

CHAPTER 23

Environmental mitigation and management



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23. Environmental management and mitigation

This chapter sets out the approach to environmental management for Brisbane Metro. In particular, it provides information on environmental management for construction and operation, including mitigation measures for managing potential impacts of Brisbane Metro.

23.1 Legislative and policy context

This section outlines the legislation relevant to the management of environmental impacts for Brisbane Metro. Further information on the legislation relevant to Brisbane Metro's construction and operation is provided in Chapter 22.

23.1.1 Commonwealth legislative requirements

Commonwealth environmental legislation relevant to Brisbane Metro includes:

- EPBC Act
- NT Act
- NEPM ASC
- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cwth).*

23.1.2 Queensland legislative requirements

Brisbane Metro is regulated by key Queensland legislation such as the EP Act, Environmental Protection Regulation and the Planning Act.

Other relevant Queensland legislation includes:

- ACH Act
- *Acquisition of Land Act 1967*
- Biosecurity Act
- *Building Act 1975*
- City of Brisbane Act
- Coastal Protection and Management Act
- DDA
- ED Act
- *Electrical Safety Act 2002*
- *Electricity Act 1994*
- Explosives Act
- Fisheries Act
- *Land Act 1994*
- *Local Government Act 2009*
- NC Act
- *Plumbing and Drainage Act 2002*
- QH Act
- *Regional Planning Interests Act 2014*
- *Stock Route Management Act 2002*
- *Survey and Mapping Infrastructure Act 2003*
- TI Act
- *Transport Operations (Passenger Transport) Act 1994*
- *Transport Operations (Road Use Management) Act 1995*
- *Transport Planning and Coordination Act 1994*
- Transport Security (Counter-Terrorism) Act
- VM Act
- Waste Reduction Act
- Water Act
- Work Health and Safety Act.

23.1.3 Brisbane City Council policies, guidelines and procedures

Brisbane Metro is identified as a priority action contained within the Council's *Brisbane. Clean, Green, Sustainable 2017-2031*. The strategy outlines Brisbane's sustainability achievements, future targets and commitments for a clean and green sustainable city.

The successful implementation of the Brisbane. Clean, Green, Sustainable strategy is reliant on a range of Council's environmental management policies and procedures, including Council's *Environmental Policy* (EM001). The policy outlines Council's commitment to prevent, manage and minimise environmental impacts associated with its activities, while conserving and enhancing the city's biodiversity and environmental quality. In doing so, Council will "*incorporate the principles of ecologically-sustainability development into our business and management systems and decision-making processes, to ensure the city's environment and resource efficiency improved over time*".

Council's Environmental Policy is supported by a suite of other policies and guidelines that provide direction on the management of specific environmental matters. These relate to general environmental management and reporting as well as specific environmental issues such as cultural heritage, erosion and sediment control, tree management, and pollution.

23.2 Approach to environmental management

Council's Corporate Environmental Management Guidelines state that the process of environmental management should ensure that all potentially harmful impacts are prevented or minimised and all environmental approvals are obtained and conditions complied with.

The approach to environmental management for Brisbane Metro will be to establish:

- environmental objectives or targets to be achieved through the design, construction or operation
- performance criteria, which demonstrate achievement of the environmental objectives, or serve as indicators of the need for mitigation measures
- mitigation measures to achieve the environmental objectives, identified through environmental investigations and consultation with key stakeholders
- a procedure for receiving and resolving complaints
- monitoring and reporting requirements to demonstrate achievement of the environmental objectives
- corrective actions.

This approach will be implemented through the CEMP (and associated sub-plans) and considered in the development of standard operating procedures and plans for commissioning.

23.2.1 Construction environmental management

The management of environmental impacts during construction will be documented in the CEMP, which will be developed through the detailed design phase. The CEMP will provide the framework for managing and controlling the environmental aspects of Brisbane Metro through the pre-construction, construction and commissioning phases. It also provides the overall framework for the system and procedures to minimise environmental impacts and fulfil legislative requirements.

The CEMP will provide a structured approach to managing environmental issues. The strategies defined in the CEMP will be developed with consideration of the mitigation measures presented in this draft Design Report and outcomes of stakeholder consultation. Mitigation and management measures identified are outlined in section 23.5. These measures will be refined and updated through the detailed design phase and following further environmental investigations and assessments.

Among other things, the CEMP will outline:

- the management structure, roles and responsibilities for the management of environment impacts of Brisbane Metro's construction
- the environmental management objectives that are important to the environmental performance of Brisbane Metro's construction
- specific management measures and controls to avoid or minimise negative environmental impacts
- statutory frameworks and specific mechanisms for compliance with applicable policies, approvals, licences, permits, consultation agreements and legislation
- an environmental monitoring and reporting, auditing and review process to confirm the adequacy and effectiveness of management measures and controls as they are implemented and incorporate any changes to environmental management procedures and practices
- process for identifying and implementing corrective actions to rectify non-conformances
- procedures for community and stakeholder engagement during construction, including implementation of a complaints and enquiries procedure.

The CEMP will be supported by a number of sub-plans that relate to specific environmental issues or particular construction activities. These address specific conditions of environmental approvals and mitigation and management measures. Likely sub-plans include:

- Construction Traffic Management Plan
- Construction Noise and Vibration Management Plan
- Erosion and Sediment Control Plan
- Contaminated Land Management Plan
- Construction Occupational Health and Safety (OH&S) Plan
- Asbestos Management Plan
- Construction Dust Management Plan
- Cultural Heritage Management Plan
- Archaeological Management Plan
- Historic Cultural Heritage Management Plan
- Flora and Fauna Management Plan, including Invasive Species Management Plan
- Waste and Resource Recovery Management Plan
- Community and Stakeholder Engagement Plan
- Risk Management Plan and Emergency Management Plan
- Environmental Monitoring Plan.

The CEMP will be a dynamic document that will be regularly updated throughout the construction of Brisbane Metro to incorporate changes in environmental management procedures and practices in light of ongoing monitoring results, new techniques, legislation, conditions of approval and environmental policies of Council.

23.2.2 Operational environmental management

Under the Transport Operations (Passenger Transport) Act, TransLink has responsibility for public transport services, ticketing and infrastructure across Queensland. This includes the existing busway network. It is expected that these arrangements continue with Brisbane Metro. Council, through Transport for Brisbane, currently operates and manages existing bus depots at seven locations across the city. The operator of the metro depot is yet to be determined.

