

Appendix A2

Environmental Aspects and Impacts Register

Purpose

This Environmental Aspect and Impact Register has been prepared by Arup to supplement the Environmental Risk Analysis conducted as part of the Environmental Impact Statement (EIS). This register has been updated with relevant risks as included in the Project Risk Register Rev B (last modified 05/04/2013).

The identification of significant construction activities and associated impacts that could eventuate during construction of the Project is central to the selection of appropriate environmental safeguards.

The risk management process involved an assessment of all specific project activities/aspects in or near environmentally sensitive areas and resulted in the development of a list of environmental risks (effects and impacts) and a corresponding risk mitigation strategy and risk ranking. Each environmental risk was categorised, based on the following:

- The environmental aspect.
- Relative scale of the potential impact.
- Type of potential impact.
- Likelihood of occurrence.

The identification of risks included a review of the proposed works, the CoA (June 2014), and review of the environmental risks identified by the EIS and the Submissions / Preferred Infrastructure Report.

This Environmental Aspects and Impact Register is to be revisited and revised as part of the construction contract.

Table 1: Risk Register Whytes Lane to Pimlico Road Early Works – Wave 2

Risk Rating: EH = Extremely High Risk, H = High Risk, M = Medium Risk, L = Low Risk

Ref#	Construction activity / aspect	Potential impacts / Risks	level prior to mitigation	Mitigation Measures and brief explanation of controls Apply in order: 1. Eliminate>>2. Substitute>>3. Isolate>>4.Engineer>>5. Admin.>> 6 PPE.	level following mitigation	Management Documents / Training Required
1	NON-CONSTRUCTION					
1a	Survey Works					
	<ul style="list-style-type: none"> Clearing Geotechnical Drilling Test pits (if required) Drill rig refuelling 	<ul style="list-style-type: none"> Erosion and sedimentation Improper control/containment of bored material Damage to native flora/fauna Unanticipated contamination Fuel spill Hydraulic hose rupture Spread of weeds/pests 	H	<ul style="list-style-type: none"> Non-construction activity EWMS (Survey works) Development of erosion and sediment controls Use existing roads wherever possible Design sample locations to minimise disturbance (where possible) Use temporary wash bays where necessary 	M	<ul style="list-style-type: none"> Non-construction activity EWMS (Survey works) Minor Consistency Review (MCR) ESCP
1b	Site establishment – McAndrews Lane					
	<ul style="list-style-type: none"> Earthworks Access road construction Utility installation Amenities/storage Parking lot construction Storage of fuels, oils, chemicals Lighting Signage Traffic management Energy considerations ASS/{PASS treatment Pad ?? 	<ul style="list-style-type: none"> Erosion and sedimentation Unanticipated contamination Fuel spill Contamination of creek/waterway Noise impacts from plant and equipment, vehicles, cranes Visual impacts to local residents - light pollution No energy initiatives in place Community not aware of site establishment activities Poor sewerage management Dust generation Increased flood impacts from works Housekeeping Waste management Afflux Trigger 'Construction' 	EH	<ul style="list-style-type: none"> Non-construction activity EWMS (Site Establishment) Notify community in advance according to Community Action Plan requirements Water truck onsite during construction of laydown pad/site establishment Surface stabilisation to avoid dust generation and batter stabilisation for erosion protection Install ESC according to approved ESCP Raise pad level 200 - 500mm to above 1:20 year flood Pad location chosen to minimise potential flood impact Review plan to ensure sufficient parking is provided Storage, compound access and parking areas, as early during works as practicable. Chemical storage in accordance with WorkCover and EPA storage requirements. Refuelling in bunded areas only Use approved contained toilet block units on site – Keep receipts must be a lawfully licenced facility- pump out tuck receipts to match facility deposit receipts. Track with waste management register Utilities water tank, wireless internet (no cabling) Spill response training and drill practice for fuel spills Keep works area tidy Regular communication with EPA during site establishment Keep adequate bins etc onsite Assess potential impacts associated with fill on afflux 	H	<ul style="list-style-type: none"> Non-construction activity EWMS (Site Establishment)MCR ESCP Ancillary Facilities Assessment Process Ancillary Facility Management Plan
1c	Temporary Pavement Construction					

