103.04 | Provision of the Superintendent site facilities | Item | 1 | | Incl |
| 103.05 | Maintenance of the Superintendent site facilities | Item | 1 | | Incl |
| 103.06 | Removal of the Superintendent site facilities | Item | 1 | | Incl |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | Superintendent's Living Facilities | | | | |
| 103.07 | Provision of the Superintendent living facilities | Item | 1 | | Incl |
| 103.08 | Maintenance of the Superintendent living facilities | Item | 1 | | Incl |
| 103.09 | Removal of the Superintendent living facilities | Item | 1 | | Incl |
| 103.10 | Superintendent's meals | M/day | | | Incl |
| | **104 ENTRY TO LAND** | | | | |
| 104.01 | Entry to land | Item | 1 | | Incl |
| | **105 WATER SUPPLIES** | | | | |
| 105.01 | Supply of water | Item | 1 | | Incl |
| | **106 UTILITIES AND SERVICES** | | | | |
| 106.01 | Liaison, programming, location and protection of utilities and services | Item | 1 | | Incl |
| 106.02 | Relocation of ? mains | Item | 1 | | Incl |
| 106.03 | Relocation of existing street lighting | Item | 1 | | Incl |
| | **SERIES 200 - MANAGEMENT REQUIREMENTS** | | | | |
| | **202 - TRAFFIC** | | | | |
| 202.01 | Traffic management | Item | 1 | | Incl |
| 202.02 | Traffic control devices | Item | 1 | | Incl |
| 202.03 | Traffic controllers | Item | 1 | | Incl |
| 202.04 | Construction, maintenance and removal of sidetracks, temporary driving surfaces and temporary pedestrian access | Item | 1 | | Incl |
| 202.05 | Maintenance of existing roads | Item | 1 | | Incl |
| | **203 - OCCUPATIONAL SAFETY AND HEALTH** | | | | |
| 203.01 | Occupational safety and health including safety plans and safety audits | Item | 1 | | Incl |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **204 - ENVIRONMENT** | | | | |
| 204.01 | Protection, preservation and monitoring of Aboriginal sites | Item | 1 | | Incl |
| 204.02 | Protection of flora and fauna | Item | 1 | | Incl |
| 204.03 | Fire prevention | Item | 1 | | Incl |
| 204.04 | Waste disposal | Item | 1 | | Incl |
| 204.05 | Dieback control | Item | 1 | | Incl |
| 204.06 | Protection of public and property | Item | 1 | | Incl |
| 204.07 | Pre-construction property inspections | No. | 1 | | Incl |
| 204.08 | Dust control | Item | 1 | | Incl |
| | To Summary | | | | $47,533,968.85 |

