

Environmental Management Plan

SHARK BAY REGION STRATEGIC MATERIAL AREAS

Shark Bay Road, SLK 21 & 102
&
Useless Loop Road, SLK 28.7, 48 & 56

December 2009

Printed copies are uncontrolled unless marked otherwise



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1. INTRODUCTION

This Environmental Management Plan (EMP) has been prepared by Main Roads' Gascoyne Region. The EMP provides specific details with regards to the management actions required for an effective environmental management program for the Shark Bay Region Strategic Material Areas.

1.1 Scope of Works

Main Roads Gascoyne Region (Main Roads) over a number of years has slowly been exhausting vital raw material stockpiles required for continued road maintenance and construction works. The scheduled maintenance and construction works are required to ensure safe road conditions are maintained for members of the public travelling on Main Roads' road network.

Main Roads is currently in the process of developing a region wide 20-year strategic plan to identify potential future material sites. The identification of material sites will help the region locate required road building material for scheduled road construction and maintenance works, as well as for use during emergency situations that may arise after events such as cyclones.

Due to the increase in the number of mining tenement applications across the state, Main Roads is seeking to place land reservations over these identified material area under the *Land Administration Act 1997*, for the purpose of gravel extraction. The aim of this reservation process is to secure areas of importance for Main Roads WA and to avoid land use conflicts with future mining leases and conservation reserves.

As part of this region wide strategic material plan, Main Roads has identified five potential material sites within the Shark Bay region (Figure 1). These potential material areas are located within and adjacent to the Shark Bay World Heritage Area and have been strategically located to provide required road building materials for the length of Shark Bay Road and Useless Loop Road.

The strategic material areas identified within the Shark Bay region will be used for the maintenance of Shark Bay Road and Useless Loop Road, with the aim of providing safe road conditions for the travelling public including tourist traffic visiting the Shark Bay World Heritage Area. Given the anticipated activities requiring the use of these material areas, it is expected that only a minimal amount of the proposed areas identified at each site will need to be cleared for the purpose of material extraction.

The proposed Shark Bay strategic material areas will make up part of Main Roads' 20-year strategic material plan. The areas will be systematically cleared in relatively small areas as material is required. It is estimated that a maximum of 1 to 2 hectares a year will be required at each material site and will be dependant on the scheduling of maintenance and construction works on different sections of the road network.

In this way, only a small proportion of each material site will be cleared at any one time, with revegetation occurring as soon as the cleared areas are no longer required. Revegetation of all temporary cleared areas will be undertaken using Main Roads' revegetation plan for pastoral regions that has been approved by the Department of Environment and Conservation.

1.2 Clearing Permit

Main Roads Gascoyne Region will apply for a Clearing Permit (Purpose Permit) under the provisions of the *Environmental Protection (Clearing of Native Vegetation) Regulation 2004* to clear native vegetation within the proposed material areas for the purpose of material extraction.

Clearing carried out under any purpose permit issued to Main Roads Gascoyne Region will be in accordance with conditions set out within the Permit.

The total amount of native vegetation cleared during this project will not exceed the region's annual limit as stated in the issued purpose permit.

1.3 Environmental Clearances

An Environmental Impact Assessment (EIA) was completed in July 2009 by Main Roads Gascoyne's Environment Officer. This EIA describes the environmental aspects relevant to the proposed project and surrounding areas, including impacts to flora and fauna, clearing of native vegetation, proximity to conservation areas and affects on surface and ground water. As a result of the EIA findings, GHD consultants were contracted to undertake a Targeted Flora Survey in July/August 2009

GHD was commissioned to undertake a Flora and Fauna Survey for all of the proposed strategic material areas at the end of July 2009. The purpose of this survey was to provide an appropriate examination and description of the receiving environment to ensure that aspects of biological/ecological significance were identified and recorded.

Suitability qualified GHD Ecologists undertook the flora and fauna survey and the following conclusions on priority flora and fauna were made:

- The number of recorded flora species in each of the Strategic Material Areas ranged from 54 flora species in Strategic Material Area SLK 102, to 84 flora species in Strategic Material Area SLK 28.7. This represents a low to moderate-high native species diversity for the relatively small areas surveyed (11.23 ha to 256.73 ha);
- No Declared Rare Flora Species were recorded during the field survey. A total of six priority species were recorded during the field survey (refer to Section 4.2.6 of GHD 2009); and
- The six priority flora species recorded during the flora survey are considered locally common around the Project Site, but have a majority of their known populations restricted to the Shark Bay region. Based on the know distribution and field observations of the six Priority species, it is considered likely that the proposed Project will impact on individual plants rather than impact upon each taxon as a whole.
- No threatened fauna species were recorded in the Project Area during the reconnaissance fauna survey. Threatened fauna species known to occur in the general area, as identified in the desktop assessment, are unlikely if present, to be significantly impacted by clearing of vegetation in the Project Sites;
- It is probable that Malleefowl may be present in the Strategic Material Areas. However, no nest mounds were recorded in any of the Project Areas during the field survey;

- Minor loss of habitat and feeding areas may result due to the clearing of native vegetation as part of this proposed project. This is not considered to be a substantial impact on current extent of habitat. There will be a minor loss of refuge vegetation and associated foraging resources; and
- Harm/death/displacement of individual animals may occur during clearing activities.

1.4 Aboriginal Heritage

The environmental impact assessment completed for this proposal has identified a number of registered Aboriginal heritage sites in the vicinity of the proposed strategic material areas. Due to the location of these registered heritage sites it is possible that unregistered heritage sites may be located within the vicinity of the strategic material areas.

In order to avoid impacts to any registered or unregistered heritage sites during the proposed works, Main Roads Gascoyne Region has undertaken consultation with representatives of the Malgana Shark Bay People Native Title Claimant Group through the Yamatji Marlpa Aboriginal Corporation.

An Aboriginal Heritage Agreement is currently being negotiated between Main Roads and the Malgana Native Title Claimant Group. It is proposed that this Aboriginal Heritage Agreement would stipulate that Main Roads would commission members of the Malgana Native Title Claimant Group to undertake on-ground heritage surveys prior to any ground disturbing works within their claim boundary.

It is hoped that this Aboriginal Heritage Agreement will ensure that Aboriginal heritage surveys are undertaken prior to any ground disturbance within any of the strategic material areas to help eliminate impacts to Indigenous heritage aspects due to the excavation of materials.

Given the nature and timeframes of the proposed works over the next 20-years, it is felt that conducting Indigenous heritage surveys over the large areas at each of the material sites will be counter productive. As most Indigenous heritage surveys will need to be resurveyed every 5 years, Main Roads is keen to only undertake heritage surveys for smaller areas directly prior to any ground disturbing works required for the excavation of road building materials. The development of the Aboriginal Heritage Agreement will ensure that Main Roads undertakes the necessary heritage surveys as required and assure the Malgana Native Title Claimant Group that their group will be consulted prior to any disturbance works.

The development of this agreement will aim to increase the effectiveness of the heritage survey process and strengthen the professional relationship between the Malgana Native Title Claimant Group and Main Roads. Main Roads recognises the statutory requirement to undertake appropriate heritage surveys prior to ground disturbing works and the development of such an agreement will ensure all legal requirements are covered.

1.5 Key Environmental Issue

The proposed Shark Bay Strategic Material Areas have the potential to impact on the surrounding environment. Environmental factors relevant to this project include:

- Vegetation and conservation of biodiversity;
- Water quality, surface and groundwater drainage;
- Reserves and conservation areas;
- Weed and hygiene control;
- Noise;
- Dust;
- Fire control;
- Visual amenities;
- Waste management; and
- Rehabilitation.