Ref#	Construction activity / aspect	Potential impacts / Risks	level prior to mitigation	Mitigation Measures and brief explanation of controls Apply in order: 1. Eliminate>>2. Substitute>>3. Isolate>>4.Engineer>>5. Admin.>> 6 PPE.	level following mitigation	Management Documents / Training Required
	<ul style="list-style-type: none"> Whytes Lane turning lane Concrete barrier installation Asphalt tack application Monitor weather conditions Excavation (potential ASS) Compaction Prime/Asphalt Traffic Management 	<ul style="list-style-type: none"> Bitumen emulsion/tack spill Runoff to waterways or sensitive areas Fuel spill Noise impacts from plant and equipment Dust generation Fire / explosion from diesel Works carried out in unsuitable weather conditions.petro-chemical runoff Not having proper environmental controls in place Mud on road during lane construction Traffic Management Impacts of concrete barriers on hydrology Acid sulphate soils – may need to do pre-checks/sampling 	E	<ul style="list-style-type: none"> Non-construction activity EWMS (Temporary pavement) No Diesel stored on site Spill response training PASS response plan Install ESC as per ESCP Review 7 day rain forecast daily and plan works accordingly rain = no primer.Criteria <10% chance rain in the following 48 Hours Reuse of aggregate where possible/permissible Abide by Traffic Management Plan Rumble grid and washdown areas (if required) Install barriers to minimise runoff impacts on road flooding Work within designated hours Waste material incorporated into temporary pavements if meets the recovered aggregate exemption 	H	<ul style="list-style-type: none"> Non-construction activity EWMS (Temporary pavement) MCP TMP ERSC ASS response plan MCR
1d	Community notification of non-construction activities					
		<ul style="list-style-type: none"> Community not aware of non-construction activities Adverse public relations Stop works All required Permit to enters not attained 	E	<ul style="list-style-type: none"> Notify community in advance. 2 week notification prior to works Implementation of the Community Action Plan Keep EPA in the loop with any community issues/pests so they are aware of it 	L	<ul style="list-style-type: none"> W2B Community Stakeholder Engagement Strategy
1e	Nest box installation					
		<ul style="list-style-type: none"> Damage/disturbance to native flora/fauna Nest boxes installed in unsuitable location Not installed prior to ' construction' 	H	<ul style="list-style-type: none"> Non-construction activity EWMS (Nest box installation) and SWMS Locations determined in consultation and gained approval from relevant authorities/departments as per the approved NBMP? Nest box installation to supervised and approved by ecologist 	L	<ul style="list-style-type: none"> Non-construction activity EWMS (Nest box installation) MCR – Not required, EWMS. Locations/box changes need to get approved by ERG. Early works permit from RMS enviro Approved NBMP
1f	Dust monitoring gauge installation					
		<ul style="list-style-type: none"> Dust monitoring gauges installed in unsuitable location Unrepresentative data collected Land-owners not consulted prior to installation Damage to dust monitoring gauges 	M	<ul style="list-style-type: none"> Locations determined and approved by consultation with relevant authorities/departments Installation supervised by environmental manager/ER to ensure correct installation Consult land owners through the appropriate communication strategy prior to installation In checklist incorporate a comments/photo section. This will help with any outlier results. Take a photo of it during collection. Commentary about changes month to month. Link to the work activities and community activities. Seasonal changes are to be expected. Agricultural activities happening etc. 	L	<ul style="list-style-type: none"> Non-construction activity EWMS (Dust guage installation)
1g	Access track establishment					
	<ul style="list-style-type: none"> Dust Erosion and sedimentation Refuelling Upgrade existing track Flooding/hydrology 	<ul style="list-style-type: none"> Dust generation Pollution of waterways Mud and dirt or public roads Fuel spills Flooding effect of access track EPL boundary 	H	<ul style="list-style-type: none"> Non-construction activity EWMS (Access track establishment) Regular sealed road cleaning if required Weather considerations taken into account during earthworks Water carts / cleaning vehicles onsite at all times Truck inspections carried our prior to entering public roads (if required) Follow refuelling procedure i.e. no refuelling outside of bunded area Spill kits to be available on site at all times Develop ESCP and review effectiveness Regular inspection and repair / review of ESCP Minimise access track height reduce flooding impacts Stay within EPL boundary 	L	<ul style="list-style-type: none"> Non-construction activity EWMS (Access track establishment) MCR Ancillary Facilities Assessment Process