# SCHEDULE No. 2 - ROADWORKS

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **SERIES 300 - EARTHWORKS** | | | | |
| | **301 - CLEARING** | | | | |
| 301.01 | Site clearing | ha | 294.8 | $9,875.00 | $2,911,150.00 |
| | **302 - EARTHWORKS** | | | | |
| | TOPSOILING | | | | |
| | Topsoil Removal | | | | |
| 302.01 | Topsoil removal, 75 deep | ha | 273.0 | $9,245.00 | $2,523,885.00 |
| | Topsoil Spreading | | | | |
| 302.03 | Respread topsoil, 75 thick | ha | 196.6 | $5,675.00 | $1,115,705.00 |
| | REMOVAL OF REDUNDANT ITEMS | | | | |
| 302.04 | Marking out and cutting edge along junction between new pavement and existing pavement including trimming existing pavement layers as required to bond to new pavement | m | 16 | $17.50 | $280.00 |
| | UNSUITABLE MATERIAL | | | | |
| 302.05 | Excavation and removal of unsuitable material (PROVISIONAL QUANTITY) | m³ | 11,000 | $16.75 | $184,250.00 |
| 302.06 | Backfilling unsuitable material excavations with site excavated material or imported material (PROVISIONAL QUANTITY) | m³ | 11,000 | $17.50 | $192,500.00 |
| | EXCAVATION IN ROCK | | | | |
| 302.07 | Excavation and removal of rock | m³ | 565,000 | $26.50 | $14,972,500.00 |
| | EMBANKMENT CONSTRUCTION | | | | |
| 302.08 | Embankment foundation compaction | m² | 2,329,297 | $1.45 | $3,377,480.65 |
| 302.09 | Embankment construction using site excavated material and imported material | m³ | 3,084,558 | $15.68 | $48,365,869.44 |
| | SUBGRADE | | | | |
| 302.10 | Subgrade | m² | 1,192,345 | $2.85 | $3,398,183.25 |
| | **303 - PITS AND QUARRIES** | | | | |
| | EMBANKMENT MATERIAL BORROW PITS | | | | |
| 303.01 | Establishment of embankment material borrow pits | Item | 1 | $1,350,000.00 | $1,350,000.00 |
| 303.02 | Reinstatement of embankment material borrow pits | Item | 1 | $1,675,000.00 | $1,675,000.00 |
| 303.03 | Establishment of basecourse gravel material borrow pits | Item | 1 | $685,000.00 | $685,000.00 |
| 303.04 | Reinstatement of basecourse material borrow pits | Item | 1 | $475,000.00 | $475,000.00 |
| | To Summary | | | | $81,226,803.34 |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **SERIES 400 - DRAINAGE** | | | | |
| | **402 - SURFACE DRAINS AND LEVEES** | | | | |
| | SURFACE DRAINS AND LEVEES | | | | |
| 402.01 | Allow for surface drains and levees (Based on the area of primer sealing) | m2 | 882,543 | $5.25 | $4,633,350.75 |
| | **404 - CULVERTS** | | | | |
| | CULVERTS | | | | |
| | Corrugated Steel Pipes | | | | |
| 404.01 | 450 Diameter pipe culvert | m | 63 | $195.00 | $12,285.00 |
| 404.02 | 600 Diameter pipe culvert | m | 1,860 | $215.65 | $401,109.00 |
| 404.03 | 900 Diameter pipe culvert | m | 1,589 | $276.00 | $438,564.00 |
| 404.04 | 1200 Diameter pipe culvert | m | 2,352 | $335.00 | $787,920.00 |
| 404.05 | 1500 Diameter pipe culvert | m | 885 | $475.00 | $420,375.00 |
| 404.06 | 1800 Diameter pipe culvert | m | 1,846 | $678.00 | $1,251,588.00 |
| 404.07 | 2100 Diameter pipe culvert | m | 58 | $765.00 | $44,370.00 |
| 404.08 | 2250 Diameter pipe culvert | m | 553 | $986.00 | $545,258.00 |
| 404.09 | 2550 Diameter pipe culvert | m | 91 | $1,275.00 | $116,025.00 |
| | Reinforced Concrete Box Sections | | | | |
| 404.10 | 1200 x 375 Box culvert | m | 147 | $575.00 | $84,525.00 |
| 404.11 | 1200 x 450 Box culvert | m | 287 | $725.00 | $208,075.00 |
| 404.12 | 1200 x 1200 Box culvert | m | 658 | $1,250.00 | $822,500.00 |
| | All Culverts | | | | |
| 404.13 | Selected bedding material | $m^3$ | 4,725 | $250.00 | $1,181,250.00 |
| 404.14 | Extra over culverts for cement stabilised backfill | $m^3$ | 19,112 | $375.00 | $7,167,000.00 |
| 404.15 | Reinforced concrete base slab and shear keys | $m^3$ | 636 | $2,765.00 | $1,758,540.00 |
| 404.16 | Reinforced concrete insitu end treatment | $m^3$ | 134 | $2,765.00 | $370,510.00 |
| | **406 - ROCK PROTECTION** | | | | |