1.6 Stakeholders

Continued consultation will be undertaken with the following stakeholders to help minimise any impacts that may be caused by the proposed projects:

- Department of Environment, Water, Heritage and the Arts (DEWHA);
- Environmental Protection Authority (EPA);
- Department of Environment and Conservation (DEC);
- Department of Water (DoW);
- Department of Agriculture and Food (DAF);
- Native Title Claimant Groups;
- Shire of Shark Bay; and
- Surrounding Land Owners.

2. ENVIRONMENTAL MANAGEMENT AND IMPLEMENTATION STRATEGIES

2.1 Environmental Commitment

2.1.1 Main Roads Environmental Policy

Main Roads is committed to achieving responsible environmental stewardship in developing and maintaining the road network during Main Roads projects and ongoing operations. To attain this goal, Main Roads has implemented a Corporate Environment Policy that seeks to:

- Protect and enhance the environmental values of road reserves;
- Minimise the impact on the natural environment of roads and road uses; and
- Conserve natural resources and minimising energy consumption and waste.

This Environmental Policy is applicable to all Main Roads' employees, contractors and sub contractors.

2.1.2 Environmental Management Systems

Main Roads operates a corporate Environmental Management System (EMS) certified to ISO 14001. The EMS was recently recertified in August 2008. Under this EMS, Main Roads has a number of standard policies and procedures that will be utilised as part of this project.



MAIN ROADS WESTERN AUSTRALIA manages the State's road network to provide safe and efficient road access that will enhance community lifestyles and support economic prosperity. We seek to achieve balanced and sustainable outcomes for the community. Responsible environmental stewardship in developing and maintaining the road network is critical to our success.

Principles

Main Roads is committed to:

- Protecting and enhancing the environmental values of road reserves;
- Minimising the impact on the natural environment of roads and road use; and
- Conserving natural resources and minimising energy consumption and waste.

Objectives

In applying these principles, Main Roads aims to:

- Fully satisfy all environmental legislation, Government Policy and, where specific legislation is lacking, uphold the spirit of the law;
- Implement, maintain and continually improve an effective environmental management system across Main Roads planning, business, project and management processes;
- Apply an approach of "avoid, minimise and mitigate", in order of preference, to the management of environmental impacts associated with road construction projects;
- Develop awareness of environmental management processes, standards and responsibilities among Main Roads' employees and contractor partners;
- Listen and be responsive to community and stakeholder views on environmental issues; and
- Set specific environmental objectives and targets relating to the key environmental aspects of Main Roads' activities, and measure and report progress in achieving these targets.

Menno Henneveld
Menno Henneveld
 Commissioner of Main Roads
 June 2004

Figure 1: Main Roads Western Australia Corporate Environment Policy

2.2 Environmental Aspects and Impacts Risk Register

The environmental aspects and impacts risk register was developed to enable the relevant environmental aspects and impacts associated with the Shark Bay Region Strategic Material Areas are accounted for.

The environmental risk associated with each of the identified aspects and impacts were assessed to determine their significance and potential actions.

The Environmental Aspects and Impacts Risk Register can be found in Appendix A

2.3 Statutory Requirements and Environmental Legislation

Main Roads' key statutory requirements and environmental legislation has been broadly identified and described in the corporate document – 6707/027 Environmental Obligations Register.

2.4 Roles and Responsibilities

All Main Roads employees are responsible for the environmental performance of their activities and for complying with environmental requirements. The following roles and responsibilities have been defined for this project.

2.4.1 Main Roads' Gascoyne Region

Main Roads' Gascoyne Region is responsible for ensuring that works meet regulatory environmental requirements and that environmental objectives are attained.

Main Roads' Gascoyne Region is also responsible for the environmental performance of staff and contractors working on this project and maintaining and implementing the EMP.

2.4.2 Project Manager

The Project Manager is responsible for the overall environmental performance of the whole project. The Project Manager will also be responsible for the implementation and compliance of the EMP within all project activities.

2.4.3 Environment Officer

The Environment Officer is responsible for overseeing the implementation of the EMP. The Environment Officer will be responsible for undertaking performance review, audits and co-ordinating successful maintenance of the EMP.

The Environment Officer will also assess the compliance with the EMP and will represent the Main Roads Project Manager on environmental matters with stakeholders.

2.4.4 Surveillance Officers

The Surveillance Officers are responsible for ensure that all works conducted under their supervision will adhere to the EMP and is compliant with relevant environmental legislation. The Surveillance Officers are to pass on relevant environmental information from the Project Manager or Environment Officer to all staff at relevant times throughout the project.

2.4.5 All Staff

All persons associated with the project have the responsibility of carry out any activities in such a manner that will not cause, or be likely to cause, environmental harm, in accordance with the *Environmental Protection Act 1986* and any other relevant environmental legislation.

2.5 Environmental Incident Reporting and Investigations

Main Roads Corporate Procedure – 6707/042 Environmental Guideline – Environmental Incident Reporting and Investigation shall be used to report, record and investigate environmental incidents.

All of the environmental incidents shall be recorded in File No. 09/27

Main Roads Environmental Incident Reporting and Investigation procedure:

- Environmental Incident Occurs;
- Immediate Remedial Action: The observer of an incident should undertake any immediate actions to stop, control or contain the incident to prevent further damage;
- Determine Environmental Incident Category (Appendix B)
- Notify Management (Appendix C)
- Assessment and Investigation
- Incident Report (Appendix D)
- Corrective and Preventative Action: The Environment Officer shall track the progress of the agreed corrective and preventative action.

2.6 Communication Plan

A communication plan for Shark Bay Region Strategic Material Areas will be developed separately to this EMP.

2.7 Monitoring & Inspections

All temporary clearing undertaken during the course of this proposal will be revegetated in accordance with Main Roads – Revegetation Plan for Pastoral Regions (see Appendix I of EIA). This revegetation plan has previously been approved by the Department of Environment and Conservation for use in conjunction with Main Roads project areas located within the pastoral/rangelands region north of the agricultural area, as described in the Environmental Protection Authority's Position Statement No. 2.

On going maintenance and monitoring of revegetated areas will be undertaken as specified by Main Roads – Revegetation Plan for Pastoral Regions. Post revegetation site inspections will be carried out annually for a minimum of two years to monitor unwanted weeds and measure the effectiveness of revegetation works.

2.8 Auditing

Given the scale and nature of the project, an internal audit of the environmental aspects of the Shark Bay Region Strategic Material Areas will be conducted in accordance with the issued purpose permit, to ensure the EMP was implemented during the course of the project.

Second or third party audits may be ordered by the Manager Environment as part of Main Roads' compliance to ISO 14001. Main Roads is required to audit at least one project from the Gascoyne Region annually. A third party audit may be conducted as part of the ISO 14001 recertification process.

2.9 Accounting Systems

Main Roads Gascoyne Region will set up an electronic accounting system that will be used to accurately record the amount of native vegetation clearing undertaken within the proposed strategic material areas. This system will aim to ensure that clearing of native vegetation will not exceed the total annual clearing limits permitted under any permit issued by either State or Commonwealth agencies. This system will also be used to ensure reporting requirements can be achieved and that accurate information is provided efficiently.