Ref#	Construction activity / aspect	Potential impacts / Risks	level prior to mitigation	Mitigation Measures and brief explanation of controls Apply in order: 1. Eliminate>>2. Substitute>>3. Isolate>>4.Engineer>>5. Admin.>> 6 PPE.	level following mitigation	Management Documents / Training Required
2	Approvals, licences and permits					
2a	Seeking/obtaining appropriate approvals and licences					
	<ul style="list-style-type: none"> Not identifying appropriate approvals/ licences or proceeding without relevant approvals/ licences 	<ul style="list-style-type: none"> Delay to project start, required to cease work, fines, adverse publicity, poor client relations, jeopardise future work 	E	<ul style="list-style-type: none"> Check EIS and RMS project/contract specifications Establish register of approvals, licences and permits Compliance tracking program 	L	<ul style="list-style-type: none"> Compliance Tracking Program Ancillary Facility MCR Out of Hours Works Procedure
2b	Licence/approval/ permit requirements					
	<ul style="list-style-type: none"> Not meeting requirements/exceeding allowable criteria 	<ul style="list-style-type: none"> Required to cease work, fines, adverse publicity, poor client relations, jeopardise future work 	E	<ul style="list-style-type: none"> Ensure requirements are addressed in CEMP and appendices Develop and implement appropriate monitoring programs Compliance tracking 	L	
	<ul style="list-style-type: none"> New activity required or new location that was not covered by initial planning approval/licence 	<ul style="list-style-type: none"> Delays to works program Required to cease/demolish work if approval not obtained/work not permitted in location 	E	<ul style="list-style-type: none"> Procedure for review of new activities by Environmental Manager to decide whether additional planning approval is required. Plan well ahead and ask the right questions 	L	
	<ul style="list-style-type: none"> Commitments made by RMS to regulator (EPA, Local Council, Community) Ensuring all commitments made by RMS and reflected in contract documents are actioned 	<ul style="list-style-type: none"> Contractual penalties Damage to reputation Delays to project 	H	<ul style="list-style-type: none"> Adequate environmental resourcing Consultation and dialogue with RMS A proactive approach to managing Environmental requirements 	M	
	<ul style="list-style-type: none"> Environmental documents not approved within program schedule Reviews by RMS and various regulators 	<ul style="list-style-type: none"> Rejection of environmental documents by RMS or regulator Delays to work Cost to project 	H	<ul style="list-style-type: none"> Adequate environmental resourcing Consultation and dialogue with RMS Register of all environmental requirements to be developed and adhered to Environmental documents to be prepared ahead of schedule 	M	
	<ul style="list-style-type: none"> Licence variations Licence not properly prepared or prepared on time 	<ul style="list-style-type: none"> Delays to work Damage to relationship with EPA 	H	<ul style="list-style-type: none"> As per EPA Licence variation procedures 	L	
	<ul style="list-style-type: none"> Unanticipated permits Variation not identified 	<ul style="list-style-type: none"> Delays to work 	H	<ul style="list-style-type: none"> Maintain licence and permit register 	L	
3	Planning and design					
3a	Approvals	<ul style="list-style-type: none"> Note: see Approvals, Licences and Permits above 				
	<ul style="list-style-type: none"> Non-construction activities All non-construction works not addressed Works commence without all non-construction tasks complete 	<ul style="list-style-type: none"> Delay of works program Property mapping potential delay 	H	<ul style="list-style-type: none"> See Approvals, Licences and Permits above Use good quality mapping to clearly show limits/boundary/activity changes 	L	
	<ul style="list-style-type: none"> Design plans and drawings Design plans/reports not complete for licence application 	<ul style="list-style-type: none"> Delay to obtaining EPL Delay of works program 	H	<ul style="list-style-type: none"> See Approvals, Licences and Permits above 	L	
	<ul style="list-style-type: none"> Design complying with contract documents RMS design specifications Blue book criteria for environmental control structures 	<ul style="list-style-type: none"> Delay to obtaining EPL Delay of works program Design does not address blue book criteria Rework design 	E	<ul style="list-style-type: none"> See Approvals, Licences and Permits above Seamless EPL whites lane overlap boundary adjustment Communication required with EPA and Leightons 	M	
4	Emergency Response					