| 406.01 | 750 Thick Light Class Rock protection to embankments of floodways | $m^2$ | 1,848 | $125.00 | $231,000.00 |
| 406.02 | 1000mm Thick 1/4 Tonne Class Rock protection to embankments of floodways | $m^2$ | 6,144 | $150.00 | $921,600.00 |
| 406.03 | 220 Thick cement stabilised basecourse to embankments of floodways | $m^2$ | 31,756 | $22.00 | $698,632.00 |
| 406.04 | Rock protection to culvert inlet / outlet | m3 | 500 | $76.00 | $38,000.00 |
| 406.05 | Rock protection to CSP culvert inlet / outlet | m3 | 9,425 | $76.00 | $716,300.00 |
| 406.06 | Plain concrete edge wall to floodway | m3 | 446 | $2,750.00 | $1,226,500.00 |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | To Summary | | | | $24,075,276.75 |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **SERIES 500 - PAVEMENT & SURFACING** | | | | |
| | **501 - PAVEMENTS** | | | | |
| | BASECOURSE | | | | |
| 501.01 | 150mm Thick gravel basecourse | m² | 901,908 | $9.50 | $8,568,126.00 |
| 501.02 | 220mm Thick gravel basecourse to floodways and floodway approaches | m² | 80,946 | $12.60 | $1,019,919.60 |
| | PAVEMENT STABILISATION | | | | |
| 501.03 | Extra over gravel pavement for cement stabilisation, 150 deep to Floodways and floodway approaches | m² | 80,947 | $12.50 | $1,011,837.50 |
| | **503 - BITUMINOUS SURFACING** | | | | |
| | ROADWORKS | | | | |
| | Primerseal | | | | |
| 503.01 | Single coat primerseal with BAR of ? litres/m² and ?mm aggregate | m² | 882,543 | $3.50 | $3,088,900.50 |
| | Seal | | | | |
| 503.03 | First coat seal with BAR of ? litres/m² and 14mm aggregate | m² | 80,847 | $3.65 | $295,091.55 |
| 503.06 | Second coat seal with BAR of ? litres/m² and 10mm aggregate | m² | 80,847 | $3.85 | $311,260.95 |
| | To Summary | | | | $14,295,136.10 |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **SERIES 600 - TRAFFIC FACILITIES** | | | | |
| | **601 - SIGNS** | | | | |
| 601.01 | Allowance for signage (based on area of seal) | m2 | 882,543 | $0.08 | $70,603.44 |
| | **602 - GUIDE POSTS** | | | | |
| 602.01 | Guide post (Based on area of basecourse) | m2 | 982,755 | $0.15 | $147,413.25 |
| | **603 - ROAD SAFETY BARRIER SYSTEMS** | | | | |
| | BARRIER | | | | |
| 603.01 | Wire rope Barrier | m | 9,830 | $125.00 | $1,228,750.00 |
| 603.02 | Galvanised W-Beam barrier | m | 5,040 | $275.00 | $1,386,000.00 |
| 603.03 | Galvanised modified eccentric loader terminal (MELT) | No. | 7 | $9,500.00 | $66,500.00 |
| | **604 - PAVEMENT MARKING** | | | | |
| | ROAD PAVEMENT MARKINGS | | | | |
| 604.01 | Allowance for linemarking (based on area of primerseal) | m2 | 882,543 | $2.00 | $1,765,086.00 |
| | To Summary | | | | $4,664,352.69 |
| | **SERIES 900 - MISCELLANEOUS** | | | | |
| | **900 - PARKING BAYS AND REST AREAS** | | | | |
| 900.01 | Allowance for parking bays and rest areas (Based on area of seal) | m2 | 882,543 | $1.50 | $1,323,814.50 |
| | **AT GRADE RAIL CROSSING** | | | | |
| 900.02 | Allow the Provisional sum of $1,150,000.00 (One million one hundred and Fifty Thousand dollars) for the cost of an at grade rail crossing complete | P.S. | 1 | $1,150,000.00 | $1,150,000.00 |
| | **BRIDGE STRUCTURES** | | | | |
| 900.03 | 40m Bridge at Cowcumba Creek | m2 | 400 | $6,500.00 | $2,600,000.00 |
| 900.04 | 200m Bridge over Fortescue River | m2 | 2,000 | $6,500.00 | $13,000,000.00 |
| 900.05 | 40m Bridge over the Railway | m2 | 400 | $6,500.00 | $2,600,000.00 |
| 900.06 | 60m Bridge over the Railway | m2 | 600 | $6,500.00 | $3,900,000.00 |
| 900.07 | 60m Bridge over Weelumurra Creek | m2 | 600 | $6,500.00 | $3,900,000.00 |
| | **SERVICE RELOCATIONS** | | | | |
| 900.08 | Allow the Provisional sum of $600,000.00 (Six hundred Thousand dollars) for the cost of Western Power and Telstra service relocations | P.S. | 1 | $600,000.00 | $600,000.00 |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | To Summary | | | | $29,073,814.50 |

