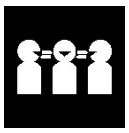
Cross River Rail Project

Coordinator-General's change report—Roma Street demolition works

March 2019

Queensland Government

The Department of State Development, Manufacturing, Infrastructure and Planning



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Synopsis

The Cross River Rail Project (the project) is a rail link from Dutton Park to Bowen Hills, including a 5.9km tunnel under the Brisbane River and Central Business District (CBD).

The project was originally approved on 20 December 2012 by the Coordinator-General, subject to conditions as detailed in the Coordinator-General's evaluation report (2012 CGER) on the environmental impact statement (EIS) for the project. The project has undergone a number of changes since this 2012 approval, with each change evaluated and approved, subject to conditions, via Coordinator-General change reports (CGCR). This is the third such evaluation.

On 19 November 2018, the Cross River Rail Delivery Authority (CRRDA, the proponent) lodged a further project change application (the November 2018 project change application) with the Coordinator-General. The key changes to the project proposed by the proponent in this change application include:

- the demolition of the Brisbane Transit Centre (BTC) east tower and Hotel Jen, including the removal of the pedestrian bridge over Roma Street linking the BTC to George Street
- the utilisation of the open space and carparking area adjacent to Hotel Jen for site access, construction laydown and general worksite requirements.

The proposed changes to the project at Roma Street are required as the demolition of the BTC west tower and podium in isolation would result in significant structural integrity and continuity impacts to the BTC east tower and Hotel Jen. The demolition of the BTC west tower and podium in isolation would also result in material impacts to emergency, stormwater, sewerage, water, electricity and communications services that are shared between the BTC west and east towers.

The following is a summary of the main issues arising from my evaluation of the project changes.

Land use and tenure

The potential land use and tenure impacts at Roma Street from the proposed changes to the project at Roma Street are generally consistent with the intent and outcomes previously evaluated and approved for the project in this location. However, the proposed changes to the project would result in approximately an additional 1.1 hectares of land being impacted by the project. There would also be an associated reduction in the availability of commercial office space, retail and accommodation uses within the Roma Street precinct, resulting from the demolition of the BTC east tower and Hotel Jen.

I am satisfied that the change to the project is required due to the impacts that would result from the demolition of the BTC west tower and podium in isolation. The proponent has identified that any land that is not required for the Cross River Rail project at Roma Street will potentially be made available for redevelopment as part of the Roma Street precinct master planning process, which includes the Brisbane Live project.

Traffic and transport

The proponent has assessed the potential impacts that could result from the proposed changes to the project at Roma Street, assessing eight haulage vehicle movements per hour (four in, four out of the construction worksite) as a worst-case scenario. The proponent has determined that cumulative construction traffic impacts will not occur from the Roma Street demolition works and the construction of the temporary coach terminal at Roma Street (August 2018 CGCR) as the works periods will not overlap.

The potential traffic and transport impacts of the proposed changes to the project at Roma Street are generally consistent with the previously evaluated and approved project in this location. The proponent predicted that the potential increase in traffic on Roma Street resulting from the proposed demolition works is not expected to significantly impact the road network. The removal of the pedestrian bridge will be undertaken at low usage times (e.g. night or over weekends) to reduce the potential impact on peak traffic and pedestrian movements on Roma Street.

The previously approved Cross River Rail project wide imposed conditions remain appropriate to manage the potential traffic and transport impacts of the proposed changes to the project at Roma Street. Traffic will be managed in accordance with a Construction Traffic Management Plan.

Noise and vibration

The nearest residences to the proposed demolition works include the Abbey Apartments on Roma Street located approximately 60 m to the west, Meriton Apartments located approximately 110 m to the south and the Parkland Boulevard apartments located approximately 225 m to the north-west. Of the three residences identified, the Meriton Apartments is expected to experience greater noise impacts compared to the previously approved project over the additional seven month period.

The proposed changes to the project will result in demolition activities closer to sensitive receptors such as the Queen Elizabeth ll Courts of Law (Supreme and District Courts). Consequently, there will be a moderate increase in potential noise and vibration impacts associated with the proposed changes to the project at Roma Street compared to the previously evaluated and approved project.

The proposed changes may require vibratory compaction during ground remediation works. Vibratory compaction may cause short-term exceedances to human comfort levels at the Supreme Court, Former Bank of Queensland and Baby Clinic (former) as well as exceedances to the heritage building damage goals at King George Chambers and the Transcontinental Hotel. If vibratory compaction during ground remediation works is required I require the proponent to undertake a detailed vibration impact assessment and to implement appropriate mitigation measures.

The previously approved Cross River Rail project wide imposed conditions remain appropriate to manage the potential noise and vibration impacts of the changed project. Construction be undertaken during standard construction hours (6:30 am to 6:30 pm, Monday to Saturday, which will limit disturbance. Noise and vibration will be managed in accordance with stringent noise goals to protect human health and wellbeing.

Air quality

The potential air quality impacts of the proposed changes to the project at Roma Street are generally consistent with the previously evaluated and approved project in this location. The predicted air quality impacts are not expected to result in exceedances of the Cross River Rail project air quality goals outlined in the June 2017 CGCR.

The previously approved Cross River Rail project wide imposed conditions remain appropriate to manage the potential air quality impacts of the changes to the project at Roma Street.

Cultural heritage

The potential non-indigenous cultural heritage impacts of the proposed changes are generally consistent with the previously evaluated and approved project in this location, however the potential impacts would occur for an additional seven-month period.

I note the proponent is in the process of finalising Cultural Heritage Management Plans (CHMP) for the project in accordance with the *Aboriginal Cultural Heritage Act 2003*. I require that in accordance with the approved CHMP, the Indigenous cultural heritage impacts will be managed and mitigated to ensure all reasonable and practicable measures will be taken to avoid harm.

The previously approved Cross River Rail project wide imposed conditions remain appropriate to manage the potential cultural heritage impacts of the changes to the project at Roma Street.

Nature Conservation

Compared to the previously evaluated and approved project in this location there would be a minor increase in vegetation loss, with the removal of eight additional trees and landscape plants. There is likely to be minimal—if any—impact on fauna and fauna habitat due to the limited fauna habitat within the disturbed area.

I am satisfied that nature conservation will be managed in accordance with the mitigation measures outlined in the approved Outline Environmental Management Plan (OEMP), which remains appropriate to manage the potential nature conservation impacts of the changes to the project at Roma Street.

Waste

Compared to the previously evaluated and approved project in this location, the changed project would result in an additional 90,000 tonnes of demolition waste being removed from the Roma Street worksite.

I am satisfied that all waste streams from the Roma Street demolition site, including the proposed change will be managed in accordance with the approved OEMP for the project.

Social and visual amenity, landscape and lighting

The potential social, visual amenity, landscape and lighting impacts of the changed project are generally consistent with the nature of impacts of the previously evaluated

and approved project; however, the potential impacts would occur for an additional seven-month period.

I am satisfied that with the implementation of mitigation measures as outlined in the approved OEMP, the expected social, visual amenity, landscape and lighting impacts of changes to the project at Roma Street will be appropriately managed. I support the proponent's statement that the Roma Street demolition works are as an opportunity to promote the redevelopment of the Roma Street precinct.

Coordinator-General's conclusion

I am satisfied that the requirements of Part 4 of the *State Development and Public Works Organisation Act 1971* has been met and that sufficient information has been provided to enable the evaluation of the proposed changes to the project.

I consider that the changes to the project and the conditions imposed (Appendix 1) for the works stated in this report will result in acceptable overall outcomes for the project's delivery and that the potential impacts can be adequately managed.