Ref#	Construction activity / aspect	Potential impacts / Risks	level prior to mitigatio	Mitigation Measures and brief explanation of controls Apply in order: 1. Eliminate>>2. Substitute>>3. Isolate>>4.Engineer>>5. Admin.>> 6 PPE.	level following mitigatio	Management Documents / Training Required
	Emergency or Significant Incident <ul style="list-style-type: none"> • Bushfire • Flooding • Fuel and chemical spills 	<ul style="list-style-type: none"> • Chemical/fuel/oil spill • Fuel spill leading to environmental harm • Spill to creek 	E	Measure provided in: <ul style="list-style-type: none"> • Emergency Incident Preparedness Response Plan; • Pollution Incident Response Management Plan • Flood preparedness and Action Plan • Emergency Management Plan <ul style="list-style-type: none"> • Spill equipment on site and regularly maintained and toolboxed Adequate training in spill kit use and material disposal requirements Consultation with relevant authorities Immediate notification of EPA after incident <ul style="list-style-type: none"> • Report immediately to the EPA even if don't have all the information. Get back to them with all the details as soon as available. If in doubt call the EPA • RMS hazardous materials reporting procedure. • Use updated EPA notifiable incident procedures • RMS incident notification and reporting procedure 	H	Emergency Incident Preparedness Response Plan Pollution Incident Response Management Plan Emergency Management Plan Flood Warning and Evacuation Plan RMS incident notification and reporting procedure