# PRELIMINARY COST INDICATION

## KARRATHA TO TOM PRICE ROAD (M065)
## STAGE 4 - OPTION 2 - PUBLIC ROAD

## for Shire of Ashburton

GHD Job No: 61-35084

**Job No.: A2985**

19 April, 2017

Davson+Ward
QUANTITY SURVEYORS & CONSTRUCTION COST CONSULTANTS

# KARRATHA TO TOM PRICE ROAD (M065)
# STAGE 4 - OPTION 2 - PUBLIC ROAD

## CONDITIONS & EXCLUSIONS

**1.00 This Cost Indication is conditioned as follows:**

1.01 These prices are current as at April 1, 2017 and are based on the rate currently used in similar contracts for MRWA

1.02 No escalation of cost has been incorporated beyond April 1, 2017

**2.00 This Cost Indication excludes the cost of the following:**

2.01 Removal of asbestos

2.02 The value of Principal supplied items including searching for and stockpiling of embankment construction and pavement construction materials

2.03 Allowances of accelerated construction periods

2.04 Holding Costs and interest charges

2.05 Time extension costs

2.06 Legal fees

2.07 Allowances for charges and costs levied by Authorities, Councils and Service Bodies

2.08 Aboriginal heritage, cultural and native title issues

2.09 Environmental obligations and clearances

2.10 Geotechnical investigations

2.11 PTA administrative charges including corporate overheads, etc

2.12 Redevelopment work of surplus land prior to disposal

2.13 Loss of business claims

2.14 Increased costs due to labour shortages in the Region

2.15 Increase in tender prices due to the current over supply of work for Contractors

## KARRATHA TO TOM PRICE ROAD (M065)
## STAGE 4 - OPTION 2 - PUBLIC ROAD
## GHD Job No: 61-35084

# SUMMARY

| | | |
|---|---|---|
| SCHEDULE No. 1 - GENERAL ITEMS (31% approx) | | $66,329,242.60 |
| SCHEDULE No. 2 - ROADWORKS | | |
| SERIES 300 - EARTHWORKS | $129,494,473.34 | |
| SERIES 400 - DRAINAGE | $49,955,960.85 | |
| SERIES 500 - PAVEMENT & SURFACING | $23,477,141.90 | |
| SERIES 600 - TRAFFIC FACILITIES | $6,130,626.62 | |
| SERIES 900 - MISCELLANEOUS | $4,907,096.00 | $213,965,298.71 |
| CONTINGENCY (20% approx.) | | $42,793,059.74 |
| GST EXCLUSIVE AMOUNT | | $323,087,601.05 |
| ESTIMATED GST PAYABLE | | $32,308,760.11 |
| **TOTAL OF COST INDICATION** | | **$355,396,361.16** |