Accordingly, I approve the changes to the project and I have amended the Cross River Rail project wide imposed conditions accordingly (Appendix 1). Appendix 1 and 2 of this report replaces Appendix 2 (Amended project wide imposed conditions – Cross River Rail Project) and Appendix 3 (Coordinator-General's recommendations for the Cross River Rail project) of the August 2018 CGCR (Temporary Roma Street Coach Terminal), therefore Appendix 2 and 3 of the August 2018 CGCR (Temporary Roma Street Coach Terminal) no longer have effect.

Appendix 1 of the August 2018 CGCR (Imposed conditions – Temporary Roma Street Coach Terminal Works) is also replaced by Appendix 3 of this change report, therefore Appendix 1 of the August 2018 CGCR (Temporary Roma Street Coach Terminal) no longer has effect.

In accordance with section 35 of SDPWO Act, this report will lapse on 8 June 2020.

A copy of this report will be issued to the proponent and will be available on the Department of State Development, Manufacturing, Infrastructure and Planning website at **www.dsdmip.qld.gov.au/crr**.

Barry Broe

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Barry Broe
Coordinator-General
13 March 2019

1. Introduction

This change report has been prepared pursuant to section 35I of the *State Development and Public Works Organisation Act 1971* (SDPWO Act) and provides an evaluation of the proposed changes to the Cross River Rail project (the project) outlined in the project change application dated 19 November 2018 (the November 2018 project change application). The project change application submitted by the Cross River Rail Delivery Authority (CRRDA; the proponent) specifies the proposed changes to the project and these are summarised in Section 4 of this report.

This report does not re-evaluate the project as a whole. Further, it is not intended to revisit all the matters that were identified and subsequently addressed in the project's environmental impact statement (EIS) assessment process. Rather, this report concentrates on the particular issues identified in the November 2018 project change application. This change report:

- summarises the change report process
- summarises the proponent's proposed changes to the project
- summarises the key issues associated with the proposed changes
- presents an evaluation of the proposed changes, based on information contained in the project change application
- provides an updated set of imposed conditions for the project to reflect the proposed changes to the project (Appendix 1).

2. About the project

2.1. The proponent

The proponent for the project is the CRRDA, an independent statutory body established under the *Cross River Rail Delivery Authority Act 2016* to facilitate and manage the delivery of the project. The CRRDA commenced operation on 14 April 2017.

2.2. The project

The project is a 10.2 km north-south rail line connecting Dutton Park to Bowen Hills with 5.9 km of tunnel under the Brisbane River and CBD. The project also includes stations at Boggo Road, Woolloongabba, Albert Street, Roma Street and the Exhibition Showgrounds.

Further information on the project and changes that have occurred since originally approved in 2012 are detailed in:

- the Coordinator-General's evaluation report on the EIS dated 20 December 2012 (2012 CGER)
- the Coordinator-General's change report dated 9 June 2017 (June 2017 CGCR)

- the Coordinator-General's change report dated 31 August 2018 (August 2018 CGCR).

This report considers the potential impacts associated with the proposed demolition of the Brisbane Transit Centre (BTC) east tower and Hotel Jen at Roma Street, including the removal of the pedestrian bridge linking the BTC to George Street and the utilisation of the open space and carparking area adjacent to Hotel Jen as a construction area.

2.3. Project delivery

The proponent advised in their change application that the demolition of the BTC east tower and Hotel Jen would be undertaken over a period of seven months, commencing in mid-to late 2019. The demolition the BTC east tower and Hotel Jen would occur prior to the demolition of the BTC west tower and podium and would not overlap with the construction of the temporary Roma Street coach terminal.

The Cross River Rail project facilitates the redevelopment of the Roma Street precinct, however any future development at the site would be assessed as part of a separate assessment process.

3. Change report process

The proponent submitted the November 2018 project change application in accordance with section 35C of the SDPWO Act. The November 2018 project change application addresses the requirements of section 35E of the SDPWO Act, in that the written application describes the proposed changes and its effect on the project and states reasons for the proposed changes.

3.1. Project change details

The proposed changes to the project at Roma Street have been termed the '*Roma Street demolition works*'.

The key changes proposed by the proponent include:

- the demolition of the BTC east tower and Hotel Jen, including the removal of the pedestrian bridge over Roma Street linking the BTC to George Street
- the utilisation of the open space and carparking area adjacent to Hotel Jen for site access, construction laydown and general worksite requirements.

Approximately 1.1 hectares of additional land is to be included within the project footprint due to the proposed changes. The proposed changes will impact Lot 1 on SP207220 in its entirety and a partially within Lot 60 on SP207215 and Lot 35 on SP207219, as shown in Figure 3.1. These lots were not previously impacted by the project.

As part of this change request, no change is proposed to the currently approved general arrangement or design of the project within the Roma Street precinct.

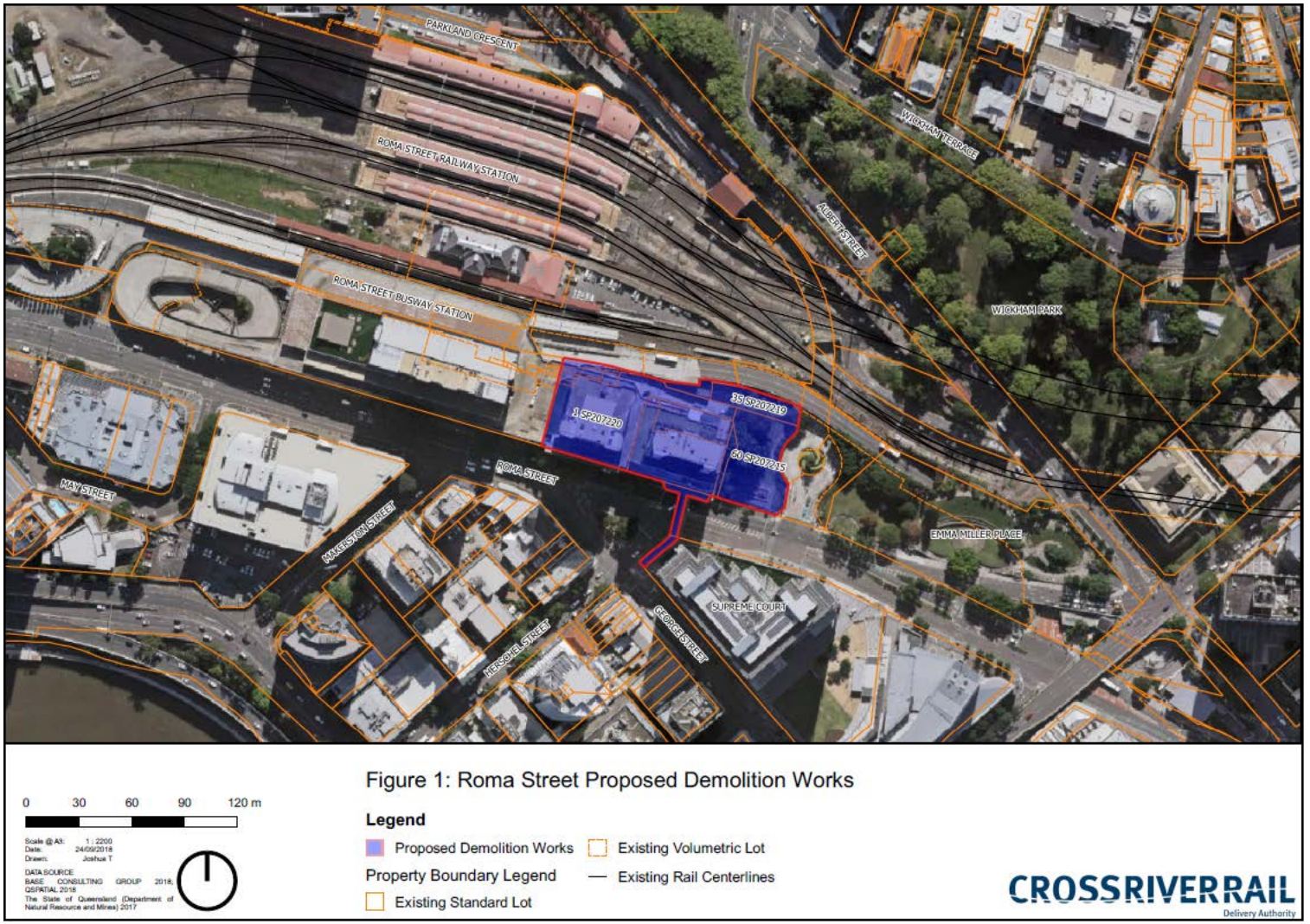

Figure 3.1 Footprint of the proposed changes to the project at Roma Street (Source: proponent March 2019)