Ref#	Construction activity / aspect	Potential impacts / Risks	level prior to mitigation	Mitigation Measures and brief explanation of controls Apply in order: 1. Eliminate>>2. Substitute>>3. Isolate>>4.Engineer>>5. Admin.>> 6 PPE.	level following mitigation	Management Documents / Training Required
5	Special Considerations and Risks	•				
5a	Surface and groundwater	•				
	<ul style="list-style-type: none"> Clearing and grubbing Earthworks Wick Drains Creek diversions Structures in creeks Storage of fuels, chemicals and other dangerous goods Material stockpiles Maintenance of plant and equipment, including servicing and refuelling Drainage works Water use / extraction Temporary access road construction / removal from waterway areas. Waterway crossings Landscaping Noxious weed treatment 	<ul style="list-style-type: none"> Impacts on water quality Impacts on surface water flows Impacts on groundwater flows Spills in waterways Uncontrolled runoff from works areas Creek crossings not properly controlled/managed Introduction of contamination into groundwater Potential for groundwater discharge during construction, <i>resulting in localised drawdown of groundwater resources</i> Changes to water chemistry altering aquatic habitats, including threatened species habitats Major impacts to various sensitive receiving environments through accidental release of water pollutants during construction Impact to water quality due to fuels and leaks and inappropriate storage of material stockpiles Changes in water chemistry, in particular pH values, affecting aquatic ecosystems Potential acidic leachate from exposure of acid sulfate soils Potential release of tannins from stored mulch piles Disturbance of contaminated material causing pollution 		<p>Measures outlined in: CONSTRUCTION SOIL AND WATER QUALITY MANAGEMENT PLAN</p> <ul style="list-style-type: none"> Appropriately designed erosion control structures (eg sedimentation basins, ERSED-straw bales, silt fences, coir logs, sed socks and sand bags) will be installed, maintained and cleaned regularly. Locate spoil stockpiles, plant and equipment away from drainage lines, watercourses or stormwater drains in accordance with established criteria. Storage, compound access and parking areas stabilized, as early during works as practicable. Chemical storage meets WorkCover and EPA bunding/storage requirements. Wheel mud reduction/ cleaning measures at exit of all sites where required. Well designed temporary waterway crossings minimising risk of fines in waterways and designed to address larger flow volumes. Buffer zones of vegetation will be maintained adjacent to waterways for as long as practical. Rehabilitation and landscaping works of disturbed areas undertaken as soon as the works are completed and/or progressively where possible. Appropriately designed, implemented and maintained silt control systems to mitigate risk of water pollution during upgrade of the creek/cane drain bridges. Implement concrete washout process within bunded areas-very minor onsite concrete works Provide and maintain spill kits. Consult / confirm with EPA and Primary Industries for temporary creek crossings construction / removal methods. Engage soil conservationist to advise on ERSED issues. Install signage at discharge points to assist workers to understand implications of dirty water release in sensitive areas. Water Quality monitoring as required Implement the RMS dewatering guidelines. Implement the RMS Acid Sulfate Soil Management Procedure. – Appendix B11 Implement appropriate procedures to identify, contain, handle and management contaminated material as per unexpected discovery of contaminated land procedure Implement the RMS mulch and tannin protocol. No storage of mulch on site Use creek crossing design from the blue book (as a minimum) in consultation with project Soil Conservationist Consider cement stabilising surface to reduce ongoing maintenance and keep a long run on/off for your track. Blinding layer might be the easiest way. Monitor water quality according to EPL requirements and best practise. <p>Prepare a contingency plan for ASS treatment area (if required)</p>		<p>Construction soil and water quality management plan and appendices ESCP</p> <p>Ancillary Site Management Plan</p>
5b	Aboriginal Heritage / Non Aboriginal heritage					
	<ul style="list-style-type: none"> Early works including non - construction activities Clearing and grubbing Earthworks Survey /geotechnical investigations Clearing of vegetation Construction of site compounds and stockpile areas Temporary access roads 	<ul style="list-style-type: none"> Impacts/disturbance unknown Aboriginal sites or artefacts Impacts/disturbance unknown non-Aboriginal sites or artefacts Excavating >500mm on the compound Works outside the approved boundary 	M	<ul style="list-style-type: none"> Induct personnel on heritage issues and mitigation measures. Implement RMS unexpected archaeological/heritage find procedure Project site is not listed as a heritage area Excavation limit of 500mm on the compound area No Excavation anticipated 	L	CONSTRUCTION HERITAGE MANAGEMENT PLAN
5c	Biodiversity					