# SCHEDULE No. 1 - GENERAL ITEMS

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **CONDITIONS OF CONTRACT** | | | | |
| GCC | **GENERAL CONDITIONS OF CONTRACT** | | | | |
| GCC.01 | Insurances in accordance with the General Conditions of Contract | Item | 1 | | Incl |
| GCC.02 | Contractor's superintendence during the execution of the Works | Item | 1 | $66,329,242.60 | $66,329,242.60 |
| GCC.03 | All charges, costs and obligations relating to the General Conditions of Contract not provided for elsewhere | Item | 1 | | Incl |
| | **SPECIAL CONDITIONS OF CONTRACT** | | | | |
| SCC.01 | All charges, costs and obligations relating to the Special Conditions of Contract not provided for elsewhere | Item | 1 | | Incl |
| | **SERIES 100 - GENERAL REQUIREMENTS** | | | | |
| 101.00 | **DESCRIPTION OF WORKS** | | | | |
| 101.01 | Provision of access for others to undertake work | Item | 1 | | Incl |
| 101.02 | Contractors programs | Item | 1 | | Incl |
| 101.03 | Project works sign | No. | | | Incl |
| | **102 SURVEY INFORMATION** | | | | |
| 102.01 | Survey information, control and setting out of the works | Item | 1 | | Incl |
| | **103 SITE FACILITIES** | | | | |
| | Contractors Site Facilities | | | | |
| 103.01 | Provision of Contractor's site facilities | Item | 1 | | Incl |
| 103.02 | Maintenance of Contractor's site facilities | Item | 1 | | Incl |
| 103.03 | Removal of Contractor's site facilities | Item | 1 | | Incl |
| | Superintendent's Site Facilities | | | | |
| 103.04 | Provision of the Superintendent site facilities | Item | 1 | | Incl |
| 103.05 | Maintenance of the Superintendent site facilities | Item | 1 | | Incl |
| 103.06 | Removal of the Superintendent site facilities | Item | 1 | | Incl |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | Superintendent's Living Facilities | | | | |
| 103.07 | Provision of the Superintendent living facilities | Item | 1 | | Incl |
| 103.08 | Maintenance of the Superintendent living facilities | Item | 1 | | Incl |
| 103.09 | Removal of the Superintendent living facilities | Item | 1 | | Incl |
| 103.10 | Superintendent's meals | M/day | | | Incl |
| | **104 ENTRY TO LAND** | | | | |
| 104.01 | Entry to land | Item | 1 | | Incl |
| | **105 WATER SUPPLIES** | | | | |
| 105.01 | Supply of water | Item | 1 | | Incl |
| | **106 UTILITIES AND SERVICES** | | | | |
| 106.01 | Liaison, programming, location and protection of utilities and services | Item | 1 | | Incl |
| 106.02 | Relocation of ? mains | Item | 1 | | Incl |
| 106.03 | Relocation of existing street lighting | Item | 1 | | Incl |
| | **SERIES 200 - MANAGEMENT REQUIREMENTS** | | | | |
| | **202 - TRAFFIC** | | | | |
| 202.01 | Traffic management | Item | 1 | | Incl |
| 202.02 | Traffic control devices | Item | 1 | | Incl |
| 202.03 | Traffic controllers | Item | 1 | | Incl |
| 202.04 | Construction, maintenance and removal of sidetracks, temporary driving surfaces and temporary pedestrian access | Item | 1 | | Incl |
| 202.05 | Maintenance of existing roads | Item | 1 | | Incl |
| | **203 - OCCUPATIONAL SAFETY AND HEALTH** | | | | |
| 203.01 | Occupational safety and health including safety plans and safety audits | Item | 1 | | Incl |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **204 - ENVIRONMENT** | | | | |
| 204.01 | Protection, preservation and monitoring of Aboriginal sites | Item | 1 | | Incl |
| 204.02 | Protection of flora and fauna | Item | 1 | | Incl |
| 204.03 | Fire prevention | Item | 1 | | Incl |
| 204.04 | Waste disposal | Item | 1 | | Incl |
| 204.05 | Dieback control | Item | 1 | | Incl |
| 204.06 | Protection of public and property | Item | 1 | | Incl |
| 204.07 | Pre-construction property inspections | No. | 1 | | Incl |
| 204.08 | Dust control | Item | 1 | | Incl |
| | To Summary | | | | $66,329,242.60 |