The scope of works proposed over the expanded project site at Roma Street include:

- worksite establishment:
  - clearing of site, including the removal of eight trees and landscape plants
  - installation of scaffolding around the exterior of buildings and fencing and hoarding around the demolition worksite
  - removal of infrastructure i.e. seating, footpaths, fencing, rail buffer stop and garden edges
  - earthworks and installation of stormwater controls
  - works associated with public utility plant, including disconnection, diversion and protection of assets
  - installation of a relocatable site office
  - setting up of traffic, access and environmental controls
- soft strip out process
  - disconnection of services to buildings
  - strip out of internal cladding, linings, fixed furniture, fittings and equipment, reducing the building to a structural shell
  - separation of waste streams into like materials
  - uncover and remove unknown hazardous material, including obtaining clearance certificates confirming hazmat removal
  - removal of any hazardous materials
- building demolition
  - removal of the pedestrian bridge from connecting the BTC to George Street
  - demolition of buildings, crushing of materials and removal of demolished material and debris from site
  - salvage of identified materials
  - removal of approximately 90,000 tonnes of materials by heavy vehicle haulage (for recycling or disposal)
- finishing works
  - levelling of the site and compaction of fill, where required
  - minor works to provide a free draining uniform site free of depressions and undulations
  - design and construction of new storm water drainage for the site without exceeding current intake capacity of existing Brisbane City Council (BCC) stormwater assets
  - provision of suitable erosion and sediment control measures and environmental safeguards to mitigate environmental effects and prevent build-up of sediment and other material in BCC stormwater assets.

The proponent anticipates that the demolition of the BTC east tower and Hotel Jen will require approximately 90,000 tonnes of material to be removed from the site and an increase in the volume of demolition material generated from the Roma Street station project works approved in the June 2017 CGCR. Approximately 72,000 tonnes of

material would be recycled, with the remainder to go to landfill. The proposed modifications to the grade of the open space adjacent to Hotel Jen would also require the removal of approximately 5,000 cubic metres of spoil.

The proponent anticipates that as there is limited opportunity for material storage and reuse onsite, the majority of material will be removed offsite for recovery or disposal. This approach is consistent with the previously approved demolition works for the BTC west tower and podium. Waste is to be managed in accordance with a Waste and Recycling Management plan, which would be consistent with the approved OEMP for the project.

3.2. Proponent's reason for change

The BTC complex (located on Lot 1 on SP207220) currently includes two commercial office towers (east and west), two levels of retail, a multi-level commercial car park and a long-distance coach terminal. Lot 1 on SP207220 also encompasses Hotel Jen, a four-star hotel providing short-term accommodation services with 191 rooms and associated facilities.

Following further investigations of the BTC west tower's structural details and arrangement of the shared mechanical and electrical services, the proponent has determined that it is not practical to demolish the BTC west tower and leave the BTC east tower and Hotel Jen remaining. The demolition of the BTC west tower and podium in isolation would result in significant structural integrity and continuity impacts to the BTC east tower and Hotel Jen. It would also result in material impacts to emergency, stormwater, sewerage, water, electricity and communications services that are shared with the BTC east tower.

In addition, the site is significantly constrained and temporary use of the open space adjacent to Hotel Jen and the Queensland Rail carpark (on Lot 60 on SP207215 and Lot 35 on SP207219 respectively) is required to aid in the demolition of these buildings. The temporary use of these lots is required for demolition worksite, construction laydown and site access needs. The additional land provides significant benefits to the project in terms of providing additional temporary construction laydown areas, which would act to offset the loss of the previously identified construction laydown area at the Platform 10 carpark, which has now been approved for use as the temporary Roma Street Coach Terminal as part of the August 2018 CGCR.

No changes to the general arrangement or design of other aspects of the project are proposed as part of this project change application. The proponent has also indicated that no changes to the current conditions are being sought to accommodate the Roma Street demolition works.

3.3. Public notification

In considering the project change application, I determined that the project should be publicly notified. The proponent's project change application was made available for public comment from 1 December 2018 to 21 December 2018.

During the public notification period, six submissions were received including three from private submitters. Three submissions were in support of the proposed Roma Street demolition works.

The following issues were raised in submissions:

- opposition to the use of the College Close car park for the Cross River Rail project, including potential impacts that would arise from its use including reduction in carpark availability for the Roma Street parklands
- wider road network and intersection impacts resulting from the demolition of the Roma Street pedestrian overbridge, including the need for a detailed assessment of the potential impacts
- ease of access for demolition haulage vehicles to the demolition worksite.

I have considered all issues raised in submissions made on this change application.

With regard to issues raised about use of the College Close car park, the use of this car park does not form part of the proposed Roma Street demolition works changes to the project and this matter is not considered further as part of this change report. The issue was assessed and addressed as part of the June 2017 change report.

The proponent provided the following documents which I have also considered in my assessment:

- Cross River Rail Request for Project Change 3 – Traffic Assessment Technical Note received on 4 March 2019
- proponent response to submissions dated 7 March 2019.

4. Evaluation of the change application

In accordance with section 35I of the SDPWO Act, I have prepared this change report following an evaluation of the environmental effects of the proposed change, its effects on the project and any other related matters. I have considered:

- the nature of the proposed change and its effects on the project, as identified in the November 2018 project change application
- project documentation, as currently evaluated, including the 2012 CGER, the June 2017 CGCR and August 2018 CGCR
- technical reports
- submissions received
- advice from the proponent.

In addition, I have amended the Cross River Rail project wide imposed conditions to reflect the changes to the project at Roma Street (Appendix 1).

Appendix 1 and 2 of this report replaces Appendix 2 (Amended project wide imposed conditions – Cross River Rail Project) and Appendix 3 (Coordinator-General's recommendations for the Cross River Rail project) of the August 2018 CGCR (Temporary Roma Street Coach Terminal), therefore Appendix 2 and 3 of the August 2018 CGCR (Temporary Roma Street Coach Terminal) no longer have effect.

Appendix 1 of the August 2018 CGCR (Imposed conditions – Temporary Roma Street Coach Terminal Works) is also replaced by Appendix 3 of this change report, therefore Appendix 1 of the August 2018 CGCR (Temporary Roma Street Coach Terminal) no longer has effect.

The steps taken in the project's EIS assessment and change application process and the EIS process documents including the CGER are available at: **www.dsdmip.qld.gov.au/crr**

The following is an evaluation of the environmental effects of the proposed changes to the project.