Ref#	Construction activity / aspect	Potential impacts / Risks	level prior to mitigation	Mitigation Measures and brief explanation of controls Apply in order: 1. Eliminate>>2. Substitute>>3. Isolate>>4.Engineer>>5. Admin.>> 6 PPE.	level following mitigation	Management Documents / Training Required
	<ul style="list-style-type: none"> Clearing and grubbing Earthworks Access Roads Survey /geotechnical investigations Weed spraying Works in / near waterways 	<ul style="list-style-type: none"> Loss and fragmentation of terrestrial fauna habitat impacting on threatened species and populations, including direct impacts on threatened flora and potential impacts on threatened fauna as a result of habitat loss and fragmentation Direct mortality of protected and threatened fauna Invasion and spread of terrestrial and aquatic weeds and pest fauna species Impacts on aquatic habitat resulting from impacts on hydrology, groundwater and water quality Potential spread of disease pathogens Spray drift impacting native flora Water quality impacts Potential fish kills Fungus phytophora 	H	<ul style="list-style-type: none"> Induct personnel on biodiversity issues and mitigation measures. Conform to unexpected encounter procedure/fauna handling procedure Ensure vegetation clearing boundaries are clearly marked and visible as per CONSTRUCTION FLORA AND FAUNA MANAGEMENT PLAN Prior to construction, identify habitat trees Record actual number of hollow bearing trees Conduct weed survey pre construction/ prior to clearing. Identify fungi Implement the Nest Box Management Plan Implement ongoing weed monitoring and management programs. Monthly inspections Chemicals applied by licenced contractor only No spraying during high wind or rain Review daily forecast / weekly forecast Disturbed areas will be monitored for effective soil stabilisation and restoration / rehabilitation. Implement a staged clearing process and undertake fauna rescue during clearing as required – 2 nights for habitat/hollow trees. Design and construct all temporary and permanent waterway crossings to RMS design – blue book design with soil conservationist Implement washing procedures to prevent the spread of pests and disease if required Conform to Root rot management plan if required after testing – cinnamon fungus Install tree protection zones Arborist assessment of boundary trees for safety No recorded threatened flora in the project area. Follow unexpected finds procedure Testing for root rot to be determined by ERG 	L	<p>CONSTRUCTION FLORA AND FAUNA MANAGEMENT PLAN</p> <p>Root Rot Management Plan (if required)</p>
5d	Access and Haul Roads					
	<ul style="list-style-type: none"> Refuelling 	<ul style="list-style-type: none"> Fuel Spills Contamination of land Pollution of waterways Potential fish kill Bushfire Non-conformance/fines 	E	<ul style="list-style-type: none"> Refuelling to be conducted in designated/bunded areas Follow refuelling procedure and flood management plan Induct staff on location refuelling area Emergency response procedures and spill kits kept onsite Notification of ESR/EM and response team Training provided on use of spill kit and clean up procedures 	H	Fuel Management Plan
	<ul style="list-style-type: none"> Erosion and Sedimentation 	<ul style="list-style-type: none"> Pollution of waterways Degradation of lands/loss of topsoil Generation of additional waste through sediment collection Decrease in capacity of ESC structures Siltation of cane drains/waterways Breach of licence conditions Runoff to properties Community complaints 	E	<ul style="list-style-type: none"> ESCPs developed and signed off by Soil Conservationist and RMS and relevant authorities EPA Implementation and maintenance of Project ESC controls and procedures Construction and management of rock check dams as per ESCP Dedicated ESC crews onsite Daily monitoring of road exits from site for mud/silt on road Truck wash down area as required Covering loads 	M	ESCP
	<ul style="list-style-type: none"> Dust 	<ul style="list-style-type: none"> Dust generation Pollution of waterways Tracking mud and dirt on public roads 	H	<ul style="list-style-type: none"> Regular road cleaning Water carts / cleaning vehicles onsite at all times Truck inspections prior to entering public roads Covering loads 	L	CAQMP
5e	Traffic and Transport					