## SCHEDULE No. 2 - ROADWORKS

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **SERIES 300 - EARTHWORKS** | | | | |
| | **301 - CLEARING** | | | | |
| 301.01 | Site clearing | ha | 347.9 | $9,875.00 | $3,435,512.50 |
| | **302 - EARTHWORKS** | | | | |
| | TOPSOILING | | | | |
| | Topsoil Removal | | | | |
| 302.01 | Topsoil removal, 75 deep | ha | 315.0 | $9,245.00 | $2,912,175.00 |
| | Topsoil Spreading | | | | |
| 302.03 | Respread topsoil, 75 thick | ha | 199.9 | $5,675.00 | $1,134,432.50 |
| | REMOVAL OF REDUNDANT ITEMS | | | | |
| 302.04 | Ripping or existing pavement to prepare for new embankment | m² | 912,000 | $7.50 | $6,840,000.00 |
| 302.05 | Marking out and cutting edge along junction between new pavement and existing pavement including trimming existing pavement layers as required to bond to new pavement | m | 16 | $17.50 | $280.00 |
| | UNSUITABLE MATERIAL | | | | |
| 302.06 | Excavation and removal of unsuitable material (PROVISIONAL QUANTITY) | m³ | 19,000 | $16.75 | $318,250.00 |
| 302.07 | Backfilling unsuitable material excavations with site excavated material or imported material (PROVISIONAL QUANTITY) | m³ | 19,000 | $17.50 | $332,500.00 |
| | EXCAVATION IN ROCK | | | | |
| 302.08 | Excavation and removal of rock | m³ | 970,000 | $26.50 | $25,705,000.00 |
| | EMBANKMENT CONSTRUCTION | | | | |
| 302.09 | Embankment foundation compaction | m² | 3,295,364 | $1.45 | $4,778,277.80 |
| 302.10 | Embankment construction using site excavated material and imported material | m³ | 4,472,393 | $15.68 | $70,127,122.24 |
| | SUBGRADE | | | | |
| 302.11 | Subgrade | m² | 2,045,938 | $2.85 | $5,830,923.30 |
| | **303 - PITS AND QUARRIES** | | | | |
| | EMBANKMENT MATERIAL BORROW PITS | | | | |
| 303.01 | Establishment of embankment material borrow pits | Item | 1 | $2,500,000.00 | $2,500,000.00 |
| 303.02 | Reinstatement of embankment material borrow pits | Item | 1 | $3,350,000.00 | $3,350,000.00 |
| 303.03 | Establishment of basecourse gravel material borrow pits | Item | 1 | $1,265,000.00 | $1,265,000.00 |
| 303.04 | Reinstatement of basecourse material borrow pits | Item | 1 | $965,000.00 | $965,000.00 |
| | To Summary | | | | $129,494,473.34 |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **SERIES 400 - DRAINAGE** | | | | |
| | **402 - SURFACE DRAINS AND LEVEES** | | | | |
| | SURFACE DRAINS AND LEVEES | | | | |
| 402.01 | Allow for surface drains and levees (Based on the area of primer sealing) | m2 | 1,338,064 | $5.25 | $7,024,836.00 |
| | **404 - CULVERTS** | | | | |
| | CULVERTS | | | | |
| | Corrugated Steel Pipes | | | | |
| 404.01 | 450 Diameter pipe culvert | m | 106 | $195.00 | $20,670.00 |
| 404.02 | 600 Diameter pipe culvert | m | 3,109 | $215.65 | $670,455.85 |
| 404.03 | 900 Diameter pipe culvert | m | 2,656 | $276.00 | $733,056.00 |
| 404.04 | 1200 Diameter pipe culvert | m | 3,932 | $335.00 | $1,317,220.00 |
| 404.05 | 1500 Diameter pipe culvert | m | 1,479 | $475.00 | $702,525.00 |
| 404.06 | 1800 Diameter pipe culvert | m | 3,088 | $678.00 | $2,093,664.00 |
| 404.07 | 2100 Diameter pipe culvert | m | 97 | $765.00 | $74,205.00 |