4.1. Land use and tenure

4.1.1. Introduction

The key land use and tenure impacts associated with the proposed changes to the project relate to the additional footprint of the BTC east tower and Hotel Jen land, and the adjacent open space and carparking areas.

The demolition works also have the potential to encounter contaminated soil and materials present at the site, due to its history as an operating rail yard.

The key land use and tenure impacts are discussed below.

4.1.2. Impacts and mitigation

Land use

The proposed changes to the project at Roma Street would result in around an additional 1.1 hectares of land (0.85 ha within Lot 1 SP207220 and 0.25 ha of Lot 60 SP207215) to be impacted by the project. The details of the land parcels impacted by the proposed changes to the project at Roma Street are provided in Table 4.1.

Table 4.1 Tenure of land parcels impacts by the proposed changes to the project (Source: Table 3, November 2018 project change application)

Address	Lot on Plan	Tenure type	Owner	Demolition site/ proposed use
159 Roma Street, Brisbane City QLD 4000	1 on SP207220	Freehold	Lendlease Funds Management Limited	BTC East tower and Hotel Jen
15 Countess Street, Brisbane City QLD 4000	35 on SP207219	Freehold	Queensland Rail	Demolition access and worksite

Address	Lot on Plan	Tenure type	Owner	Demolition site/ proposed use
300 Albert Street Brisbane City QLD 4000	60 on SP207215	Freehold	The State of Queensland represented by the Department of Housing and Public Works	Demolition access and worksite

Lot 1 on SP207220 is currently fully developed by multi-storey buildings including the BTC and Hotel Jen. The BTC complex operates as a transport interchange hub and includes two commercial office towers and two levels of retail. The BTC west tower has eight levels with 17,481 square metres of lettable area, while the east tower has 12 levels with a lettable area of 12,140 square metres. Hotel Jen, owned by the Shangri-La Group, currently operates as a four-star hotel with 191 rooms and associated facilities.

The proposed demolition of BTC East and Hotel Jen, both located on Lot 1 SP207220, will see a reduction in the availability of commercial office space and car parking within the Roma Street precinct.

The required portion of Lot 60 on SP207215 (refer to Figure 3.1) adjacent to Hotel Jen is currently green space and contains landscape gardens, a fig tree, retaining walls and seating. The part of Lot 60 on SP207215 required will be restricted from public use during the demolition works.

Lot 35 on SP207219 comprises the Roma Street rail yards and Queensland Rail facilities, including car parking facilities. A small area of approximately 800m² within lot 35 on SP207219 that contains the Queensland Rail car parking area and minor rail infrastructure would be required for the project.

Despite the increased land use impacts and the loss of commercial office space and carparking resulting from the proposed changes to the project at Roma Street, the proponent has identified that the removal of the BTC East tower and Hotel Jen would result in additional redevelopment opportunities for the broader Roma Street precinct. Following the completion of Cross River Rail construction activities at Roma Street, the permanent use of the site will be determined by the Roma Street precinct master planning process, which includes the Brisbane Live project.

It is noted that the following existing land use and tenure mitigation measures will assist in reducing the potential impact of the proposed changes to the project:

- a commitment from the proponent to work with affected land owners
- ongoing consultation by the proponent with key stakeholders in relation to future development
- ongoing consultation by the proponent with Queensland Rail
- ongoing consultation by the proponent with relevant stakeholders where disruption to land uses and facilities are required for construction activities

- access to adjoining properties and access for delivery vehicles is to be maintained, where practicable. Where changes are required, alternative access arrangements are to be identified in consultation with property owners and local businesses
- safe and efficient access to major land uses such as the Roma Street Parklands is maintained, particularly during major events
- implementation of appropriate measures aimed at reducing potential construction impacts such as noise and vibration, dust, emissions and odours and construction traffic
- access for emergency services vehicles to be maintained for the duration of construction works.

No additional mitigation measures are required to manage the proposed land use changes to the project at Roma Street.

Contaminated land

All three lots underlying the proposed Roma Street worksite are listed on the Environmental Management Register (EMR) for having notifiable activities with the potential to cause land contamination. Details are provided in Table 4.2.

Table 4.2 Notifiable activity details of lots underlying the Roma Street worksite (Source: Table 8, November 2018 project change application)

Property	EMR Site ID	Notifiable Activity Details
Lot 1 SP207220	83123	The BTC is currently listed on the EMR for 'petroleum product or oil storage'. A review of the BCC flammable and combustible liquids license details indicate that Lot 1 SP207220 holds a license for between 50,000 litres and 200,000 litres on-site above ground storage.
Lot 60 on SP207215	85760	Notifiable activity 'railway yards' – the former Roma Street rail yards were historically located in the area now occupied by Emma Miller Place, open space adjacent to Hotel Jen and the Roma Street Parklands. The rail yard has been remediated during redevelopment. However, the property remains on the EMR.
Lot 35 on SP207219	83090	Included on the EMR for the Notifiable Activity of railway yards.

A contaminated land investigation for the Roma Street precinct was completed by a suitably qualified person (in accordance with the *Environmental Protection Act 1994* and the Queensland Auditor Handbook for Contaminated Land) to provide a preliminary indication of the contamination status of the Roma Street station site.

The investigation found that a Site Management Plan for Lot 22 on RP903100 (a portion of Lot 60 SP207215) reported historical contamination including polyaromatic hydrocarbons (PAH) and metals associated with a discontinuous layer of ash/coke material. The proponent has indicated that these compounds have a low level of leachability within the ash/coke material, and therefore is considered a 'low level'

impact with manageable risks. These areas were also covered by a minimum 1.5 m thickness of clean fill (including topsoil) or by sealed surfaces such as bitumen.

Soil and groundwater sampling undertaken by the proponent indicated elevated concentrations of PAH in soils and elevated concentrations of total reportable hydrocarbons (TRH) in both groundwater and soils above the sensitive land use criteria. The proponent also identified that previous fuel storage and associated infrastructure and imported fill located at Roma Street may present a contamination risk to the area during the demolition works with the likelihood of contamination from these predicted to be 'low' to 'medium'.

An asbestos risk assessment undertaken for the three buildings located on Lot 1 on SP207220 did not identify the presence of asbestos material, however hazardous material could be present behind sheeting which could not be assessed at the time of assessment. Consequently, the proponent has indicated that an asbestos removal control plan will be prepared prior to commencing activities that may involve asbestos removal, and that an experienced and licensed hazardous materials removal contractor would be engaged to remove any asbestos containing materials. Further, where asbestos removal works are to occur, background air monitoring will be performed by an independent occupational hygienist, with daily results maintained on site.

Compared to the previously assessed and approved project, there would be no additional properties listed on the EMR to be impacted by the proposed changes to the project, only an extended area within the lots already identified within the project footprint.

The proponent predicted that the risk of contamination resulting from the additional property impacts would be addressed through the management measures included in the approved Outline Environmental Management Plan (OEMP), which I require the proponent to update based on the proposed changes to the project. Management measures to be implemented to address contamination and contaminated soils would include:

- intrusive investigations to confirm the contamination status of an area proposed to be excavated within Lot 60 of SP207215
- ensuring that soil is not to be moved around onsite without adequate representative sampling undertaken by a qualified and experience contaminated land consultant
- preventing soil removal offsite without a disposal permit
- remediation or disposal of contaminated or unsuitable spoil material that cannot be used for spoil placement
- covering loads or wetting material to reduce airborne dust emissions
- maintain documentation of all contaminated material during transport operations
- providing all personnel involved in construction or excavation activities provided with relevant safety information and training relating to contamination before commencing site works
- develop and implement, prior to the commencement of the demolition works, a Construction Occupational Health and Safety plan outlining procedures for

managing exposure of construction workers to potential contaminants in soil and water

- analytical testing to confirm the presence or absence of asbestos, where asbestos is suspected in previously filled areas. If asbestos is present, management measures would be implemented in accordance with the project's Asbestos Management Plan.