3. ENVIRONMENTAL MANAGEMENT PLAN

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
1.	Induction	Pre-Construction	Inform all personnel of the management actions required of them	Develop and implement a communication plan including response to complaints, liaising/reporting to government agencies, engagement with the community and others when work is performed. Ensure all personnel are aware of relevant environmental and heritage requirements specific to this project	Project Manager Contractor	MRWA	
	Monitoring/ Inspection	Checks to be made during monthly environment monitoring	To ensure all personnel are aware of relevant environmental and heritage requirements	All personnel involved with project works shall attend a site induction that will outline environment and heritage requirement. All induction sheets shall be kept on file for future reference and auditing requirements.			
2.	Environmental Incidents	Construction	Ensure all related records of environmental incidents are maintained	Main Roads Corporate Procedure – 6707/042 Environmental Guideline – Environmental Incident Reporting and Investigation shall be used to report, record and investigate environmental incidents. All of the environmental incidents shall be recorded in File No. 09/27 See Section 2.5 of EMP for more information	Project Manager Environment Officer		Main Roads environmental guideline: <i>Environmental Incident Reporting and Investigation 6707/042</i>
3.	Traffic Risk Management	Pre-construction/ Construction	Minimise public risk to as low as reasonably achievable to comply with relevant standards.	A Traffic Management Plan will be developed and implemented for the period of this proposal.	Project Manager Contractor	MRWA	

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
4.	Site Management	Pre-construction/ Construction	Ensure that the site is managed to ensure that construction of the proposal will have minimal impact upon the public and surrounding environment.	<p>Hard stand areas will be located on designated area in discussion with a Main Roads' Environment Officer. Storage areas and hard stand area will not be relocated during project time frame without consulting a Main Roads' Environment Officer. The dumping of materials anywhere outside of the hardstand areas will be registered as an environmental incident.</p> <p>Specific areas shall be designated for the storage, maintenance and refuelling of machinery/vehicles in discussion with a Main Roads' Environment Officer. These areas are to be situated on an impermeable surface layer (gravel sheeted as a minimum) not in close proximity to any watercourse/drainage.</p> <p>Maintain good housekeeping practices during construction to prevent litter.</p> <p>Rehabilitate temporary cleared areas as soon as practical in accordance with Main Roads' Revegetation Plan for Pastoral Areas, as outlined in Appendix H of the EIA. Initial material excavation will be undertaken at the furthest point away from the road reserve. This will ensure a buffer zone is maintained between the road reserve and the material site.</p>	Project Manager Contractor Environment Officer	MRWA	
	Monitoring/ Inspection	Construction	Ensure the management of site is continued throughout the course of the project.	<p>Location of hard stand areas will be identified prior to the commencement of onsite activities in consultation between Project Manager and a Main Roads' Environment Officer. Further discussions of hard stand area locations will be conducted as required throughout the project time frame.</p> <p>Site inspections will occur throughout the duration of works to ensure environmental or heritage aspects are not impacted.</p> <p>All environmental incidents will be investigated by a Main Roads' Environmental Officer or Project Manager, who will ensure that all remedial actions are completed.</p>			

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
5.	Dust Management	Construction	Minimise the impact of dust on surrounding environments	<p>A complaints handling system shall be set up in order to rapidly handle any complaints received.</p> <p>Avoid earthmoving activities in high winds.</p> <p>Appropriate dust suppression actions will be used to prevent dust lift.</p> <p>Areas of temporary clearing or disturbance are to be rehabilitated as soon as practical.</p> <p>Where it is found that trucks leaving the site are carrying excessive material onto sealed surfaces, these areas will be swept to reduce dust generation and maintain traffic safety.</p>	Project Manager Contractor	MRWA	
	Monitoring/ Inspection	Construction	Ensure the impact of dust on surrounding environments is kept to a minimum.	Site inspections shall be conducted at regular intervals throughout the project time frame to ensure dust management practices are maintained and minimise impacts to surrounding environmental aspects.			
6.	Visual Impact	Pre-construction/ Construction	Help to minimise impacts to the visual amenities of the Shark Bay World Heritage Area	<p>Visual impacts from the proposed works shall be minimised by limiting clearing of native vegetation, utilising existing borrow pits where practical, retaining buffers of vegetation between the strategic material areas and Shark Bay Road & Useless Loop Road and by rehabilitating temporary cleared areas as soon as possible.</p> <p>Initial material excavation will be undertaken at the furthest point away from the road reserve. This will ensure a buffer zone is maintained between the road reserve and the material site.</p>	MRWA Project Manager Contractor	DEC	

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
7.	Fire Control and Response	Construction	Reduce the risk of fire ignition from construction activities	<p>Note: this plan covers the risk of impacts of fire from project activities on the environment. Fire fighting procedures and evacuation will be covered in the Emergency Response Plan.</p> <p>Induction to include evacuation procedures, location of fire response equipment and emergency contacts</p> <p>In case of fire call 000. Shark Bay Fire and Rescue service located at:</p> <p style="text-align: center;">111 Dampier Rd, Denham 6537</p> <p>If a wildfire occurs inform adjacent landholders and Department of Environment and Conservation</p> <p>Works procedures for 'hot works' to include:</p> <ul style="list-style-type: none"> - Clear area around works (no flammable materials) - Fire trailer to be located at site of hot works <p>Visual inspection of project area for ignition sources and high fuel loads should occur prior to work.</p> <p>No fires shall be lit within the project area.</p>	MRWA Project Manager Contractors	MRWA	Government legislation: <i>Bush Fires Act 1954</i>
	Monitoring/ Inspection	Construction	Ensure the fire risk from construction activities is kept to a minimum	<p>All personnel shall be made aware of fire control requirements during inductions.</p> <p>Undertake regular site inspections to identify potential fire risks and remove any hazards.</p>			

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
8.	Noise Management	Construction	Reduce the impact of noise on local sensitive noise receptors during construction and operation	<p>Comply with <i>Environmental Protection (Noise) Regulations 1997</i>.</p> <p>Restrict working hours to 0700 to 1900 Monday to Saturday in the vicinity of sensitive noise receptors (within 1km)</p> <ul style="list-style-type: none"> - No construction activities are to occur prior to 0700 <p>Works on Sunday will be restricted to 0900 to 1900 in the vicinity of sensitive noise receptors (within 1km).</p> <p>Prior to 0700, preparation may occur on site, but must not include:</p> <ul style="list-style-type: none"> - Operation of mobile plant - Power tools, hoists and other power equipment - Impact noise including hammering, boring or drilling - Radios <p>Construction works will be carried out in accordance with AS 2496-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites</p> <p>The equipment used will be the quietest reasonably available</p> <p>Noise and dust complaints procedures will be developed to deal with any complaints</p> <p>All stakeholders should be informed of works prior to construction</p>	Project Manager Contractor	MRWA DEC	<p>Government legislation:</p> <p><i>Environmental Protection (Noise) Regulations 1997</i></p> <p><i>AS 2496-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites</i></p>
	Monitoring/ Inspection	Construction	Ensure noise generated from construction activities does not become a nuisance to local sensitive receivers	Ensure all personnel are made aware of any noise related issues, including noise regulations.			