| 404.08 | 2250 Diameter pipe culvert | m | 925 | $986.00 | $912,050.00 |
| 404.09 | 2550 Diameter pipe culvert | m | 153 | $1,275.00 | $195,075.00 |
| 404.10 | 2700 Diameter pipe culvert | m | 1,825 | $2,625.00 | $4,790,625.00 |
| | Reinforced Concrete Box Sections | | | | |
| 404.10 | 1200 x 375 Box culvert | m | 312 | $575.00 | $179,400.00 |
| 404.11 | 1200 x 450 Box culvert | m | 316 | $725.00 | $229,100.00 |
| 404.12 | 1200 x 1200 Box culvert | m | 1,093 | $1,250.00 | $1,366,250.00 |
| | All Culverts | | | | |
| 404.13 | Selected bedding material | $m^3$ | 7,900 | $250.00 | $1,975,000.00 |
| 404.14 | Extra over culverts for cement stabilised backfill | $m^3$ | 32,270 | $375.00 | $12,101,250.00 |
| 404.15 | Reinforced concrete base slab and shear keys | $m^3$ | 1,063 | $2,765.00 | $2,939,195.00 |
| 404.16 | Reinforced concrete insitu end treatment | $m^3$ | 224 | $2,765.00 | $619,360.00 |
| | **406 - ROCK PROTECTION** | | | | |
| 406.01 | 750 Thick Light Class Rock protection to embankments of floodways | $m^2$ | 4,821 | $125.00 | $602,625.00 |
| 406.02 | Facing Class rock protection to embankments of floodways | $m^2$ | 350 | $135.00 | $47,250.00 |
| 406.03 | 1000mm Thick 1/4 Tonne Class Rock protection to embankments of floodways | $m^2$ | 16,028 | $150.00 | $2,404,200.00 |
| 406.04 | 220 Thick cement stabilised basecourse to embankments of floodways | $m^2$ | 73,339 | $22.00 | $1,613,458.00 |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| 406.05 | 150 Reinforced concrete embakment to floodways | m² | 3,000 | $128.00 | $384,000.00 |
| 406.06 | 1 Tonne Rock Mattresses | m² | 3,120 | $325.00 | $1,014,000.00 |
| 406.07 | Rock protection to culvert inlet / outlet | m3 | 836 | $76.00 | $63,536.00 |
| 406.08 | Rock protection to CSP culvert inlet / outlet | m3 | 15,755 | $76.00 | $1,197,380.00 |
| 406.09 | Plain concrete edge wall to floodway | m3 | 1,163 | $2,750.00 | $3,198,250.00 |
| 406.10 | Reinforced concrete edge wall to floodway | m3 | 375 | $3,675.00 | $1,378,125.00 |
| 406.11 | Filter Cloth | m2 | 3,120 | $35.00 | $109,200.00 |
| | | | | | $49,955,960.85 |
| | To Summary | | | | |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **SERIES 500 - PAVEMENT & SURFACING** | | | | |
| | **501 - PAVEMENTS** | | | | |
| | BASECOURSE | | | | |
| 501.01 | 150mm Thick gravel basecourse | m² | 1,274,631 | $9.50 | $12,108,994.50 |
| 501.02 | 220mm Thick gravel basecourse to floodways and floodway approaches | m² | 205,059 | $12.60 | $2,583,743.40 |
| | PAVEMENT STABILISATION | | | | |
| 501.03 | Extra over gravel pavement for cement stabilisation, 150 deep to Floodways and floodway approaches | m² | 205,059 | $12.50 | $2,563,237.50 |
| | **503 - BITUMINOUS SURFACING** | | | | |
| | ROADWORKS | | | | |
| | Primerseal | | | | |
| 503.01 | Single coat primerseal with BAR of ? litres/m² and ?mm aggregate | m² | 1,338,064 | $3.50 | $4,683,224.00 |
| | Seal | | | | |
| 503.03 | First coat seal with BAR of ? litres/m² and 14mm aggregate | m² | 205,059 | $3.65 | $748,465.35 |
| 503.06 | Second coat seal with BAR of ? litres/m² and 10mm aggregate | m² | 205,059 | $3.85 | $789,477.15 |
| | To Summary | | | | $23,477,141.90 |

| Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|
| | **SERIES 600 - TRAFFIC FACILITIES** | | | | |
| | **601 - SIGNS** | | | | |
| 601.01 | Allowance for signage (based on area of primerseal) | m2 | 1,338,064 | $0.08 | $107,045.12 |
| | **602 - GUIDE POSTS** | | | | |
| 602.01 | Guide post (Based on area of basecourse) | m2 | 1,479,690 | $0.15 | $221,953.50 |
| | **603 - ROAD SAFETY BARRIER SYSTEMS** | | | | |
| | BARRIER | | | | |
| 603.01 | Wire rope Barrier | m | 13,384 | $125.00 | $1,673,000.00 |
| 603.02 | Galvanised W-Beam barrier | m | 5,040 | $275.00 | $1,386,000.00 |
| 603.03 | Galvanised modified eccentric loader terminal (MELT) | No. | 7 | $9,500.00 | $66,500.00 |
| | **604 - PAVEMENT MARKING** | | | | |
| | ROAD PAVEMENT MARKINGS | | | | |
| 604.01 | Allowance for linemarking (based on area of primerseal) | m2 | 1,338,064 | $2.00 | $2,676,128.00 |
| | To Summary | | | | $6,130,626.62 |
| | **SERIES 900 - MISCELLANEOUS** | | | | |
| | **900 - PARKING BAYS AND REST AREAS** | | | | |
| 900.01 | Allowance for parking bays and rest areas (Based on area of primerseal) | m2 | 1,338,064 | $1.50 | $2,007,096.00 |
| | **AT GRADE RAIL CROSSING** | | | | |
| 900.02 | Allow the Provisional sum of $1,150,000.00 (One million one hundred and Fifty Thousand dollars) for the cost of 2No. at grade rail crossing complete | P.S. | 1 | $2,300,000.00 | $2,300,000.00 |
| | **SERVICE RELOCATIONS** | | | | |
| 900.03 | Allow the Provisional sum of $600,000.00 (Six hundred Thousand dollars) for the cost of Western Power and Telstra service relocations | P.S. | 1 | $600,000.00 | $600,000.00 |
| | To Summary | | | | $4,907,096.00 |

GHD

Unit 186 Pelago East Apartments
26 Sharpe Avenue
KARRATHA WA 6714

T: 61 8 9185 0700 E: ktamail@ghd.com.au



G:\61\35084\WP\REP-B_June Version\6135084-REP-B_KTP Cost Benefit and Social Impact Assessment.docx

Document Status

| Revision | Author | Reviewer | | Approved for Issue | | |
|---|---|---|---|---|---|---|
| | | Name | Signature | Name | Signature | Date |
| A | M.Papacristos<br>P Tilley<br>T Hibberd | P Tilley | P Tilley* | P Tilley | P Tilley* | 16/05/2017 |
| B | M.Papacristos<br>P Tilley<br>T Hibberd | N Hanrahan | | N Hanrahan | | 05/09/2017 |
| C | P Tilley | | | | | Internal |
| D | P Tilley | P Tilley | | P Tilley | | 21/3/2018 |

* Denotes signed original on file

www.ghd.com