It is expected that environmental management for Brisbane Metro operations will be in accordance with the existing environmental processes and procedures for the busway and Council bus depots. However, it is recognised that updates to some existing processes and operating procedures to incorporate environmental management of the new metro vehicles and new infrastructure will be required.

Implementation of a communication and engagement process will be undertaken prior to the operation phase to support the commencement of Brisbane Metro services and associated changes to the bus network in late-2022. Key issues to be addressed include the timing of commencement of services, information on using and accessing Brisbane Metro services, and updates to signage, website and passenger information channels. Information on changes to local traffic access will also be required.

Ongoing communication and complaints management for Brisbane Metro operations will be in accordance with Transport for Brisbane and TransLink's existing customer feedback processes.

23.3 Implementation of the CEMP

The CEMP will provide the framework for managing and controlling the environmental aspects of Brisbane Metro through the pre-construction, construction and commissioning phases and the overall framework for the system and procedures to ensure environmental impacts are minimised and legislative requirements are fulfilled.

This section outlines key aspects relating to the CEMP implementation including roles and responsibilities, monitoring and reporting, and non-compliance and corrective actions.

23.3.1 Management structure, roles and responsibilities

Various parties will be involved in the management of environmental impacts relating to Brisbane Metro's construction activities. A clear management structure and definition of roles and responsibilities is important to the successful management of potential environmental impacts. The main parties and their key roles and responsibilities include the following.

- Council is responsible for the delivery of Brisbane Metro, including the design, construction and commissioning activities, in accordance with its corporate policies and procedures. This includes approval of the CEMP. Council also has an interest as the regulator for various approvals, licences and permits under local laws and Queensland legislation (as delegate).
- The Queensland Government will be responsible for administering various legislation, regulations, policies and codes relevant to Brisbane Metro's construction. The Queensland Government will also have an interest as the owner and manager of the existing busway infrastructure and new infrastructure (except the depot), and as the owner of key land uses near to new Brisbane Metro infrastructure (e.g. facilities at the Cultural Centre precinct).
- The construction contractor will be responsible for developing and implementing the CEMP and ensuring all necessary approvals, licences and permits have been obtained and are complied with.
- All project personnel have a general environmental duty under the EP Act and are responsible for ensuring compliance with the CEMP and legislation, regulations, policies and codes relevant to Brisbane Metro.

23.3.2 Monitoring and reporting

The CEMP will require a monitoring program for each environmental element and management and mitigation measures and relevant approvals, licences and permits. Specific monitoring actions will be outlined in the Environmental Monitoring sub-plan included in the CEMP and will address environmental performance, non-compliance, audit results, necessary changes in construction details, new standards or legislation and any other requirements.

Regular reporting on environmental management activities and environmental performance will be required through the construction phase. This will outline such things as compliance with the environmental objectives and performance criteria.

23.3.3 Non-compliance and corrective actions

The CEMP will outline a process for managing non-compliances. This will include the need for corrective/preventative action(s) to be implemented for non-compliances identified. Opportunities for improvement of environmental management will also be initiated as a result of incidents, monitoring, and other reviews. Non-compliances and corrective actions may trigger the need for review and modification of the CEMP.

23.4 Communications and engagement

A communications and engagement process will be implemented during construction to allow stakeholders and community members to obtain information and provide feedback on Brisbane Metro's construction activities and environmental management measures. Communication and engagement will ensure that community members and stakeholders are kept informed about Brisbane Metro and construction activities. In particular, communication and engagement activities for the construction phase will aim to ensure that:

- local communities (e.g. residents, businesses and managers of facilities) near to construction works are aware of the nature, timing and impacts of construction activities prior to their commencement, the measures to mitigate or manage potential construction impacts, and of the process for making complaints about the works
- public transport and road users, including pedestrians and cyclists, are aware of construction activities and potential impacts on transport networks (e.g. changes to bus services, local traffic network, pedestrian and cycle access) prior to the commencement of the works
- local communities near to construction works, as well as the wider community are provided with opportunities for ongoing engagement throughout the construction phase and have access to a community inquiry and complaints process to address and respond to community issues about construction works
- consultation with the community and stakeholders is commenced well in advance of construction works commencing.

23.4.1 Community and Stakeholder Management Plan

A Community and Stakeholder Management Plan will be developed and implemented through the construction phase to ensure community and stakeholders are kept informed about construction activities. This will outline:

- principles and objectives of communication and engagement for the construction phase
- potential issues associated with construction of Brisbane Metro likely, or known, to be of interest or concern to the community and stakeholders (e.g. construction noise and vibration, traffic and transport access, impact on local businesses)
- key stakeholders to be consulted, such as local communities, transport users, wider community, interest groups and government agencies
- communication and engagement activities to be undertaken during the construction phase, including timing of communication and engagement activities, and any construction impacts requiring specific communication and engagement strategies
- process and procedures for receiving and responding to community inquiries, complaints and issues
- process for monitoring and reporting on communication and engagement outcomes and the effectiveness of communication and engagement activities.

A range of communication and engagement tools will be used to inform the community and stakeholders about construction activities.

Possible tools include:

- feedback mechanisms such as project email and a 1800 project information telephone line
- communication tools, such as project website, media releases and alerts, advertising, project newsletters and community updates, and emails and letters to stakeholders

- engagement activities, such as community information sessions, stakeholder meetings, and public displays.

23.4.2 Community complaints and responses

A complaints management process will be implemented for the construction phase. Key elements of the process include:

- procedures for receiving, registering and responding to complaints including a database for tracking of complaints and actions taken in response
- a mechanism for notifying the community of the complaints procedure and how it may be accessed
- monitoring, auditing and reporting on the complaint handling system.

23.5 Summary of management measures

This section provides a summary of the environmental management and mitigation measures relevant to the design and construction of Brisbane Metro, that have been identified through investigations as part of this draft Design Report. It also outlines the objectives for the management of individual environmental matters.

These environmental objectives and mitigation and management measures will inform the CEMP prepared by the construction contractor prior to construction. The timing and responsibility for the implementation of the mitigation and management measures will also be outlined in the CEMP. It is intended that Council retains responsibility for some of the management measures including those related to design refinement, however the construction contractor will be responsible for implementing the majority of mitigation and management measures.