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
9.	Waste Management	Pre-construction / Construction	Ensure that construction activities area managed to a standard that minimises any adverse impacts on the environment.	<p>All storage and handling of fuels, oils and other hazardous material in the project area is to be done in accordance with all legislative requirements and OSH safety procedures.</p> <p>Dumping or temporary storage of all material or aggregate should only occur at designated depots or controlled hardstands.</p> <p>Appropriate spill equipment should be available at all times. All spills will be recorded as an environmental incident and an environmental incident report filled out.</p> <p>Emergency cleanup procedures shall be implemented in the case of any spillage. These will include control of spilled material and removal of contaminated soil to an approved site.</p> <p>All spills are to be contained immediately and remediated within 1 week. Remediation will consist of removal of contaminated soils to an appropriate treatment facility and will be in accordance with Main Roads Document No. 6707/028 – <i>Contaminated Sites</i></p> <p>In the event of a major spill that may contaminate water sources or groundwater, DEC Emergency Pollution Response is to be called (1300 784 782).</p> <p>All litter on the project will be placed into lidded bins and disposed of at an approved landfill.</p>	Project Manager Contractor Environment Officer	MRWA DEC	<p>Government Legislation:</p> <p><i>Contaminated Sites Act 2003 (WA)</i></p> <p><i>Contaminated Sites Regulations 2004 (WA)</i></p> <p><i>Environmental Protection (Controlled Waste) Regulations 2004 (WA)</i></p> <p><i>Soil and Land Conservation Act 1945 (WA)</i></p> <p><i>Soil and Land Conservation Regulations 1992 (WA)</i></p> <p>Main Roads property management guideline:</p> <p><i>Land Disposal Process Guidelines 60/04/01</i></p> <p>Main Roads environmental guideline:</p> <p><i>Contaminated Sites 6707/028</i></p>
	Monitoring/ Inspection	Construction	Ensure waste management practices are maintained throughout course of project	<p>Inspection of all storage and service areas, spill kits and bunding will be carried out at regular intervals throughout the project timeframe.</p> <p>Inspections of hard stand area will be conducted prior to commencement of construction and throughout the course of the project.</p> <p>All environmental incidents will be investigated by the Environmental Officer, who will ensure that all remedial actions are completed.</p>			

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
10.	Material Pits	Construction	Minimise the environmental impact of material pit operations	New material pits are to be sited, assessed and operated in accordance with the Corporate Environmental Guideline - <u>6707/008 - Environmental Guideline - Pits & Quarries</u>	Project Manager Contractor	MRWA	Main Roads environmental guideline: <i>Pits and Quarries 6707/008</i>
	Monitoring/ Inspection	Construction	Ensure the development of borrow pits does not have significant impact on environmental aspects	Inspection of all new material pits will be undertaken by the Project Manager or Environment Officer to ensure that operation in accordance with the Corporate Environmental Guideline - <u>6707/008 - Environmental Guideline - Pits & Quarries</u>			
11.	Vegetation – Clearing	Pre-Construction/ Construction	Ensure that the overall objectives of the alignment and construction works are compatible with maintaining and, where possible, enhancing the biological integrity of the surrounding environment	<p>The proposed construction works shall be designed/located in a manner that minimises adverse impacts on the surrounding environment.</p> <p>Construction works will be programmed for periods of limited rainfall to reduce the potential for soil erosion and drainage line siltation due to vegetation removal and heavy rains.</p> <p>Any stockpiled vegetation from clearing works shall not be burnt. This vegetation shall be used during any rehabilitation works and either chipped or replaced according to the revegetation plan. Tree trunks which are suitable for use of fauna refuge shall be left on site.</p> <p>Stockpiled vegetation shall be windrowed parallel to the road alignment, not exceeding 2m beyond the limit of the earthworks. The stockpile shall not exceed 1.5m in height. Stockpiled topsoil shall not be stockpiled on vegetation that is not designated for clearing.</p> <p>Wherever possible, the topsoil storage period will be minimised to prevent reduction in biotic viability. Topsoil will be stored and reused locally rather than transported large distances.</p> <p>During construction works, damage of existing vegetation will be avoided as far as practicable.</p>	Project Manager Environment Officer Contractor	MRWA DEC	Government Legislation: <i>Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i> <i>Conservation and Land Management Act 1984 (WA)</i> <i>Environmental Protection Act 1986</i> <i>Environmental Protection (Clearing of Native Vegetation) Regulations 2004</i> <i>Wildlife Conservation Act 1950</i> <i>Wildlife Conservation Regulations 1970 (WA)</i> Main Roads environmental guideline:

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
				<p>Vehicles and equipment is not to be parked or driven over tree roots or over vegetation that is not designated for clearing.</p> <p>Native vegetation to be removed is to be cleared in a manner that ensures all clearing occurs within the approved clearing areas. i.e. machine turn around points will be within clearing limits.</p> <p>Proposed clearing for the purposes of extracting gravel material will be undertaken in accordance with Main Roads Corporate Procedure – 6707/008 - Environmental Guideline – Pits and Quarries</p> <p>Temporary cleared areas will be progressively rehabilitated as soon as practical in accordance with Main Roads' Revegetation Plan for Pastoral Areas, as outlined in Appendix H of the Environmental Assessment Report for this project.</p>			Native Vegetation Clearing Regulations and Permits 6707/034
	Monitoring/ Inspection	Pre-construction / Construction	Ensure that clearing of native vegetation during the course of the propose project does not impact significantly on sensitive environments	<p>Inspections of clearing works shall be conducted at the time of vegetation clearing to ensure that impacts to sensitive environmental aspects is kept to a minimum.</p> <p>DEC will be contacted prior to clearing works and provided with the opportunity to attend site inspections.</p>			
12.	Threatened Ecological Communities (TECs), Declared Rare or Priority Flora	Pre-construction/ Construction	Avoid disturbing, and minimise impact on any identified TECs, Declared Rare or Priority Flora.	<p>Flora surveys were undertaken to ensure that no Declared Rare or Priority Flora are impacted during the proposed project.</p> <p>Six priority flora species were recorded during the flora survey and are considered locally common around the Project Site, but have a majority of their known populations restricted to the Shark Bay region. Clearing of material within the vicinity of the priority flora species will be restricted to limit the impact on each priority flora species population.</p>	Project Manager Environment Officer Contractor	MRWA DEC	<p>Government Legislation:</p> <p><i>Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i></p> <p><i>Environmental Protection Act 1986</i></p> <p><i>Environmental Protection (Clearing of Native</i></p>

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
				<p>If impacts are unavoidable, it is considered likely that the proposed Project will impact on individual plants rather than impact upon each taxon as a whole.</p> <p>All personnel will be made aware of the location of priority flora species within the project area and management strategies will be implemented to avoid unnecessary impacts to any of the priority flora populations.</p> <p>A map which identifies the locations of priority flora species within the strategic material areas is located within GHD, 2009, 'Strategic Material Area Shark Bay Road and Useless Loop Road, Shark Bay Region, Flora and Fauna Survey'</p> <p>Main Roads will continue to liaise with DEC in relation to any identified priority flora species within the strategic material areas.</p>			<p><i>Vegetation) Regulations 2004</i></p> <p><i>Wildlife Conservation Act 1950</i></p> <p><i>Wildlife Conservation Regulations 1970 (WA)</i></p> <p>Main Roads environmental guideline: Biological Survey 6707/017</p> <p>Native Vegetation Clearing Regulations and Permits 6707/034</p>
	TEC's, Declared Rare and Priority Flora - Monitoring/ Inspection	Construction	Ensure impacts to priority flora and other sensitive environmental aspects is minimised	<p>Location of priority flora species shall be marked and flagged to ensure minimal impact to these populations occurs during the course of the project.</p> <p>All personnel working on the project will be made aware of the requirements not to impact on the populations during the inductions.</p>			
13.	Fauna Management	Construction	To protect and avoid impact to native fauna	<p>No animals are to be intentionally harmed or killed by the project personnel, unless there is a real and immediate threat to human health. THIS INCLUDE SNAKES.</p> <p>Animals (including snakes) should be allowed to move on if there is no threat to human safety.</p> <p>If a snake will not move on a suitable qualified reptile handler shall be called.</p> <p>If a sick or injured animal is encountered the Department of Environment and Conservation, Shark Bay Office shall be called.</p> <ul style="list-style-type: none"> - Department of Environment and Conservation, Shark Bay Office – (08) 9948 1208 	Project Manager Environment Officer Contractor	MRWA DEC	<p>Government legislation: <i>Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i></p> <p><i>Environmental Protection Act 1986</i></p> <p><i>Wildlife Conservation Act 1950</i></p> <p><i>Wildlife Conservation</i></p>