Erosion and sedimentation

Sedimentation has the potential to result from construction activities such as vegetation clearing, the demolition of existing infrastructure, earthworks associated with track work, road and footpath realignment, use of haulage roads as well as during spoil removal, haulage and placement.

The proposed changes to the project at Roma Street will result in approximately 1.1 hectares of additional exposed and disturbed area added to the project footprint. I require the proponent to update the approved OEMP to respond to the proposed changes to the project at Roma Street. The Erosion and Sediment Control plan (ESCP) as a subset of the approved OEMP is to be:

- prepared and approved prior to the commencement of project works
- regularly audited and reviewed
- include measures to:
  - avoid disturbing vulnerable surface and subsurface soils
  - install drainage, erosion and sediment control measures early in the project schedule
  - minimise worksite clearing and the extent and duration of soil exposure
  - identify spoil storage locations on worksites
  - divert clean waters around disturbed surfaces and spoil storage locations, including on-site capture of surface drainage waters and sediment
  - use sediment control devices, such as sediment fences, check dams or other techniques to slow water flow and enable sediment to settle from water prior to migrating offsite
  - avoid loose spoil material or other soil spilling onto roadways via installation of wheel washes, covering loads etc. at all road access points
  - progressively stabilise and revegetate disturbed areas using stored topsoil where practicable.

4.1.3. Coordinator-General's conclusion

I note that the demolition of the BTC east tower and Hotel Jen would reduce the availability of office space and accommodation facilities in the Roma Street precinct; however, this would also provide enhanced opportunities for redevelopment as part of the Roma Street precinct master planning process upon completion of Cross River Rail infrastructure.

I note that all three lots underlying the site are listed on the EMR with the potential to cause land contamination if disturbed during construction activities. The proponent predicted that the risk of contamination resulting from the additional property impacts

would be addressed through the mitigation measures included in the approved OEMP, which I require the proponent to update based on the proposed changes to the project. The proponent has also committed to the preparation of an ESCP to manage potential sedimentation impacts resulting from the proposed changes to the project at Roma Street. I require the proponent to fulfil this commitment. I further require the site-specific ESCP and Construction Environment Management Plan (CEMP) to be prepared for the project to include mitigation and management measures consistent with those included in the approved OEMP.

I am satisfied that through the implementation of the mitigation measures outlined in the approved OEMP that is to be updated, the potential contaminated land, and erosion and sedimentation impacts of the additional demolition works can be managed.

4.2. Traffic and transport

4.2.1. Introduction

The proposed changes to the project at Roma Street have the potential to impact on existing traffic volumes and the transport network within the Roma Street precinct and wider region, including road, rail, bus, cycleway and pedestrian access.

The proponent's assessment of the potential impacts of the proposed changes to the project at Roma Street included:

- review of proposed traffic volumes on Parkland Boulevard and Roma Street
- swept path assessment of haulage vehicles travelling along Parkland Boulevard and Roma Street for site access and egress
- review of potential changes to access for pedestrians and cyclists using Parkland Boulevard and Roma Street.

The key traffic and transport impacts of the proposed changes to the project at Roma Street are discussed below.

Submissions received

The key traffic and transport issues raised in submissions include:

- opposition to the use of the College Close car park for the Cross River Rail project, including potential impacts that would arise from its use including reduction in carpark availability for the Roma Street parklands
- wider road network and intersection impacts resulting from the demolition of the Roma Street pedestrian overbridge, including the need for a detailed assessment of the potential impacts
- ease of access for demolition haulage vehicles to the demolition worksite.

I have considered each submission and how the information provided by the proponent has responded to submitters' issues as part of my evaluation.

4.2.2. Impacts and mitigation

Construction vehicle traffic and site access

The proponent estimates that the removal of 90,000 tonnes of demolition material from the site could be undertaken over the seven-month demolition period and working in accordance with the approved hours of work by, on average, two haulage vehicles per hour (equating to four vehicle movements per hour) operating 12 hours per day six days per week.

The proponent has assessed the potential impacts that could result from the proposed changes to the project at Roma Street, assessing eight haulage vehicle movements per hour (four in, four out of the construction worksite) as a worst-case scenario. This assessment concluded that the additional traffic as a result of the demolition will not have a significant impact on the road network at Roma Street.

The proponent has conducted surveys that showed that Roma Street currently caters for approximately 30 haulage vehicle movements in a single direction during peak times. Articulated vehicles typically used for haulage activities could present a hazard to road users, due to the swept paths and tracking across kerbs at intersections, as well as road users failing to observe the trailer component of the vehicle when crossing the road.

Given the high levels of pedestrian use and cyclist activity in the Roma Street precinct especially during peak periods, the proponent has identified that the largest vehicle that could be safely permitted to the proposed additional worksite would be the standard three axle semi-trailer, capable of carrying up to 24 tonnes of material.

The proponent has determined that cumulative construction traffic impacts will not occur from the Roma Street demolition works and the construction of the temporary coach terminal at Roma Street (August 2018 CGCR) as the works periods will not overlap.

The proponent concluded that the potential minor increase in construction traffic on Roma Street resulting from the proposed changes to the project at Roma Street is not expected to significantly impact the road network.

Site access

The proponent has indicated in their change application that access to the Roma Street demolition worksite would be provided from Roma Street in two stages. Stage one (refer to Figure 4.1) would include the demolition of the BTC east tower, during which vehicles would access the worksite from the northern end of Roma Street (the current access to Hotel Jen) via Herschel Street and exit through the open space park to Roma Street.

Stage two (refer to Figure 4.2) would include the demolition of Hotel Jen and would commence once the BTC east tower lot has been cleared.

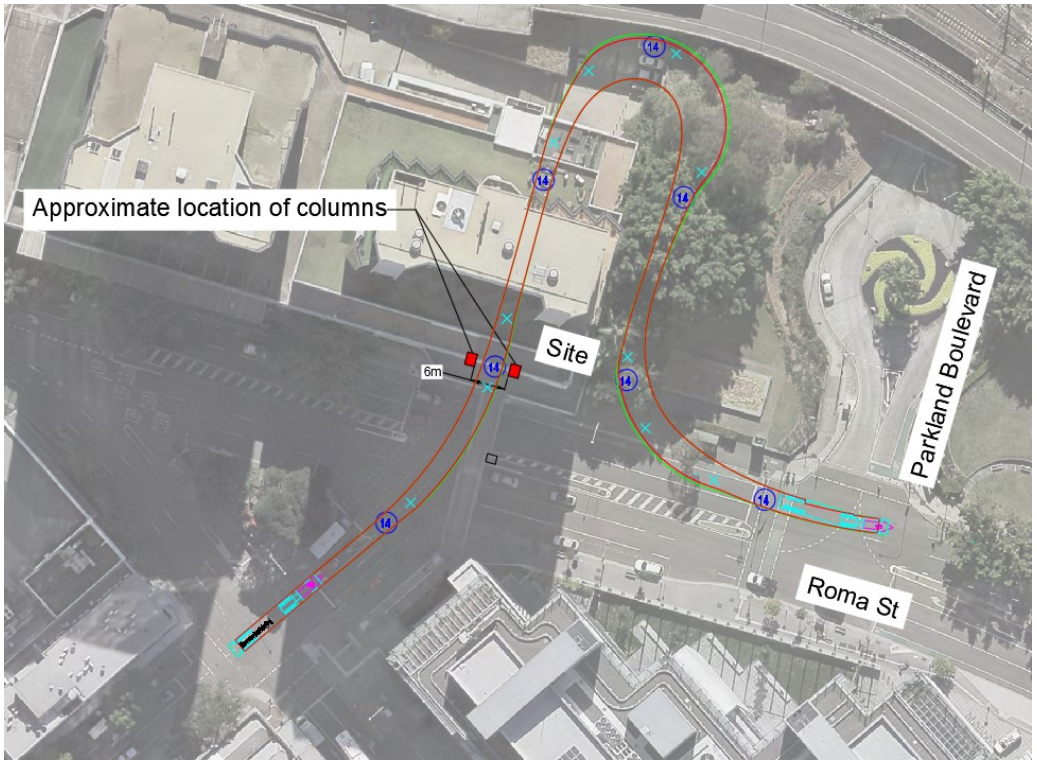

Figure 4.1 **Stage one proposed vehicle access (Source: November 2018 project change application)**