23.5.1 Traffic and transport

Management strategies should include reasonable and practicable measures to reduce the impacts to pedestrians, cyclists and other road users as well as the operation of public transport, businesses, universities, hospitals and emergency response. The key objectives for construction traffic and transport management are to:

- maximise road safety related to construction activities
- minimise disruption to access for adjoining property including car parks
- avoid or mitigate impacts on the condition of transport infrastructure and operations
- minimise disruption to pedestrians and cyclists
- minimise changes to traffic operations and kerbside access
- minimise disruption to all public transport users including bus routes and stops
- ensure the CBD and urban road network can continue to function from a traffic perspective
- ensure any required works are compatible with existing infrastructure and future transport corridors
- transport most excavated material from locations that are close to the arterial and motorway road network.

Traffic and transport mitigation and management measures for the design and construction phases are outlined in Table 23.1.

Table 23.1: Traffic and transport management

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> • Suitable bus operation plans will be developed by Transport for Brisbane and TransLink prior to the commencement of construction works. These will provide for as many buses as practical to continue to operate through the South East Busway, Cultural Centre station, 	Design refinement	Council

Mitigation and management measures	Phase	Responsibility
<p>along North Quay and Adelaide Street as far as practicable.</p> <ul style="list-style-type: none"> • Council will continue to liaise with the CRR Delivery Authority, including to improve stair/escalator capacity at the Roma Street outbound (northbound) platform. 		
<ul style="list-style-type: none"> • Develop and implement, prior to construction, a Framework Traffic Management Plan and associated Construction Traffic Management Plans that outline measures for the management of traffic and transport impacts during construction. The Construction Traffic Management Plans will be developed in collaboration with key stakeholders, including Council, TMR and TransLink and should address, among other things: <ul style="list-style-type: none"> • staging and timing of works on the busway and busway stations • staging and timing of works on roads • pedestrian and cycle routes • access to public transport stops • signage and delineation around construction worksites and construction areas, including any diversion routes • other measures to help ensure safety and manage the change in traffic flows (for example, traffic controllers, traffic signal operational changes, dynamic advance warning using variable message signage and real-time monitoring of traffic conditions using closed circuit television (CCTV)) • identification of any alternative routes with sufficient capacity to temporarily accommodate additional traffic, with measures to encourage drivers to use these routes. • monitoring of traffic flows against any modelled traffic volumes. • Liaison with affected stakeholders as part of the development of Construction Traffic Management Plans. Stakeholders include Griffith University, QPAC/Arts Queensland/South Bank Corporation and TMR. • Construction Traffic Management measures should address special events that are held in the city core. • Restrict truck movements (spoil and delivery) on the road network during commuter peak periods, generally 7am-9am and 4pm-6pm Monday to Friday. Further restrictions should apply to the metro depot construction worksite to prohibit truck movements on Priestdale Road during the afternoon school pick-up (i.e. 2.30pm-4pm school days). • When and where it is necessary for works to be completed from the busway, these will be carried out when bus volumes are low or when there are no buses operating on the busway (i.e. between 9pm and 5am Monday to Friday and during weekends from 10pm on Friday to 5am on Monday). Appropriate traffic control measures such as lane closures and will be coordinated with bus operators and TransLink. • Construction worksite deliveries and removal of spoil and materials via the busway will be restricted to between 9pm and 5am Monday to Friday and during weekends from 10pm Friday to 5am Monday. Appropriate traffic control measures and will be coordinated with bus operators and TransLink. • Bus diversions at the Buranda station will be undertaken in consultation and agreement with TransLink and the bus operator, with buses diverted via the Eastern Busway and South East Busway access points on O'Keefe Street with temporary bus stops provided on O'Keefe Street. • Work areas associated with busway modifications and other minor station works will be segregated to prevent customers accessing work areas and allow busway station operations to continue relatively unhindered (i.e. no amendments to bus services and provision of appropriate customer access to platforms), whilst subject to necessary safety measures (e.g. reduction in vehicle speed at construction worksites and provision of safety barriers and signage). • At the Cultural Centre precinct construction worksites, minimum requirements to ensure pedestrians can safely and logically access all destinations in the Cultural Centre precinct and be able to walk through the precinct include: <ul style="list-style-type: none"> • both the downstream footpath and the upstream shared path on Victoria Bridge remain 	Construction	Contractor/Council

Mitigation and management measures	Phase	Responsibility
<p>open and accessible from both sides of the Brisbane River</p> <ul style="list-style-type: none"> pedestrians are able to access the Cultural Centre bus stops from both sides of Melbourne Street. Pedestrians are able to access the Melbourne Street pedestrian bridge from both sides of Melbourne Street. an at-grade pedestrian crossing is available between the Melbourne Street pedestrian bridge and the intersection of Grey Street and Melbourne Street (this could be on the river side of the intersection). a pedestrian crossing of Grey Street is provided to enable connectivity between QPAC and the South Brisbane railway station. a pedestrian path is available on Melbourne Street between Grey Street and Merivale Street. a pedestrian path is available on Grey Street between Melbourne Street and a pedestrian crossing between QPAC and the South Brisbane railway station. pedestrians are able to access the Cultural Centre precinct venues. 		

23.5.2 Soils, topography and contaminated land

Management strategies should include reasonable and practicable measures to reduce the risk of polluting lands or disturbing lands that have the potential to pollute the environment, or where reasonable, rehabilitating polluted lands. Key objectives for the management of soils and topography during the construction phase are to:

- reduce land pollution and the spread of contaminated material
- reduce erosion including topsoil erosion
- avoid/reduce disturbance of actual/potential acid sulfate soils
- manage the handling and treatment of contaminated spoil to minimise the potential health and environmental risks
- improve soil and geotechnical stability.

The soils and topography management measures relevant to the design refinement and construction phase are provided in Table 23.2. Management measures around rehabilitation of areas are also applicable in the management of soils and topography.