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
				<p>No pets, traps or firearms shall be allowed on site</p> <p>Any death or injury of an animal shall be reported to the supervisor and recorded as an environmental incident</p> <p>Main Roads will continue to liaise with DEC regarding impacts to fauna species.</p>			<p><i>Regulations 1970 (WA)</i></p> <p><i>Wildlife Conservation (Reptiles & Amphibians) Regulations 2002 (WA)</i></p> <p><i>Conservation and Land Management Act 1984 (WA)</i></p> <p>Main Roads environmental guideline: Biological Survey 6707/017</p>
	Fauna Management - Monitoring/ Inspection	Construction	Ensure impacts to priority fauna and other sensitive environmental aspects is minimised	<p>All personnel working on the project will be made aware of the requirements not to harm or kill any animals during the course of the project during site induction and that animals should be allowed to move away from project site.</p> <p>Investigation of any environmental incidents involving fauna will be undertaken by the Environment Office to ensure all remedial actions are completed.</p>			
14.	Aboriginal Heritage	Pre-Construction	Ensure that there is no unauthorised disturbance to Aboriginal heritage sites during construction	<p>Ensure Aboriginal heritage is managed in accordance with <i>Aboriginal Heritage Act 1972</i>.</p> <p>An Aboriginal Heritage Agreement has been developed between the Malgana Shark Bay People Native Title Claim Group and Main Roads. This agreement stipulates that on-ground heritage surveys will be commissioned by Main Roads and undertaken and undertaken by the Malgana Shark Bay People prior to any ground disturbing activities.</p> <p>All personnel are to be made aware of their obligations under the Aboriginal Heritage Act 1972 during Site Inductions.</p> <p>Any Aboriginal heritage sites identified in close proximity to the alignment shall be fenced to prevent inadvertent disturbance during construction.</p> <p>Works are to cease if skeletal material or Aboriginal artefacts are discovered.</p>	Project Manager Environment Officer Contractor	MRWA DIA	<p>Government Legislation: <i>Aboriginal Heritage Act 1972 (WA)</i></p> <p><i>Aboriginal Heritage Regulations 1974 (WA)</i></p> <p><i>Native Title Act 1993 (Commonwealth)</i></p> <p>Main Roads environmental guidelines: <i>Environmental Assessment and Approval 6707/001</i></p> <p><i>Aboriginal Heritage 6707/006</i></p>

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
				<p>Skeletal material:</p> <ul style="list-style-type: none"> - All works throughout the project area are to cease until given all clear by police. - Police are to be called to establish if the remains are a potential crime scene. - Remains are to be protected from further disturbance. - If the remains are determined to be of Aboriginal origin, Native Title claimants are to be consulted on the management of the remains. - Work at the immediate location (plus 25m buffer) of the skeletal remains is not to be recommence until all parties have been consulted and agreement has been reached. <p>Other Aboriginal artefacts:</p> <ul style="list-style-type: none"> - Work shall cease in the immediate vicinity of the discovery of aboriginal artefacts. - A qualified archaeologist shall examine the material. - If the material is deemed to be of Aboriginal origin, DIA and Native Title claimants are to be informed. - Treatment of the archaeological material shall be decided in consultation with DIA and Native Title claimants. 			
	Aboriginal Heritage - Monitoring/ Inspection		Ensure no disturbances to Aboriginal heritage aspects are caused during the course of the project.	<p>All personnel working on the project will be made aware of the requirements regarding Aboriginal heritage sites during site induction.</p> <p>The Project Manager and Environment Office will ensure on-ground heritage surveys are undertaken prior to any ground disturbing works at any of the proposed material areas.</p>			

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
15.	Weeds	Construction	Prevent and reduce the introduction and spread of weeds	<p>Where reasonable, the control of weed species within the project area prior to construction will be carried out to limit the amount of propagative material that may be spread during disturbance.</p> <p>The following machinery and vehicle hygiene measures will be utilised to avoid the inadvertent spread of weeds within any project areas:</p> <ul style="list-style-type: none"> • All clearing, topsoil stripping and gravel cartage activities will be conducted under dry soil conditions • All construction plant and machinery should be cleaned free of soil and vegetative material prior to arrival and prior to departing the project site. • Clean down will comprise of the use of a brush and/or compressed air to remove clumps of soil. A metal bar or spade will be used to remove compacted soil where necessary. • Dust adhering to the sides of vehicles does not need to be removed • All plant is to be inspected on arrival. • Unclean plant will not be allowed to enter the material site. <p>All site personnel will be advised of the hygiene measures.</p> <p>If a new weed infection is identified within the area, measures to reduce its spread should be established.</p> <p>Weed infested soil is not to be imported into the works for rehabilitation or fill.</p> <p>Declared Plants or environmental weeds listed under the Department of Agriculture and Food's <i>Declared Plants List</i> shall be controlled with the aim of eradication.</p>	Project Manager Environment Officer Contractor	MRWA Dept. of Ag & Food DEC	<p>Government Legislation: <i>Biosecurity and Agriculture Management Act 2007</i></p> <p><i>Agriculture and Related Resources (Declared Plants and Restricted Animals) Regulations 1982 (WA)</i></p> <p><i>Noxious Weeds Regulations 1973 (WA)</i></p> <p>Main Roads environmental guideline:</p> <p><i>Environmental Assessment and Approvals 6707/001</i></p>
	Weed - Monitoring/ Inspection	Construction	Ensure no introduced weed species or weed spread occurs	Inspections of plant equipment entering project area will occur to reduce any infestation of weed species			

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
16.	Dieback Management	Pre-construction	Ensure all Dieback Management issues have been addressed prior to construction work	<p>Phytophthora cinnamomi (“Dieback”) disease is generally restricted to areas in the south west of the State, south of the 26th parallel of latitude, and in areas receiving an average annual rainfall of greater than 400mm. As the proposed strategic material areas are within an area just south of the 26th parallel and receive less than 400mm of rainfall annually, the proposed material areas may be considered to be low risk for the Phytophthora cinnamomi pathogen.</p> <p>Machinery hygiene measure outlined in the weed management section above will be implemented to reduce risk of dieback spread.</p>	Environment Officer	DEC	
17.	Water Course and Hydrology	Construction	Maintain the hydrological regime that exists prior to the construction of the proposal and prevent erosion in areas subject to flooding	<p>No further impacts to any birridas will occur during the proposed project beyond the already disturbed areas. Material extraction within Material Area SLK 28.7 will be undertaken with extreme caution and no further material will be removed from undisturbed areas of the adjacent birridas. On-ground pegging of the material areas boundary will be undertaken and maps will be established identifying the location of the birridas and any ‘no go’ zones.</p> <p>Works should minimise vegetation and soil disturbance to prevent soil movement.</p> <p>All disturbance works will be undertaken during dry seasons to reduce the potential for soil erosion and drainage line siltation and to avoid interactions with personnel and heavy rainfall and flood waters.</p> <p>All activities will be implemented in association with the DoW’s ‘Water Quality Protection Note 44 – Roads near sensitive water resources.</p> <p>If additional groundwater is required, Main Roads will apply for a 26D Licence under the Rights in Water and Irrigation Act 1914 to construct bores in these areas and apply for a 5C Licence for the abstraction of ground water.</p>	<p>Project Manager</p> <p>Environment Officer</p> <p>Contractor</p>	<p>MRWA</p> <p>DoW</p>	<p>Government Legislation:</p> <p><i>Environmental Protection Act 1986</i></p> <p><i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i></p> <p><i>Rights in Water and Irrigation Act 1914</i></p> <p><i>Rights in Water and Irrigation Regulations 2000</i></p> <p><i>DoW’s Stormwater Management Manual</i></p> <p>DoW’s ‘Water Quality Protection Note 44 – Roads near sensitive water resources.</p> <p>Main Roads environmental</p>