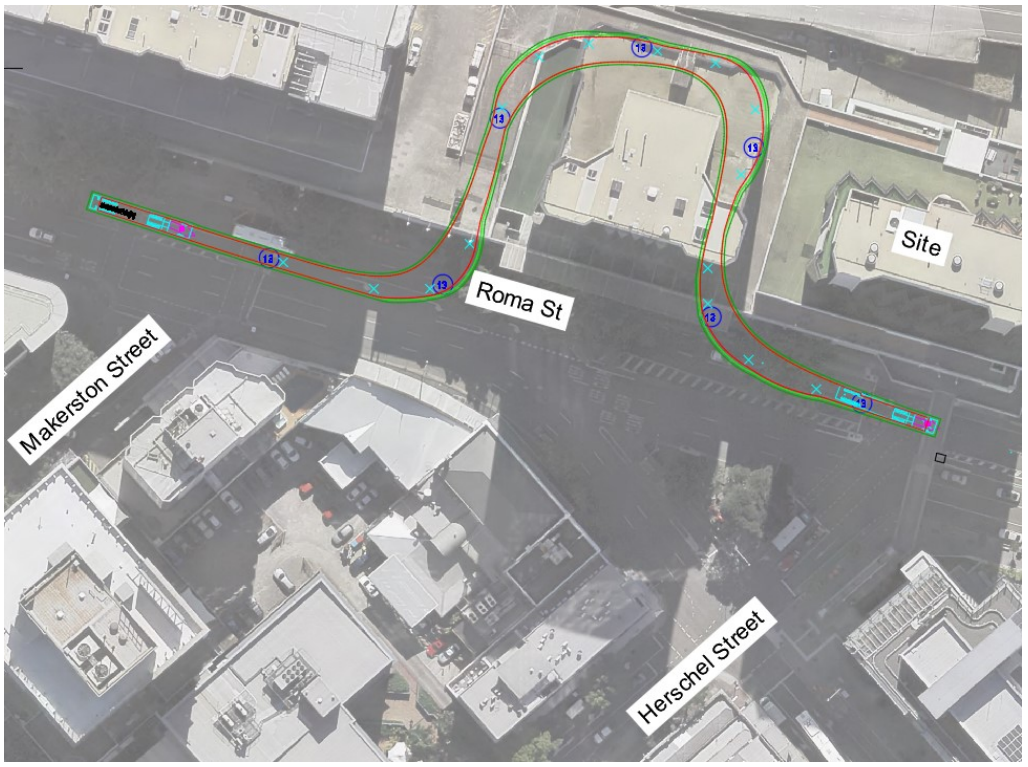

Figure 4.2 **Stage two proposed vehicle access to the Roma Street worksite (Source: November 2018 project change application)**

Following clearance of the BTC east tower lot, demolition vehicles would access and exit the site via the BTC east tower lot.

The proponent has indicated that based on a swept path analysis during stage one access, a 19 metre 3-axle semitrailer would be able to enter and exit the site with 300 mm clearance on either side of the vehicle. However, if any other vehicle is located within the designated servicing area for the haulage vehicle, the semitrailer would not be able to manoeuvre in or out of the waiting bay. During stage two, access to the site would also be possible eastbound from Roma via a one way in/one way out setup adjacent to Roma Street, by straddling the two lanes; a manoeuvre permitted under current Queensland road rules.

I note that access for demolition haulage vehicles was raised in a submission and the proponent in their response advised that the height clearance through Hotel Jen and the manoeuvres required to access the worksite have been tested and can be achieved.

On 4 March 2019, the proponent advised (via an updated ARUP Traffic Assessment Technical Note) that the height clearance through Hotel Jen has been confirmed and that large heavy vehicles can access the site safely. Once the haulage vehicle is loaded, its exit of the site would also need to be controlled to mitigate the risk of an accident with other Parkland Boulevard traffic. The proponent has indicated that the preferred vehicle access option would be determined in consultation with relevant stakeholders, such as the Department of Transport and Main Roads (DTMR) and Brisbane City Council (BCC), as part of a road safety audit.

Modifications to the grade of the open space adjacent to Hotel Jen is proposed to ensure heavy vehicles can safely access (exit) the site. As the open space is at a higher elevation than the road, some levelling would be required. The proponent has indicated that the exact modifications to the open space would be confirmed prior to the commencement of site works, once a survey of the site is completed.

I require that the proponent updates the approved OEMP to respond to the proposed changes to the project at Roma Street. Mitigation measures to address the potential traffic and transport impacts include:

- ensuring that heavy construction vehicles use only designated haulage routes in accordance with the CEMP and Construction Traffic Management Plan (CTMP). Designated haulage routes developed in consultation with DTMR and BCC follow major or arterial roads. Construction haulage would also be undertaken during the approved hours of work, and managed and coordinated (where practicable) with other nearby major construction works
- preparation and implementation of CTMPs for the worksite prior to the commencement of construction activities, in consultation with BCC, DTMR and emergency service authorities
- preparation and implementation of a construction workforce car parking plan for each worksite in consultation with BCC and DTMR
- local communities and road users are to be notified of proposed changes to local traffic access. This would include the provision of clear signage identifying the

changed traffic conditions and public advertisements describing the proposed changes, the duration of the changes and possible alternative routes

- project works in or near road corridors are to be screened with solid barriers to minimise distractions for motorists
- access to properties and local businesses adjoining or near project works is maintained, or where changes to property access are required, alternative access arrangements are to be identified in consultation with property owners and occupants and documented in traffic management plans
- consultation with DTMR, BCC and emergency service providers to identify and implement measures to manage traffic flows and ensure safe traffic movement near construction works.

Pedestrian and cyclist impacts

Pedestrian impacts

The proponent has indicated that pedestrian access routes within the Roma Street precinct would be retained despite the proposed changes to the project, however detours would be required.

The width of the footpath on the northern side of Roma Street is likely to be reduced during demolition works due to the installation of site fencing. Disruptions to the flow of pedestrians on Roma Street would be managed by a CTMP and coordinated by authorised traffic controllers to ensure safety. Heavy vehicle haulage will also operate outside peak traffic times in the Roma Street precinct, to reduce the potential for pedestrian impacts during peak movement times and would be coordinated with the assistance of authorised traffic controllers.

Parkland Boulevard will remain open to pedestrians throughout the demolition of the BTC east tower and Hotel Jen, however pedestrians may have to follow temporary footpath diversions. Any modifications to access for pedestrians and cyclists to Parkland Boulevard would be managed through a traffic management plan.