Table 23.2: Soils and topography management

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> Where applicable, undertake geotechnical, acid sulfate soil (in areas below five metres AHD) and contaminated land investigations to support the design process and construction planning. Undertake detailed contaminated land site investigations to confirm risk associated with possible disturbance of potentially contaminated land and inform the design process. In accordance with the relevant legislation and guidelines, this may include preparation of contaminated land investigation documents outlining specific mitigation and management measures including identification of areas where ground gas may pose a risk. 	Design refinement	Council
<ul style="list-style-type: none"> Prior to construction, develop and implement an Erosion and Sediment Control Plan, that addresses, among other things: <ul style="list-style-type: none"> measures for avoiding the disturbance of vulnerable soils and subsurface soils installation of drainage, erosion and sediment control measures prior to construction establishment of no-go zones where soil disturbance is avoided and reduce the extent, area and duration of soil disturbance identification of proposed stockpile locations at construction worksites diversion of clean waters around disturbed surfaces and spoil storage locations 	Construction	Contractor

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> • onsite capture of surface drainage waters and sediment • use of sediment control devices such as sediment fences, check dams or other techniques to slow water flow and enable sediment to settle from the water prior to migrating offsite • monitoring the effectiveness of installed control measures • progressive stabilisation and revegetation of disturbed areas, using stored topsoil where practicable • installation of measures to avoid loose material or other soil spilling onto roadways (e.g. wheel wash, covered loads) at all road access points from each construction worksite, prior to construction. • Prior to construction, develop and implement a Contaminated Land Management Plan, that addresses, among other things: <ul style="list-style-type: none"> • identification of properties on the EMR or CLR • measures for the management, remediation and disposal of contaminated soil and/or spoil generated from properties listed on the EMR or CLR including consideration of the Site Management Plan • requirements such as disposal permits for the removal of contaminated soil in accordance with the EP Act • measures for the identification and management of unforeseen contamination including asbestos • identification of the likely forms of contamination that could occur from construction activities (e.g. fuels, oils, paints) • measures for the prevention of land contamination, including procedures for the management and storage of hazardous materials, and spill response and remediation procedures • measures for managing the generation of contaminated dust during excavation works, particularly at the Cultural Centre precinct, including monitoring at adjacent properties and at nearby sensitive receptors • post-construction management and/or monitoring requirements. • Prior to the commencement of demolition works and construction, prepare and implement an Asbestos Management Plan in accordance with the relevant legislation and guidelines, which should include provision for when an asbestos audit is required to be carried out by a licensed asbestos contractor prior to partial or full demolition of any buildings and structures. • Prior to construction, develop and implement an Occupational Health and Safety Plan, that outlines measures for managing potential exposure of construction workers to potential contaminants in soil and water. • Where further investigations identify potential risks from ground gas, gas monitoring systems and alarms are to be fitted in underground infrastructure during construction to assess ambient gas concentrations, including oxygen, methane, carbon dioxide and carbon monoxide. • Prior to construction, develop an Acid Sulfate Soil Management Plan, where investigations identify the disturbance of acid sulfate soil, which includes among other things measures for the management and disposal of acid sulfate soil. 		

23.5.3 Surface water and flooding

Management strategies used for works should include reasonable and practicable measures to reduce the risk of release of sediment or polluted water and maintain/manage overland and stormwater flows to reduce impacts to local receiving waters. Key objectives for management of water resources are to:

- reduce impacts on hydraulic conveyance and/or flood storage of the existing environment
- manage flooding so as to not worsen impacts upstream, downstream and adjacent to Brisbane Metro and meet public safety requirements with respect to flood immunity

- maintain or improve overland flow paths and stormwater flows
- maintain ecological, recreational and aesthetic water quality values in local receiving waters during construction.

Mitigation and management measures relating to surface water and flooding for the detailed design and construction phases are provided in Table 23.3. Management of water resources will also include the adoption of management measures relating to waste, hazard and risk and contaminated land.

Table 23.3: Surface water and flooding management

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> • Consider the incorporation of water sensitive urban design principles into the Brisbane Metro design, particularly at the depot site, to reduce impacts during the operational phase. • Where relevant, undertake detailed hydraulic modelling to inform the detailed design and construction methodology. • Ensure that the busway access to the metro depot across the unnamed tributary of Bulimba Creek is designed with consideration of the detailed design of the M1/M3/Gateway Merge project. 	Detailed design	Council
<ul style="list-style-type: none"> • Develop and implement prior to the commencement of construction, storage and handling procedures for chemicals, litter and other hazardous materials to avoid the release of contaminants to waterways, drains and roadside gutters. These include, among other things: <ul style="list-style-type: none"> • the need for chemicals (including paints and solvents), oils, fuels (and other hydrocarbons), regulated wastes, cement and concrete and any empty and unwashed drums to be stored on a concrete hardstand area and appropriately sheltered and bunded. • Prior to construction, develop and implement surface drainage measures for construction worksites and laydown areas. This should include measures such as: <ul style="list-style-type: none"> • appropriate drainage controls to divert clean/up-slope waters around areas of exposed soil, where possible and maintain separation of clean and dirty water flows • appropriate run-off controls implemented prior to works commencing to divert surface run-off around exposed soils where contaminated soils are required to be disturbed • collection, treatment, diversion and assessment of wastewater generated from construction activities via an approved system • inspections of erosion and sediment control measures, bunding and water treatment facilities following rainfall events • release of turbid and/or sediment-laden waters through appropriate sediment controls • provision of all-weather access for construction vehicles and equipment. • Identify measures to reduce the risk to properties near the Hanlon Park construction laydown area of Norman Creek flooding (e.g. consideration of appropriate fencing/hoardings around the laydown area). 	Construction	Contractor

23.5.4 Groundwater

Management strategies used for works should include reasonable and practicable measures to reduce impacts to the groundwater and surrounding aquifers. Key objectives for management of groundwater are to:

- reduce the potential for changes in groundwater quality as a result of construction
- reduce the potential for groundwater inflow volumes into the underground station and tunnels
- reduce the extent and amount of groundwater level drawdown in the surrounding aquifers
- manage the potential for impacts resulting from the migration of contaminated groundwater.

Groundwater management measures relevant to the design and construction phases are outlined in Table 23.4.