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
				Where large quantities of water are to be taken from local aquifers, Main Roads will undertake consultation with surrounding land owners and the Department of Water.			guideline: Water Protection 6707/005
	Monitoring/ Inspection	Construction	Ensure hydrological regimes are maintained within the Project Area	Site inspections shall be conducted at regular intervals throughout the course of the project to minimise construction impacts.			
18.	Water Quality	Construction	Prevent groundwater contamination associated with machinery storage, maintenance, bulk fuel storage and refuelling.	<p>Specific areas shall be designated for the storage, maintenance and refuelling of machinery/vehicles in discussion with a Main Roads' Environment Officer. These areas are to be situated on an impermeable surface layer (gravel sheeted as a minimum) not in close proximity to any watercourse/drainage.</p> <p>Bulk fuels area to be adequately bunded.</p> <p>If washdown facilities or chemical storage takes place on site, best management practices will be utilised in accordance with <i>DoW's Water Quality Protection notes, Mechanical Equipment Washdown</i> to minimise impacts on water resources.</p> <p>Significant spills are to be reported immediately to Main Roads and as specified in the Waste Management section.</p> <p>All activities will be implemented in association with the DoW's 'Water Quality Protection Note 44 – Roads near sensitive water resources.</p>	Project Manager Contractor Environment Officer	MRWA DoW	
19.	Monitoring/ Inspection	Construction	Ensure groundwater quality is maintained throughout project	Site inspections shall be conducted at regular intervals throughout project time frame to minimise impacts to sensitive environmental aspects.			

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
20.	Rehabilitation	Post-Construction	<p>Leave the project area free from debris; and</p> <p>Rehabilitate temporary cleared area so that the revegetated area provides a net increase in area of native vegetation.</p>	<p>Revegetation of temporary cleared area will be undertaken in accordance with Main Roads' Revegetation Plan for Pastoral Areas, as outlined in Appendix H of the Environmental Assessment Report for this project.</p> <p>Landscaping and rehabilitation works will ensure that run off does not pond on the site and attract grazing animals including goats and so that safe batters are established.</p> <p>All waste materials from the development are to be completely removed from the site upon completion of the project. Final clean-up shall be to the satisfaction of the Project Manager and Environment Officer.</p>	<p>Project Manager</p> <p>Environment Officer</p> <p>Contractor</p>	<p>MRWA</p> <p>DEC</p>	<p>MRWA Gascoyne Region - Clearing Purpose Permit</p> <p>Main Roads environmental document: Revegetation Plan for Pastoral Areas 6707/048</p>
	Rehabilitation - Monitoring/ Inspection			Monitoring of revegetation works will be in accordance with Main Roads' Revegetation Plan for Pastoral Areas			
21.	Record keeping	All phases of construction	All required records relating to clearing of native vegetation under Main Roads Purpose Permit will be maintained.	<p>Clearing:</p> <ul style="list-style-type: none"> a copy of the PEIA & EMP shall be maintained on record; a map showing the location where the clearing occurred, recorded in an ESRI Shapefile; the size of the area cleared (in hectares); and the dates on which the clearing was done. <p>Offsets:</p> <ul style="list-style-type: none"> a copy of each offset proposal; a map showing the location where any offset have been implemented, recorded in an ESRI Shapefile; a description of the offset implemented; and the size of the area of the offset (in hectares) <p>Revegetation and rehabilitation of areas:</p> <ul style="list-style-type: none"> a copy of the Revegetation Plan; a map showing the location of any area revegetated and rehabilitated recorded in an ESRI Shapefile; a description of the revegetation and rehabilitation activities undertaken; and the size of the area revegetated and rehabilitated (in hectares). 	<p>Project Manager</p> <p>Environment Officer</p>	<p>MRWA</p> <p>DEC</p>	<p>MRWA Statewide Clearing Purpose Permit</p> <p>Main Roads environmental guideline: Environmental Assessment and Approval 6707/001</p> <p>Native Vegetation Clearing Regulations and Permits 6707/034</p>

No.	Area of Management	Timing	Objective	Action	Responsible Party	Advice	To the Requirements of
	Record Keeping - Monitoring/ Inspection	All phases of project	Maintain all required environmental and heritage records for auditing and reporting requirements	Control of weed and other pathogens <ul style="list-style-type: none"> • a copy of any management plan prepared; and • for any pathogen the appropriate steps taken All environmental and heritage approval records will be maintained on appropriate files for auditing and reporting purposes.			