Roma Street pedestrian footbridge

The pedestrian footbridge at the intersection of Roma Street and Herschel Street that provides a connection from the BTC to George Street is also required to be demolished, due its structural connection to Hotel Jen. The proponent has indicated that this would involve a temporary closure of Roma Street and the footpath in the vicinity of the bridge. The proponent proposes to undertake the removal of the bridge during low pedestrian and traffic periods on the road network, during night hours or on weekends, to avoid potential peak traffic impacts. The demolition would also be coordinated with BCC and qualified traffic management controllers.

As a result of the removal of the pedestrian bridge, alternative pedestrian crossings will be provided, triggering the requirement for significant modifications to traffic signals at nearby intersections along Roma Street. The proponent has identified that the Roma Street/Herschel Street intersection would be modified (such as changes to signal phasing) to provide signalised pedestrian crossing movements.

To determine the potential impact of modifying the Roma Street/Herschel Street intersection, the proponent undertook a SIDRA analysis of the potential impacts resulting from the removal of the pedestrian bridge. Noting that the analysis is a conservative estimate of potential impacts, it is predicted that the intersection would operate within the acceptable level of service for a CBD intersection, however it is possible that there may be some additional queuing impacts.

I note that a submitter raised concerns with the potential wider road network and intersection impacts resulting from the demolition of the Roma Street pedestrian footbridge, including the need for a detailed assessment of the potential impacts. The proponent has advised that the conservative assessment of the potential impacts associated with the proposed scramble crossing at the Roma Street/Herschel Street intersection found that the proposal would not have major implications to the pedestrian capacity of the Roma Street/Herschel Street intersection.

Further, the proponent considers that an analysis of the potential impacts to surrounding intersections is not required, as surrounding intersections are not anticipated to be significantly affected by the proposed scramble crossing. However, the proponent indicated that further analysis would be undertaken prior to the commencement of project works and any necessary changes to the scramble crossing identified during that assessment would be developed and implemented in consultation with BCC.

I accept the proponent's assessment and require that the proponent fulfils their commitment to undertake the removal of the bridge during low pedestrian and traffic periods such as during night hours or on weekends, to reduce any potential impacts. I also require the proponent to update the approved OEMP and any subset CTMP to reflect the changes to the project at Roma Street, including any modifications to intersections, prior to the commencement of project work.

Cyclist impacts

Parkland Boulevard is identified as a priority cycle route on the South East Queensland Principal Cycle Network Plan. Parkland Boulevard is expected to remain open to cyclists during demolition, however detours or temporary delays may be experienced due to access for haulage vehicles to the worksite. Any detours for cyclists would be managed in accordance with a traffic management plan, to ensure safety during heavy vehicle movements in and out of the site.

The CityCycle station in front of the BTC east tower and Hotel Jen will need to be removed due to the potential reduction in footpath width to accommodate the proposed changes to the project at Roma Street. The relocation of the CityCycle station will be coordinated with BCC and is not expected to impact on the traffic network.

The proponent anticipates that cyclist activity on Roma Street would not be significantly impacted by the proposed changes to the project. The proponent proposes the following mitigation measures to address pedestrian and cyclist impacts:

- where pedestrian and cycle access to community facilities is changed, local access strategies are to be developed in consultation with local communities, community facility managers and relevant stakeholder groups (including Vision Australia) to

provide safe and efficient pedestrian access. Safe, alternative access is to be provided for bikeways disturbed by construction works

- maintain safe and functional access for pedestrians and cyclists near project works, incorporating relevant Crime Prevention Through Environmental Design (CPTED) principles
- site access will be controlled by a CTMP to ensure safety of cyclists during heavy vehicle movements in and out of the site.

Car park impacts

The demolition of the BTC east tower and Hotel Jen will result in the loss of 190 car parking spaces within the Roma Street precinct. The proponent has identified that the existing BTC carpark is principally used by tenants of the BTC office buildings, with some paid carparking for CBD commuters.

In accordance with the imposed conditions for the project, construction workers will be instructed to avoid parking on local streets to minimise the impact to visitors who typically make use of local street parking. Workforce parking would also be provided at the worksite following the demolition works, where feasible, to reduce potential impacts on street parking availability in the Roma Street area.

Bus network impacts

In the project change application, the proponent anticipates that the Inner Northern Busway at Roma Street would not be significantly affected by the proposed changes to the project at Roma Street, however some minor disruptions to services are possible, if required to ensure safety to users. The proponent has indicated that any minor disruptions to bus operations will be coordinated with Translink.

Three Translink bus services (Routes no. 61, 350, 352) travel eastbound along Roma Street daily through the intersection of Parkland Boulevard and Roma Street. The proponent predicted that no significant disruptions or re-routing of these services would be required for the demolition works.

The proponent has indicated that the bus stop shelter located on the northern footpath of Roma Street adjacent to the site is currently decommissioned. Bus operations on Roma Street are currently under review for the project, where modifications could include the re-activation of this stop.

4.2.3. Coordinator-General's conclusion

I am satisfied that the proponent has assessed the potential traffic and transport impacts of the proposed changes to the project at Roma Street.

Haulage vehicle access to the demolition worksite would be undertaken within the approved hours of work for the project, avoiding peak traffic and pedestrian movement times.

I require that any detours required for pedestrians and cyclists are developed in consultation with BCC and DTMR and implemented in accordance with the CTMP. Further, I require that the proponent undertakes the removal of the pedestrian

footbridge connecting Roma Street to Hotel Jen and the BTC during periods of reduced pedestrian and traffic demand.

I acknowledge that the Roma Street demolitions works would result in a reduction in the availability of carparks in the Roma Street precinct, however this is an unavoidable impact resulting from the demolition of the BTC east tower and Hotel Jen. The existing conditions for the project require the proponent to ensure that construction workers avoid parking on local streets, and to provide workforce parking within the construction site, where practicable.

I am satisfied that through consultation with BCC and DTMR and the implementation of the mitigation measures outlined above which are consistent with those in the approved OEMP, the potential traffic and transport impacts of the proposed changes to the project at Roma Street will be mitigated and managed.

4.3. Noise and vibration

4.3.1. Introduction

The proponent conducted a technical assessment to determine the predicted noise and vibration impacts of the proposed changes to the project at Roma Street. The proposed changes involve new property impacts and additional demolition works not previously assessed.

Noise impacts of the proposed changes to the project at Roma Street were assessed and compared, where possible, to the impacts of the previously approved construction activities adjacent to Roma Street Station in the 2011 EIS and February 2017 project change application.

Proposed project changes that have the potential to alter noise and vibration impacts include the additional demolition of the BTC east tower, Hotel Jen and the removal of the pedestrian footbridge across Roma Street, as well as associated demolition material haulage and changes to construction traffic movements required for the proposed changes. The increased duration of noise and vibration impacts on sensitive receptors were also considered with the sequential demolition of the BTC west tower and podium.

Sensitive receptors of the noise and vibration impacts and their distance from the proposed demolition works (approved and proposed) at Roma Street include:

- Queen Elizabeth ll Courts of Law (Supreme and District Courts), located approximately 40 m across from Roma Street
- Abbey Apartments, located approximately 60 m to the west
- Magistrates Court, located approximately 100 m to the south-east
- Meriton Apartments, Hershel Street, located approximately 110 m to the south
- Residential and healthcare buildings (including Brisbane Private hospital) located on Wickham Terrace, approximately 200 m to the north-east
- Pullman King George Square hotel, located approximately 220 m to the south-east
- Parkland Apartments, located approximately 225 m to the north-west.

The proponent has advised that the construction of the Roma Street Coach Terminal will be completed in July 2019 and will not overlap with the demolition works at Roma Street. As such, cumulative noise and vibration impacts were not included as part of the assessment of the proposed project change.