Table 23.4: Groundwater management

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> Undertake detailed groundwater investigations at tunnel/underground construction locations (e.g. Cultural Centre precinct and Adelaide Street) and where dewatering is required to accurately establish existing groundwater regime in terms of levels and groundwater quality to inform the design development and groundwater controls, management and disposal measures required during construction to manage both environmental and engineering risks. Consider through the design development, potential risks from groundwater level rebound in the event that any existing controls on groundwater levels change in the future. 	Detailed design	Council
<ul style="list-style-type: none"> Where applicable, prepare and implement prior to construction, site-specific management plans for construction works that may disturb groundwater including measures to address the potential for and prevent environmental impact from groundwater drawdown. Identify and implement appropriate protocols and procedures for the control and containment of fuel and chemicals, where construction requires below-ground excavations, to reduce potential contamination of groundwater from spills and releases to ground. Where applicable, undertake groundwater monitoring to determine: <ul style="list-style-type: none"> water level drawdown quality of water being intercepted assessment of actual and potential contamination migration volume of groundwater to be treated and released to surface waters. 	Construction	Contractor

23.5.5 Noise and vibration

Management strategies used for works should ensure that reasonable and practicable measures are taken to minimise the risk of environmental harm or nuisance from noise or vibration. The key objectives for management of noise and vibration are to:

- reduce noise and vibration impacts from construction and operation of Brisbane Metro
- design and operate Brisbane Metro in compliance with noise and vibration goals.

The noise and vibration mitigation and management measures relevant to the design and construction are provided in Table 23.5.

Table 23.5: Noise and vibration management

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> Undertake a detailed noise monitoring program to quantify existing LAeq and LAmax noise levels along the Brisbane Metro alignment and to confirm construction noise criteria. Undertake measurements at locations where façade noise reductions have been estimated to quantify the actual façade noise reductions and confirm the actual façade performance. This includes noise measurements at the QPAC building, particularly the north-west corner, to inform a detailed assessment by octave band, and Adelaide Street façade of City Hall. Confirm the location of noise-sensitive rooms within City Hall. Undertake detailed noise modelling based on the selected metro vehicle to confirm the outcomes of the noise and vibration assessment (refer to Chapter 10). Undertake a quantitative assessment of operational noise impacts for the depot to confirm the need for mitigation measures to be incorporated into the final design. Undertake further investigation of overall road traffic noise levels to confirm the findings of the noise and vibration assessment (refer to Chapter 10). 	Detailed design	Contractor
<ul style="list-style-type: none"> Prior to construction, prepare and implement a Construction Noise and Vibration Management Plan that outlines measures for the management of noise and vibration impacts. This should address: <ul style="list-style-type: none"> identification of noise and/or vibration sensitive locations (in all their forms) and 	Construction	Contractor

Mitigation and management measures	Phase	Responsibility
<p>confirmation of the noise and vibration criteria applicable to the construction of Brisbane Metro</p> <ul style="list-style-type: none"> • documentation of the final construction equipment, methodology and schedules to be used by the contractor, and revised noise and vibration modelling to predict likely impacts of the final construction equipment/methodology • details of all 'non-standard hours' (as defined by the CN&V Code of Practice) activities • development of revised noise and vibration mitigation measures to achieve compliance with the criteria (refer to Chapter 10), including: <ul style="list-style-type: none"> • selection of plant and equipment (e.g. use of quiet/silenced equipment) • engineering controls (e.g. acoustic enclosures, acoustic curtain, broad-band reversing alarms) • construction techniques, construction hours, and periods of respite for noisy activities • building façade upgrades • consideration of sensitive receptors in the siting and layout of noisy equipment. • noise and vibration monitoring plan, including real-time monitoring at sensitive locations • building condition surveys, where predictions indicate cosmetic damage criteria may be exceeded • community consultation and notification procedures, and complaints handling process • process for monitoring, and regular auditing and review of the Construction Noise and Vibration Management Plan, and proposed mitigation measures. <ul style="list-style-type: none"> • The Construction Noise and Vibration Management Plan should also include measures for the following work locations. <ul style="list-style-type: none"> • Buranda station: <ul style="list-style-type: none"> • undertake further investigation once construction methodology is finalised to confirm noise mitigation and management measures required • rock-breaking activities at Buranda station, if these are required within 10 metres of the southern apartment building of the Buranda TOD • establish a three-metre-high temporary noise barrier around the perimeter of the construction worksite • conduct monitoring of existing noise levels at one detached dwelling south of O'Keefe Street, near Buranda station to assess how these compare to the predicted construction noise levels • where practicable, schedule concrete sawing works at Buranda station during the daytime period. Conduct ground-borne noise measurement trials to confirm whether concrete sawing works can be carried out during the night-time period and the need for mitigation measures, if night-time concrete sawing works are unavoidable. • Mater Hill station: <ul style="list-style-type: none"> • undertake a detailed investigation of vibration sensitive equipment and vibration isolation systems within the Mater Private Clinic, in advance of any vibration intensive works • undertake ground-borne noise and vibration trials at Mater Private Clinic prior to construction to confirm relevant construction goals will be achieved and the need if any, for further mitigation measures. • Cultural Centre precinct: <ul style="list-style-type: none"> • continuous vibration monitoring at the South Brisbane railway station, former Queensland National Bank building and former Victoria Bridge abutment to ensure compliance with cosmetic damage criteria (refer to Chapter 10) • conduct pre-construction and post-construction building condition surveys for the South Brisbane railway station and former Queensland National Bank to document the condition of the buildings prior to construction and any changes resulting from construction activities • conduct noise and vibration monitoring at QPAC during the commencement of 		

Mitigation and management measures	Phase	Responsibility
<p>construction works, particularly vibratory sheet piling and bored piling works adjacent to the building</p> <ul style="list-style-type: none"> • conduct noise and vibration trials at QPAC to enable predictive modelling to be refined to assist in managing impacts during QPAC performances • conduct ongoing consultation with QPAC to inform scheduling of noise-intensive works outside of performance times • conduct further assessment of ground-borne noise and vibration at the QPAC to identify appropriate mitigation measures. This includes avoiding works with a risk of causing ground-borne noise impacts during performance times • establish a three-metre-high temporary noise barrier around the construction worksite perimeter at the Cultural Centre precinct. <p>Adelaide Street:</p> <ul style="list-style-type: none"> • establish a two-metre-high temporary noise barrier around the perimeter of the construction worksite at Adelaide Street. 		