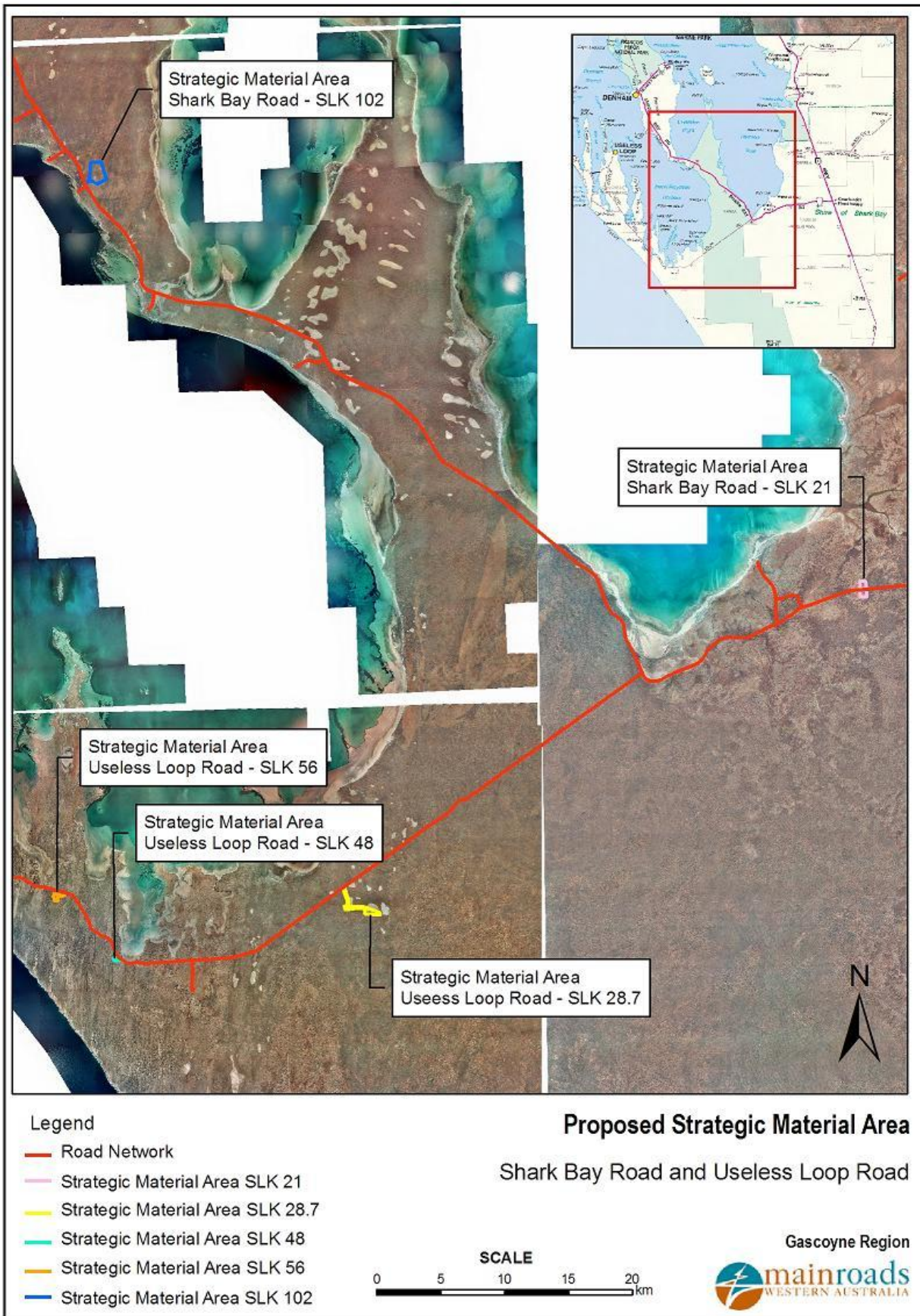


Figure 1: Location of the Proposed Strategic Material Area in relation to Shark Bay Road and useless loop road

Appendix A
ENVIRONMENTAL ASPECTS AND IMPACT RISK REGISTER

Table A1: Risk Likelihood (probability)

Likelihood	Description	Probability of Occurrence during Project Life
Almost certain	Many times daily	>90%
Likely	Approximately once daily	50% - 90%
Possible	Once a week to once a months	15% - 49%
Unlikely	Once a month to once a year	5% - 14%
Very unlikely	It has known to have happened	<5%

Table A2: Risk Magnitude (Consequence) of Impact

Level	Description	Consequence
1	Insignificant	Very low or positive impact on the environment
2	Minor	Limited and/or localised impact on the environment
3	Moderate	Reversible impacts. Wider implications on the environment
4	Major	Serious long term implications for the environment
5	Catastrophic	Serious or permanent damage to the environment

Table A3: Risk Level Matrix

Risk level Matrix					
Probability*	Consequences*				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	High	High	Extreme	Extreme	Extreme
Likely	Moderate	High	High	Extreme	Extreme
Possible	Low	Moderate	High	Extreme	Extreme
Unlikely	Low	Low	Moderate	High	Extreme
Very unlikely	Low	Low	Moderate	High	High

*Consequence: the result from an accident involving a hazard.

*Probability: the likelihood of a hazard becoming a hazard event.

Table A4: Risk Level Matrix Description

Risk Level	Qualitative Risk Action Description
Extreme	Immediate action required
High	Senior management attention needed
Moderate	Management responsibility must be specified
Low	Manage by routine procedures

Shark Bay Road Strategic Material Areas Environmental Aspects, Impacts and Risk Register

					Initial Risk			Proposed Controls	Residual Risk		
					Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Management Area	Classification	Aspects	Impacts	Possible Consequence	L	Env. Harm	Risk Level		L	Env. Harm	Risk Level
Aboriginal Heritage Management	Social	Ground disturbance works	Disturbance/ interference with a Aboriginal site of significance	May result in damage to significant Aboriginal heritage aspects and breach of <i>Aboriginal Heritage Act 1972</i> .	Likely	Moderate	High	Consultation will be undertaken with Aboriginal claimant group.	Unlikely	Moderate	Mode rate
Fauna Management	Biodiversity	Construction	Death/ injury to native fauna including threatened and vulnerable species	Breach of State and Commonwealth legislation.	Possible	Moderate	High	<p>Minimise the amount of vegetation clearing within project area.</p> <p>Allow fauna to move away from project area.</p> <p>Record the death or injury of fauna as an environmental incident.</p>	Unlikely	Moderate	Mode rate
Land Disturbance	Biodiversity	Ground disturbance including the clearing of native vegetation	Disturbance of conservation significant vegetation	<p>Impacts to identified priority flora species and protected fauna habitat within project area.</p> <p>Breach of State and Commonwealth legislation.</p>	Possible	Major	Extreme	<p>Targeted flora and fauna survey undertaken to identify significant flora species.</p> <p>Priority flora species to be marked and for personnel to be made aware of priority location and necessary conservation.</p>	Unlikely	Moderate	Mode rate

Fire Risk	Biodiversity	Outbreak of Fire	Damage to vegetation and fauna habitat, risk to human life and infrastructure, damage to adjacent national park	Temporary loss of vegetation and fauna habitat. Risk to human life, infrastructure and impacts to economy. Risk of bush fire.	Unlikely	Major	High	Development of an Emergency Response Plan. Implementation of EMP with adequate fire control actions.	Unlikely	Moderate	Moderate
Waste Management	Biodiversity	Waste disposal during construction works	Pollution of natural environment	Discharge of environmentally harmful pollutants into the environment, which may impact on national park, fish industries and human health.	Unlikely	Major	High	Implementation of EMP with adequate waste management protocols.	Unlikely	Moderate	Moderate
Dust Management	Air	Construction works	Generation of dust	Result in complaints from nearby stakeholders and impacts to public safety.	Possible	Minor	Moderate	Implement a Dust Management Plan to ensure likely impacts are diminished. Ensure complaints are handled efficiently via the communication plan.	Unlikely	Minor	Low
Weed Management	Biodiversity	Construction and land clearing	Spread of weed from contaminated machinery, equipment and vehicles	Spread of weeds and declared plants within project area which may lead to the degradation of surrounding environment.	Likely	Moderate	High	Implementation of weed hygiene management actions to minimise impact of construction works.	Unlikely	Moderate	Moderate
Temporary clearing	Biodiversity	Rehabilitation of temporary cleared areas – Borrow pits	Failure to correctly strip and stockpile topsoil and vegetation	Loss of soil and native seed viability in topsoil. Increase likely impacts of weed spread.	Possible	Moderate	High	Ensure stockpiling and revegetation is undertaken in accordance with MRWA revegetation plan and EMP.	Unlikely	Moderate	Moderate

Erosion & Sediment Control	Land	Clearing areas	Unnecessary clearing of vegetation	Loss of biodiversity and increase likelihood of erosion and dust issues.	Possible	Minor	Moderate	Ensure clearing is kept to a minimum and revegetation of temporary cleared area occurs as soon as possible.	Unlikely	Minor	Low
Hydrocarbons /Chemical Management	Land & Water	Storage & use of hydrocarbons/ chemicals	Spills of chemicals and hydrocarbons onto the ground or into waterways	Result in contamination of site, surface and groundwater. May result in death of flora and fauna and loss of biodiversity, may impact on national park, fish industries and human health.	Possible	Major	Extreme	Ensure spill response kits are available at all times on site, chemicals are stored correctly and adequate response actions have been incorporated into EMP.	Unlikely	Minor	Low
Hydrocarbons /Chemical Management	Land	Weed Spraying	Drift of herbicides outside of designated area	Result in death of native vegetation, including non-targeted flora and protected flora.	Unlikely	Major	High	Use of only registered herbicide operators. No straying should be undertaken during windy conditions.	Very Unlikely	Minor	Low

Appendix B
ENVIRONMENTAL INCIDENT CATEGORY
(from 6707/042 Environmental Guideline – Environmental Incident Reporting and Investigation)