Ref#	Construction activity / aspect	Potential impacts / Risks	level prior to mitigation	Mitigation Measures and brief explanation of controls Apply in order: 1. Eliminate>>2. Substitute>>3. Isolate>>4.Engineer>>5. Admin.>> 6 PPE.	level following mitigation	Management Documents / Training Required
	<ul style="list-style-type: none"> Temporary access roads General earthworks and construction Import of material / plant / equipment Site establishment Construction vehicle movements and deliveries Travel to/from site 	<ul style="list-style-type: none"> Temporary disruptions / delays to local and highway traffic Temporary restrictions to private access roads Noise vibration and dust nuisance to residents on haul routes 	M	<ul style="list-style-type: none"> Develop and update Traffic Management Plans for all stages of work. Identify and assess roads likely to be affected by Project construction and develop methods to minimise traffic increases. Undertake before and after dilapidation surveys on local roads Traffic controllers and / or signage for both egress and ingress off the work sites. All vehicles carrying materials to be adequately covered to prevent any loss of material, which may cause driver safety issues. Weed and seed certificates for all new plant/machinery transported to site Weed and seed certificate for any material/fill brought to site Weed and seed certificates for all vehicles on site? Community notification procedures Quarry extraction limits checked 	L	<p>CONSTRUCTION TRAFFIC AND ACCESS MANAGEMENT PLAN</p> <p>CONSTRUCTION AIR QUALITY MANAGEMENT PLAN</p> <p>CONSTRUCTION WASTE AND ENERGY MANAGEMENT PLAN</p> <p>EWMS / Induction</p>
5f	Clearing and Grubbing					
	<ul style="list-style-type: none"> Large exposed clearing areas Flora and fauna Air quality Dust generation Water quality Community Aboriginal and non-aboriginal heritage Weeds and herbicides Tannin generation Creek diversion 	<ul style="list-style-type: none"> Clearing without permit Area to be cleared/protected not clearly marked or delineated Stormwater runoff – sedimentation and erosion impacts Habitat trees cleared incorrectly Turbid water to waterways Windblown dust generation Large exposed areas unable to be managed Destruction of heritage Injury/damage to flora/fauna Weed infestation Tracking mud and dirt onto public roads Complaints and visual impacts Improper creek diversion resulting in water pollution Clearing outside boundary or clearance limits. (To clear outside will need to get approved prior to starting only have a limited area to be cleared over the entire W2B) Vegetation tracking Unsafe trees not identified before clearing therefore cannot wait 2 days before felling 	E	<ul style="list-style-type: none"> Delineation of clearing boundaries Appropriate staging of clearing to ensure manageable disturbance area Tool boxing and inductions Ecologist inspection/marketing of habitat trees/dangerous trees Project ecologist onsite during clearing activities Staged clearing process clearing non-habitat trees first ESCP controls in place prior to clearing and maintained Rumble bars/ grid to minimise tracking of mud offsite Follow procedures and approvals for creek diversion as per project specifications Weed management procedure Designate responsibility to one person to cover all clearing boundaries and protected areas etc to avoid confusion Pre-work walk every day prior to starting Identify all unsafe and habitat trees BEFORE clearing begins, including trees located adjacent to project boundary. 	H	<p>Pre-clearing ground disturbance Permit</p> <p>EWMS Clearing and Grubbing</p> <p>CONSTRUCTION FLORA AND FAUNA MANAGEMENT PLAN</p> <p>CWMS</p> <p>Vegetation clearing procedure</p> <p>Fauna handling and rescue procedure</p> <p>Induction</p>
5g	Sequencing of work					
	<ul style="list-style-type: none"> Multiple work faces open at one time Large exposed uncontrolled areas 	<ul style="list-style-type: none"> Increased risk of erosion/sedimentation Stormwater runoff Lack of environmental controls/resources 	E	<ul style="list-style-type: none"> Where sequencing requires multiple work faces, ensure adequate resources are employed to manage the works Environmental controls are developed for each work site/front and signed off by the project Soil Conservationist prior to commencement of work 	M	
5h	Bulk Earthworks					
	<ul style="list-style-type: none"> Heavy machinery Stockpiles Compaction Dewatering 	<ul style="list-style-type: none"> Erosion of disturbed areas Noise complaints Dust emissions Stormwater runoff to creeks-sedimentation Damage to native flora and fauna Destruction of heritage Vibration impacts from compaction Improper management of stormwater without controls in place 	E	<ul style="list-style-type: none"> Delineation of clearing boundaries/visibly Appropriate staging of clearing to ensure manageable disturbance area Tool boxing and inductions High risk weather events taken into account when planning/undertaking works to minimise risk due to high rainfall Out of hours work process in place No sensitive receivers identified 	H	<p>Pre-clearing ground disturbance Permit</p> <p>EWMS Clearing and Grubbing</p> <p>CONSTRUCTION SOIL AND WATER QUALITY MANAGEMENT PLAN</p> <p>CONSTRUCTION NOISE AND VIBRATION MANAGEMENT PLAN</p>
5i	Stockpiles					