23.5.6 Air quality

Management strategies used for works will ensure that reasonable and practicable measures are taken to minimise the risk of generating dust or other emissions (light or odour) that could impact on the amenity, human health and/or workplace health and safety in the workplace and the local area. The objectives for air quality management are:

- maintain ambient air quality within agreed goals and minimise the potential for impacts from dust, odour and vehicle exhaust emissions during construction
- reduce the potential for increased risks to public health from changes to ambient air quality and as a result of metro operations
- reduce greenhouse gas emissions during construction.

Air quality management measures for the detailed design and construction are outlined in Table 23.6.

Table 23.6: Air quality management

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> • Design the underground sections of Brisbane Metro and ventilation control systems to meet the relevant air quality objectives. 	Detailed design	Council/contractor
<ul style="list-style-type: none"> • Prior to construction, prepare and implement a Construction Dust Management Plan that addresses: <ul style="list-style-type: none"> • layout of construction worksites and laydown areas to locate dust causing activities are away from sensitive receptors, as far as practicable • covering of stockpiles, skips and loads to minimise dust • revegetation of earthworks and exposed areas/soil stockpiles to stabilise surfaces or use of hessian, mulches or tackifiers • watering exposed and disturbed areas, including stockpiles • use of water-assisted dust sweepers on access and local roads, to remove as necessary, any material tracked out of the work areas • installation of dust monitoring devices where complaints are received or there is excessive dust • selection and operation of vehicles, plant, and equipment in a proper and efficient manner and measures to limit the use of generators and emissions. 	Construction	Contractor

23.5.7 Flora and fauna

Construction management strategies used for works should be designed to improve biodiversity outcomes where possible. Positive outcomes could include, improving the habitat values by retaining nesting sites and tree hollows, replacing remnant vegetation endemic to the area, and/or developing a management plan for any significant species which are likely to be impacted by the works. The objectives for management of flora and fauna are to:

- minimise disturbance of fauna or degrading/severing fauna habitat or movement corridors
- reduce the spread of pests, including fire ants and weeds
- reduce impacts to terrestrial and aquatic flora and fauna
- reduce clearance of vegetation and disturbance to habitat areas
- avoid disturbance to significant trees
- rehabilitate disturbed areas and maintain to avoid colonisation by weeds
- reduce the pollution and sedimentation of stormwater run-off.

Table 23.7 provides an overview of the flora and fauna management and mitigation measures for the detailed design and construction phases.

Table 23.7: Flora and fauna management

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> • Review the design of the bus turnaround at Griffith University station to minimise disturbance and reduce the extent of clearing required of older growth eucalypt woodland, as far as practicable. • Implement measures to protect the Breakfast Creek mangrove community adjacent to Ernie’s Roundabout. • Undertake flora and fauna surveys of the depot site to inform the detailed design. • Design to minimise the clearing of amenity plantings where practicable, and facilitate the replacement of amenity plantings following construction. 	Detailed design	Council
<ul style="list-style-type: none"> • Prior to construction, prepare and implement a Flora and Fauna Management Plan, including an Invasive Species Management Plan. This should address among other things: <ul style="list-style-type: none"> • opportunities to limit the footprint of construction worksites and laydown areas • measures to protect and clearly define/mark vegetation to be retained or avoided and site boundaries, including storage of heavy machinery and equipment in designated pre-cleared areas only, away from areas of retained vegetation • ensure clearance of vegetation is supervised by an experienced and licensed wildlife carer and/or ecologist • measures for washdown of vehicles, plant and equipment and inspection for any foreign soil or plant matter/weed material before entering construction worksites • measures for managing exposed soil surfaces and/or stockpiles including preventing sediment discharge into retained vegetation and drainage lines and restoration and rehabilitation of vegetation areas disturbed by construction works, as soon as practicable following works • management of offsets for NALL vegetation cleared in accordance with Council policies and procedures, where relevant. 	Construction	Contractor

23.5.8 Land use and planning

The objectives for management of land use and planning impacts are to:

- engage (inform, consult and/or partner) with the community for works that may impact directly or indirectly upon members of the community, or may be improved by community input

- minimise the impacts on supply of residential land
- design to preserve the character of adjacent areas and protect these areas during construction and operation.

Land use and planning management measures relevant to the detailed design and construction phases are outlined in Table 23.8. Additional management measures are described in traffic and transport (Table 23.1) and socio-economic (Table 23.9).

Table 23.8: Land use and planning management

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> • Engage with key stakeholders to identify opportunities for integration of the design and management of potential land use impacts, including the following: <ul style="list-style-type: none"> • EDQ in relation to the future development of the Woolloongabba PDA, Queen's Wharf PDA, and Herston Quarter PDA to provide the opportunity for integration with future development within these areas • developers and entities involved in new development planned or under construction along the alignment to provide timely information on the Brisbane Metro design • QPAC in relation to impact on the QPAC Green, car park access and QPAC operations • Queensland Rail with regard to works near to Buranda, South Brisbane and Roma Street railway stations. • Acquire land required for the operation of Brisbane Metro in accordance with the <i>Acquisition of Land Act 1967</i> (Qld). 	Design refinement/detailed design	Council/Contractor

23.5.9 Socio-economic management

The objectives for management of socio-economic impacts are to:

- minimise direct property impact through detailed design
- provide opportunities for community members to participate in project planning and environmental monitoring activities
- enhance community liveability and local amenity through design which is safe, accessible, reflective of local character
- provide effective communication and community liaison with regular updates about construction works and possible impacts to key stakeholders, the local community and general public
- provide opportunities for affected local communities to participate in planning and provide feedback on construction issues and participate in mitigation or management solutions
- provide mechanisms for receiving community feedback/complaints and responding to these concerns.

Socio-economic management measures are outlined Table 23.9. Management of socio-economic aspects will also include the adoption of measures relating to traffic and transport (Table 23.1), land use (Table 23.8), noise and vibration (Table 23.5) and air quality (Table 23.6).