Incident Category	Definition	Examples
MINOR ENVIRONMENTAL INCIDENT	<p>Where the environmental impact is limited and is confined within the work site. Environmental impacts are readily addressed through clean up or changes to work practices.</p> <p>Breach of project or contract EMP.</p> <p>NB: Minor incidents that have a high frequency of recurrence are indicative of underlying issues associated with work practices. This in turn increases the potential for these minor incidents developing into significant incidents.</p>	<p>Uncontained hydrocarbon spillage <200 L.</p> <p>Dust suppression spray failure without causing off site impact.</p>
SIGNIFICANT ENVIRONMENTAL INCIDENT	<p>Incident involving off-site environmental impacts that requires significant resources to address.</p> <p>Non-compliance with statutory requirements or environmental criteria requiring reporting to authorities.</p>	<p>Clearing outside of approved area (<100m²).</p> <p>Over spray of herbicides damaging nearby crops or native vegetation.</p> <p>Dust monitoring results exceed statutory criteria.</p> <p>Failure to submit compliance report to DEC within the timeframe.</p>
	<p>Non-conformance with EMP occurring within the work site where the environmental impact is significant and has the potential for an offsite environmental impact.</p>	<p>Uncontained hydrocarbon spillage >200 L.</p> <p>Dust suppression spray failure causing actual off-site impact.</p> <p>Unauthorised clearing of rare flora.</p>
MAJOR ENVIRONMENTAL INCIDENT	<p>Any on-site or off-site environmental incident resulting in significant long term environmental harm</p> <p>An incident resulting in prosecution under environmental laws.</p>	<p>Unauthorised clearing of a large area (>100 m²).</p> <p>Actual pollution of waterways (eg. by on-site or off-site fuel spills).</p> <p>Land disturbance resulting in damage to public infrastructure (power line or water pipes) which impact on a group of people.</p>

Appendix C
TIMING AND NOTIFICATION OF ENVIRONMENTAL INCIDENTS
(modified from 6707/042 Environmental Guideline – Environmental Incident Reporting and Investigation)

Incident Category	Personnel to be Notified by Whom	Timing of Notification
MINOR	<ul style="list-style-type: none"> ▪ Observer(s) notifies the relevant Supervisor 	<ul style="list-style-type: none"> ▪ By the end of the working day.
SIGNIFICANT	<ul style="list-style-type: none"> ▪ Observer(s) notifies the relevant Supervisor ▪ Supervisor notifies the Project Manager and Environment Officer ▪ Project Manager notifies Manager Environment and DEC if the incident is a non-compliance with statutory requirements or has resulted in pollution or environmental harm. 	<ul style="list-style-type: none"> ▪ Upon completion of remediation actions. ▪ Upon completion of initial incident assessment. ▪ Upon completion of initial incident assessment.
MAJOR	<ul style="list-style-type: none"> ▪ Observer(s) notifies the relevant Supervisor. ▪ Contractor's Supervisor notifies Project Manager and Environment Officer. ▪ Project manager notifies DEC, Manager Environment and relevant Executive Directors. 	<ul style="list-style-type: none"> ▪ Immediately. ▪ Immediately. ▪ Upon completion of initial incident assessment and/or site emergency response procedure.

**Appendix D
ENVIRONMENTAL INCIDENT AND INVESTIGATION REPORT**

CONTRACT
NUMBER

CONTRACTOR

REGION

INCIDENT
REPORT
NUMBER

PART A – INCIDENT DETAILS		
OBSERVATION DETAILS		
Name:		Position:
Company: Select		
DETAILS OF INCIDENT		
Location:	Time: Select	Date: / /
INCIDENT CATEGORY (Refer Environmental Incident Category Attached):		Select
MANAGEMENT NOTIFIED (<i>Refer Environmental Incident Notification Process attached</i>)		
Select		
DETAILS OF INCIDENT (<i>i.e. Where did the incident occur? What happened? How the incident happened?</i>)		
IMMEDIATE REMEDIAL ACTION TAKEN (<i>To Stop, Control or Contain the Incident</i>)		
DESCRIPTION OF ENVIRONMENTAL IMPACT (<i>Size, Duration</i>)		

PART B – INCIDENT INVESTIGATION			
7. DESCRIPTION OF EVENTS LEADING UP TO THE INCIDENT			
8. CONTRIBUTING FACTORS / IMMEDIATE CAUSES			
9. LIKELY UNDERLYING CAUSES			
10. CORRECTIVE AND PREVENTIVE ACTION			
DESCRIPTION	Responsible Person	Target Completion	Date Completion
11. TEAM INVESTIGATION			
NAME	POSITION	SIGNATURE	
	(Investigation		
	(Team		
	(Team		
	(Team		
12. COMMENTS (<i>Contractor's Representative</i>)			
		Signature & Date	
13. COMMENTS (<i>Contract Manager</i>)			
		Signature & Date	
14. COMMENTS (<i>Main Roads Environment Manager – Significant Incident Only</i>)			
		Signature & Date	

Appendix E
ENVIRONMENTAL CHECKLIST
Shark Bay Strategic Material Areas

Date of Inspection:	Officer:	Checklist Sequence Number:
Serials from previous inspection that required further action:		
Have all the further actions identified from previous inspections been closed out?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA

Number	Aspect	Scope	Compliance	Comments/Observations
1.	General	Have all staff received an environmental induction?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
2.		Does the environmental induction require updating?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
3.	Aboriginal Cultural and Heritage Sites	No Aboriginal sites have been disturbed or located	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
4.	Material Pits	Visual inspection of active pit and rehabilitated pits for weeds, topsoil management & regrowth.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
5.	Weed Management	Field inspection for the presence of weeds, particularly in problem areas.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
6.		Plant & vehicle inspection logs up to date	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
7.		Washdown register up to date	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
8.		Presence of weeds and implementation of mitigation measures.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	

Number	Aspect	Scope	Compliance	Comments/Observations
9.		Herbicide use.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
10.	Drainage Management	Evidence of scour, erosion around culverts and batters	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
11.		Visually inspect native vegetation around bores for draw down effects e.g. sudden dying off	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
12.	Noise Management	Compliance with plant and vehicle noise maintenance activities.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
13.		Investigations of received complaints.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
14.	Vegetation	Inspection of clearing lines, temporary fences and markings	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
15.		Has any over clearing occurred since last inspection?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
16.	Priority Species Management	Are all known populations priority flora marked and sign posted	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
17.		Inspect priority flora populations for damage	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
18.	Fire Prevention	Does the fire trailer have water in it?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
19.		Observations of any potential ignition sources or fuel source	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
20.	Dust Management	Is dust mitigation being carried out?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
21.		Have any complaints about dust been received from residents?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	

Number	Aspect	Scope	Compliance	Comments/Observations
22.	Handling, Storage and Disposal of Dangerous Goods	Implementation of measures to minimise the risk of spills and land contamination.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
23.		Inspect chemical and fuel storage areas	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
24.		Are fuels, oils & hazardous substances being stored in bunds/drip trays with adequate capacity?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
25.		Is a spill kit located at the designated refuelling point?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
26.		Do all refuelling vehicles have spill kits?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
27.	Waste Management	Are waste containers clearly labelled?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
28.		Visual inspection for litter on site	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
29.		Are waste materials being regularly removed from site?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
30.	Fauna Management	Fauna encounters including death or injury.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
31.		Any significant encounters with native fauna (i.e. snakes)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
32.	Environmental Incidents	Have there been any environmental incidents since the last inspection?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
33.		If so, have they been reported and investigated?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	

Number	Aspect	Scope	Compliance	Comments/Observations
34.	Rehabilitation and Topsoil Management	Visual inspection of rehabilitation and vegetation within material areas, noting areas where vegetation is in a poor condition	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
	Summary	List serials above that require further action		

Additional Comments:

Signed: _____

Date: _____