Ref#	Construction activity / aspect	Potential impacts / Risks	level prior to mitigation	Mitigation Measures and brief explanation of controls Apply in order: 1. Eliminate>>2. Substitute>>3. Isolate>>4.Engineer>>5. Admin.>> 6 PPE.	level following mitigation	Management Documents / Training Required
	<ul style="list-style-type: none"> Felled trees Mulch Stockpile location Hauling stockpile materials Tannins from mulch stockpiles 	<ul style="list-style-type: none"> Windblown dust Erosion and Sedimentation Runoff to creeks Tannins entering waterways Weed spreading from stockpiled material 	H	<ul style="list-style-type: none"> ESCP and CWMS for stockpiles implemented ie location, max height Quarry control to minimise stockpile build-up Staging works to use all material brought to site daily Implement controls to prevent tannins entering waterways Follow stockpile management protocol Locate stockpiles in approved locations Follow tannin management procedures/guidelines 	M	CONSTRUCTION SOIL AND WATER QUALITY MANAGEMENT PLAN EWMS CWMS ESCP Stockpile Management Protocol
6	Landscaping					
6a	Soil amelioration requirements					
	<ul style="list-style-type: none"> Nutrient/fertilizers not applied per specification 	<ul style="list-style-type: none"> Plant/grass dieback Significant cost to project Erosion of batters Unapproved/incorrect seed etc in spray mulch Insufficient watering of spray mulch Weed survey prior to works commencing 	M	<ul style="list-style-type: none"> Follow landscaping plans and procedures in accordance with R178 Obtain RMS signoff/approvals Hydromulch batters Achieve 70% cover Progressive hydromulching application to encourage growth in warmer months Use approved type of spray mulch Adequate watering of spray mulch to get required coverage 	L	CONSTRUCTION FLORA AND FAUNA MANAGEMENT PLAN ESCP
6b	Weeds					
	<ul style="list-style-type: none"> Identifying weeds Removal of weeds Mulching of weeds 	<ul style="list-style-type: none"> Weeds not identified – weed infestation/contamination of existing and new landscape Weeds mulched on site and causing weed infestation in new landscaped area Improper removal of weeds contaminating work and landscape areas Introduction of new weedy species through poor weed hygiene of plant to site. 	H	<ul style="list-style-type: none"> Induction and toolboxes for workers on weed identification, weed areas and weed procedures/requirements/responsibility Cleaning of machinery prior to entering the project site for first time / leaving clean / weed infested areas Ongoing weed management onsite, spraying of stockpiles/disturbed areas Ongoing visual monitoring Monthly weed management program in summer (if required) Weeds managed as per weed and pathogen plan (FFMP) 	L	
7	Demobilisation					
	<ul style="list-style-type: none"> Removal of site buildings facilities Waste management Erosion and sediment control 	<ul style="list-style-type: none"> Waste generation Damage to services Spills Fines Generation of dust Construction disturbance footprint Contamination of ancillary facility area 	M	<ul style="list-style-type: none"> Follow waste management procedure Ensure adequate sediment and erosion control measures/site stabilisation for demobilisation Post construction land assessment Stabilisation of the site is important Progressive waste management leading up to project completion and demob. Remove ALL waste from site. Return site to previous condition or better upon project completion – RMS to give direction on laydown at demob. Appropriate testing to demonstrate no contamination of ancillary area. 	L	Ancillary Facilities Management Plan