Table 23.9: Socio-economic management

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> • Prepare a Community and Stakeholder Management Plan prior to construction in accordance with section 23.4.1. • Undertake ongoing consultation and communication with managers and users of social infrastructure near to construction works to inform planning of construction activities and proposed mitigation and management measures (e.g. Mater Hospital precinct, Cultural Centre precinct stakeholders, Griffith University). • Consider the timing of major events in the inner city in the planning and 	Construction	Contractor

Mitigation and management measures	Phase	Responsibility
<p>scheduling of construction activities and major haulage tasks (e.g. Riverfire, New Year's eve celebrations, Brisbane Festival).</p> <ul style="list-style-type: none"> Maintain access for delivery vehicles to commercial and industrial land uses near to construction works, where practicable. Where changes to access are required, identify alternative access arrangements in consultation with local businesses. Maintain pedestrian access to businesses near to construction activities. Undertake ongoing consultation and communication with business owners and managers near to construction works to inform planning of construction activities and proposed mitigation and management measures (e.g. Garden City Shopping Centre, Cultural Centre precinct, Adelaide Street). 		

23.5.10 Aboriginal cultural heritage

Management strategies used for works will include reasonable and practicable measures to avoid or minimise the risk of harm to Aboriginal cultural heritage items. The objectives for management of Aboriginal cultural heritage are to:

- avoid or minimise the disturbance of a place of Aboriginal cultural heritage significance which will result in the loss or diminishment of identified heritage values
- avoid or minimise the loss of, or damage to, objects of Aboriginal cultural heritage as a result of construction works.

Measures for managing potential impacts on Aboriginal cultural heritage are outlined in Table 23.10.

Table 23.10: Aboriginal cultural heritage management

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> Consult with the Turrbal People and Jagera People #2 as the Aboriginal Parties for the study area, about Brisbane Metro, potential impacts and proposed management measures. 	Design refinement	Council
<ul style="list-style-type: none"> Prior to construction, prepare a CHMP or other cultural heritage management agreement with each of the Aboriginal Parties in the study area, outlining measures for the management of Aboriginal cultural heritage values for Brisbane Metro. Avoid impacts of any tangible or intangible Aboriginal cultural heritage values, where possible. Where impacts are unavoidable, develop measures for management of cultural heritage values in consultation with the Turrbal People and the Jagera People #2, with such measures to be documented in a CHMP or CHMA. 	Detailed design	Council/Contractor
<ul style="list-style-type: none"> Ensure compliance with the CHMP or CHMA (or other process as agreed with the Aboriginal Parties). 	Construction	Contractor

23.5.11 Historical cultural heritage

Management strategies used for works should include reasonable and practicable measures to reduce the risk of disturbance of historical cultural heritage sites (including vibration impacts). The objectives for management of historic cultural heritage values are to:

- avoid or reduce the disturbance of a place of cultural or natural heritage significance resulting in the loss or diminishment of identified heritage values
- reduce the loss of or minimise damage to, items, sites and structures of historic cultural heritage or archaeological significance as a result of construction works.

Historic cultural heritage management measures for the detailed design and construction phases of Brisbane Metro are outlined Table 23.11. Additional measures relevant to the management of potential impacts on historic heritage values are also addressed in noise and vibration (Table 23.5) and air quality (Table 23.6).

Table 23.11: Historical cultural heritage management

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> • Investigate alternative construction methodologies for the underpass of the railway corridor at South Brisbane to avoid or minimise direct physical impacts on the South Brisbane railway station. • Avoid, as far as practicable, impacts on historic heritage places. Where impacts are unavoidable, develop measures for the management of potential historic heritage impacts in collaboration with key stakeholders (e.g. DES, DEE, Arts Queensland, Cultural Centre stakeholders, including advisory committee, Queensland Rail, Council heritage branch). • Identify principles in conjunction with Queensland Cultural Centre stakeholders, for the design of the transition structure at Melbourne Street, new underground Cultural Centre station entries, and other above ground structures, and reinstatement of heritage elements impacted by construction activities (e.g. QPAC Green) and public realm elements. • Identify measures in collaboration with Queensland Rail for the management of heritage values at South Brisbane railway station (e.g. removal and reinstatement of heritage elements, design of the new underground Cultural Centre station entries). • Consult with DES to confirm the necessary approvals process for works on or in the vicinity of a Queensland heritage place (e.g. South Brisbane railway station, Queensland Cultural Centre, Early Streets of Brisbane). • Ensure design of above ground structures appropriately considers nearby historic heritage places. 	Design refinement/detailed design	Council
<ul style="list-style-type: none"> • Prior to construction, prepare and implement a historical heritage management plan outlining measures to manage potential historic heritage impacts. This should address: <ul style="list-style-type: none"> • measures to avoid potential direct impacts, including accidental damage (e.g. avoiding heritage places where possible, identifying heritage places on construction plans, establishing physical barriers/no go zones, avoid storing materials and equipment on or near to heritage places, where possible) • measures to manage potential impacts associated with settlement and vibration (e.g. investigation of ground conditions prior to construction, pre-construction and post-construction building condition surveys, continuous vibration and settlement monitoring of heritage buildings where predictive modelling indicates potential risk of cosmetic damage) • measures to protect heritage buildings from deterioration due to dust deposition (e.g. implementation of dust management measures, avoid storing excavated materials on or near heritage places, where possible, consideration of spoil haulage routes away from heritage places) • processes and procedures for ongoing engagement with relevant stakeholders about potential heritage impacts (e.g. DES) • process for regular review, monitoring and reporting on the historical heritage management plan. • Prior to construction, prepare and implement an archaeological management plan to guide the management of any archaeological deposits disturbed during construction. This should address: <ul style="list-style-type: none"> • need for further archaeological research and investigation in areas identified as having higher archaeological potential (e.g. Early Streets of Brisbane) • strategies for archaeological investigations and management of potential archaeological impacts (e.g. test excavations at particular sites, monitoring of excavation works, salvage excavation) • protocols for managing archaeological discoveries made during construction. • The historical heritage management plan should include specific measures relating to the following heritage places: <ul style="list-style-type: none"> • South Brisbane railway station <ul style="list-style-type: none"> • process and procedures for the removal, storage and reinstatement of heritage 	Construction	Council/Contractor

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> elements in conjunction with Queensland Rail and DES ongoing vibration monitoring (refer to Table 23.5) Former Queensland National Bank (Ng House) and former Victoria Bridge abutments <ul style="list-style-type: none"> ongoing vibration monitoring (refer to Table 23.5) engagement with DES and other relevant stakeholders Queensland Cultural Centre <ul style="list-style-type: none"> ongoing engagement with QPAC, Arts Queensland, heritage advisory committee, DES and other relevant stakeholders about potential construction impacts, management and reinstatement of heritage elements Stone kerbing, Moon's Buildings <ul style="list-style-type: none"> process and procedures for the removal, storage and reinstatement of heritage elements (e.g. awnings, stone kerbing) in consultation with Council's heritage branch City Hall <ul style="list-style-type: none"> ongoing vibration monitoring (refer to Table 23.5). 		

23.5.12 Urban and visual amenity

During and following construction, there will be changes to the urban and visual amenity at locations where new or substantially altered surface infrastructure is proposed. The objectives for urban and visual amenity are to:

- integrate the design with the local environment considering commercial activity and urban centres, access and connections, landscape and visual amenity, local urban neighbourhood character, integrated movement networks and protection and enhancement of natural and cultural features
- maintain or improve access to local facilities
- provide for Brisbane Metro to act as a catalyst for urban improvement
- provide active edges to public spaces and provide a connected and high amenity streetscape
- protect and enhance critical views and vistas and minimise visual impacts of Brisbane Metro
- protect and enhance areas of significant natural value and ensure existing landscape values are integrated.

Urban and visual amenity management measures for the design and construction are outlined in Table 23.12. Additional measures also relate to traffic and transport (Table 23.1), land use and planning (Table 23.8), socio-economic (Table 23.9) and historic heritage (Table 23.11).

Table 23.12: Urban and visual amenity management

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> Identify principles and streetscape strategies in conjunction with Cultural Centre stakeholders (e.g. Arts Queensland, QPAC, Queensland Museum, Queensland Art Gallery, South Bank Corporation) for the reinstatement of the public realm at the Cultural Centre precinct. Identify principles and streetscape strategies for the reinstatement of Adelaide Street in conjunction with relevant stakeholders. 	Design refinement	Council
<ul style="list-style-type: none"> Design barriers around the transition structures at Melbourne Street and Adelaide Street/North Quay to maintain views to and within the Queensland Cultural Centre (Melbourne Street) and to the Brisbane River (North Quay/Adelaide Street). Incorporate landscape and screening measures into the design of the metro depot to minimise visual impacts. Ensure lighting for Brisbane Metro is designed in accordance with the relevant standards and guidelines to minimise potential for light spill on adjoining properties. 	Detailed design	Council
<ul style="list-style-type: none"> Maintain safe access to public spaces near to construction works, particularly within the Cultural Centre precinct and Adelaide Street. 	Construction	Contractor

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> Ensure temporary lighting is design and sited in accordance with relevant standards and guidelines to minimise potential light spill on adjoining sensitive properties. 		

23.5.13 Hazard and risk

Potential hazards associated with Brisbane Metro during the construction and operation phases pose a risk to people and property. The objectives for management of hazard and risk are to:

- provide a safe work site and maintain an appropriate level of public and road user safety adjacent to construction worksites and construction activities during the construction of metro
- provide a safe workplace and public transport mode during Brisbane Metro operation
- reduce the potential for accidents during busway operation
- provide a safe environment for maintenance of the busway infrastructure
- allow for emergency vehicle use of Brisbane Metro infrastructure
- maintain a safe and secure environment in station areas
- identify potential construction and operational hazards and risks and apply appropriate impact treatment/prevention/mitigation measures to avoid or minimise these risks during metro design and construction.

The hazard and risk management measure is provided in Table 23.13.

Table 23.13: Hazard and risk management

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> Ensure hazards and risks are appropriately addressed through the detailed design, including those relating to such things as environmental matters (e.g. contaminated land, air quality), flooding, fire and life safety, traffic and transport. 	Detailed design	Contractor/Council
<ul style="list-style-type: none"> Prior to construction, develop and implement a Risk Management Plan and Emergency Management Plan for the construction phase. 	Construction	Contractor

23.5.14 Cumulative impacts

The objective for management of cumulative impacts is to consider the spatial and temporal overlap of concurrent projects near Brisbane Metro. Measures to manage cumulative impacts are outlined in Table 23.14.

Table 23.14: Management of cumulative impacts

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> Continue to engage with entities responsible for other projects having overlapping construction periods with Brisbane Metro to coordinate construction activities as far as practicable through an integrated approach to reduce cumulative impacts. Continue to work with key stakeholders in relation to proposed CRR project and Queen's Wharf Brisbane (e.g. CRR Delivery Authority, Destination Brisbane Consortium, TMR and other relevant stakeholders) to develop a CBD construction traffic management plan to manage overlapping construction traffic impacts of Brisbane Metro, Queen's Wharf Brisbane and the proposed CRR project. 	Design refinement	Council

23.5.15 Waste management

Gross pollutants or project-related materials left uncontrolled on site have the potential to diminish local area amenity and cause material or environmental harm. Objectives for waste management are to:

- reduce the amount of wastes generated from the construction site using the waste hierarchy pyramid

- manage and reduce the impact of waste during maintenance and operations.

The waste management measures are provided in Table 23.15.

Table 23.15: Waste management

Mitigation and management measures	Phase	Responsibility
<ul style="list-style-type: none"> • Develop and implement a Waste and Resource Recovery Management Plan prior to construction that outlines: <ul style="list-style-type: none"> • waste stream assessment by project phase and strategies for management around the waste hierarchy principles (avoid/reduce, reuse, recycle) • training and awareness of waste management procedures • supply chain management actions • roles and responsibilities • monitoring, auditing and reporting requirements • procedures for review and update of the plan. 	Detailed design	Council/Contractor

23.6 Summary

Council will manage the impacts of Brisbane Metro in line with Commonwealth and State legislation and Council strategies, policies and guidelines through the environmental management framework. This framework includes the development of a CEMP and revision of existing Council standard operating procedures and plans for the busways to account for the changes and upgrades.

Changes to the identified potential impacts or management measures outlined in this draft Design Report may occur during detailed design or additional investigations/studies and will be captured as part of the CEMP or other environmental management plans or procedures.

Through the implementation of this environmental management framework, Council will also be able to demonstrate that Brisbane Metro has been designed, constructed and operated in accordance with the environmental objectives and Council Environmental Policy.