The full extent of demolition at Roma Street is expected to commence in mid-to late 2019 and extend over an 18-month period. The project change application indicated that the buildings will be demolished sequentially, with the demolition of BTC east tower and Hotel Jen first, followed by the podium and BTC west tower. The inclusion of BTC east tower and Hotel Jen to the demolition program has added an additional seven months to the noise and vibration impacts at Roma Street.

4.3.2. Impacts and mitigation

Construction Noise

For the purposes of predicting the potential noise impacts of the proposed changes to the project at Roma Street, calculations of typical noise that would be generated from the anticipated demolition activities were conducted by the proponent. These key activities were grouped as follows:

- *site establishment:* clearing of the site adjacent to Hotel Jen, earthworks, construction of a hardstand, fencing and hoarding
- *internal demolition:* soft strip-out works within the buildings, conducted within the retained façade of the buildings
- *building demolition:* works involving the removal of the building structures
- *stockpile management:* works involving the collection of building debris and sorting into stockpiles via the use of a tracked excavator or bobcat and loading material onto haul trucks and haul truck movements
- *ground remediation:* levelling of the site and compaction of fill
- *finishing works:* construction of new drainage infrastructure.

Noise emissions have been predicted for each of these construction activities except the internal demolition stage, which will be conducted within the façade of the buildings and is therefore not expected to have significant external noise and vibration impacts

As most sensitive receptors (including the Supreme Court, Magistrates Court and the Abbey Apartments) are in close proximity and in direct line-of sight to the proposed demolition works, the noise emissions predicted for each demolition activity were used to calculate the noise levels likely to be experienced at each of the sensitive receptors. At each location a range of noise levels were calculated to account for variation in the noise source position across each of the receiving sites. Meteorological effects that could affect long-distance sound propagation, such as wind, was also considered for sensitive receptors located more than 100 m from the works.

The proponent predicted that exceedances of the project noise goals would occur for the following sensitive receptors from the proposed changes to the project:

- the Supreme Court, by up to 15 dB(A) during the building demolition activities and 4-12 dB(A) during other activities as listed above
- the Magistrates Court, by up to 5 dB(A) during site excavation, building demolition and stockpile management
- Abbey Apartments, by up to 8 dB(A) during external façade demolition and 5 dB(A) for stockpile management
- Meriton Apartments, by up to 3 dB(A) during external façade demolition of the buildings.

The proposed changes to the project at Roma Street will result in demolition works in closer proximity to identified sensitive receptors, except for the Abbey Apartments and the Parkland Boulevard Apartments. Therefore, it is likely that the potential noise impacts will be increased for most receptors compared to the previously approved demolition works at Roma Street. The predicted changes in noise levels from the proposed demolition of the BTC east tower and Hotel Jen are summarised in Table 4.3.

Table 4.3 Predicted changes in noise levels (Source: Table 18, November 2018 project change application)

Receptor/ location	Change in noise levels
Supreme Court	+9.5 dB
Magistrates Court	+4.7 dB
Abbey Apartments	-1.6 dB
Meriton Apartments	+1.6 dB
Parkland Apartments	-4.7 dB
Pullman King George Square	+3.3 dB
Wickham Terrace receptors	+2.2 dB

It should be noted that these predicted changes in noise levels are for the demolition of BTC east tower and Hotel Jen only and that the noise impacts of the demolition of BTC west tower and podium will remain consistent with the noise levels previously approved for the project.

The proponent has indicated that an increase in noise of less than 3 dB is typically considered to be negligible and difficult for most people to detect, while increases up to 5 dB would be considered minor and increases up to 10 dB are considered moderate. Therefore, the increase in noise levels for the proposed Roma Street demolition works compared to the previously approved works would be considered minor for most of the sensitive receptors, as indicated by the figures above. However, it is recommended that the proponent undertake stakeholder consultation with all sensitive receptors, particularly the Supreme Court, where increases in noise impacts are predicted to be moderate.

The proponent has advised that due to the elevated nature of the noise source for the demolition works and/or the sensitive receptors, mitigation measures for noise impacts are limited in scope. This limits the use of noise barriers, which are typically applied as mitigation to reduce the impact of noise generating activities that are ground based such site clearing and finishing works.

Noise generating construction activities will be undertaken during the approved standard construction hours, being 6.30am to 6.30pm Monday to Saturday. No works will be undertaken during public holidays. Additional extended work hours may be required for activities which may cause impacts to traffic or pedestrian movement but will be undertaken to ensure they comply with the existing noise and vibration conditions for the project.

To manage the potential noise impacts of the proposed changes to the project, the proponent has advised that the existing noise and vibration mitigation measures include:

- schedule the demolition and use demolition methodologies which leave the outside facade of the building intact until the latter stages of the demolition (to partially screen noise emissions and assist in reducing the duration of the worst case impacts from the demolition)
- substitution of noisy demolition practices with quieter ones, for example, using saw-cutting in place of breaking
- removal of glass panels as complete panes, rather than breaking during removal
- consultation with potentially affected entities to notify them of proposed works and determine suitable mitigation measures
- plan construction to undertake the following measures:
  - early installation of acoustic screens around potential noise sources
  - using the quietest plant and equipment reasonably expected to undertake each component of work
  - minimise the coincidence of noisy plant and equipment working simultaneously near sensitive receptors.

The proponent has also committed to undertaking a noise monitoring program as part of a Noise and Vibration Monitoring Plan, which would be prepared by the contractor and approved by a qualified acoustic consultant. The monitoring program would be established prior to the commencement of the proposed demolition works at Roma Street.

Construction Traffic Noise

The November 2018 project change application assessed the construction traffic movements for the proposed changes to the project at Roma Street to be 24 heavy vehicles per day with an average of two vehicles per hour and a peak of up to four vehicles per hour.

The 2011 EIS assessment determined that during peak construction, 130 heavy vehicles per day (103 spoil vehicles and 27 delivery vehicles) would access the Roma Street construction site area. This was predicted to result in a 0.3 dB(A) increase to the existing road traffic noise level and would comply with the DTMR Road Traffic Noise criteria.

Table 4.4 compares the predicted construction traffic volumes for the Roma Street worksite for the 2011 EIS, the February 2017 change application, and the proposed changes to the project at Roma Street.

The assessment noted that as the 2011 EIS traffic volumes were predicted to be compliant with the DTMR road traffic noise criteria, therefore the traffic noise associated with the proposed changes to the project at Roma Street would also comply. The proponent concluded that there are no additional construction traffic noise impacts associated with the proposed changes to the project.

Table 4.4 Cross River Rail Project traffic volumes (Source: Table 17, November 2018 project change application)

Construction Worksite	Peak Spoil Movement (Loads/day)			Peak Delivery Movement (Loads/day)			Peak Traffic Movements (Loads/Hour)		
	2011[1]	2017[2]	2018[3]	2011	2017	2018	2011	2017	2018
Roma Street	103	39	24	27	27	n/a	10	6	4

Construction Vibration

The predicted vibration impacts of the proposed changes to the project at Roma Street have been calculated and assessed against the project's construction vibration goals reported in Table 3, Appendix 2 of the August 2018 CGCR. The goals fall into three categories; human comfort, building damage and threshold for consultation.

As the goals for both human comfort and building damage include different values at different frequencies, a worst-case assessment has been adopted as the target to take the most conservative approach.

Therefore, for the basis of this assessment, the applicable vibration goals (peak particle velocity) are as follows:

- human comfort
  - residential: 0.2mm/s
  - courtrooms: 0.4mm/s
- building damage
  - heritage buildings: 2mm/s
  - residential: 15mm/s
  - courtrooms: 50mm/s

[1] 2011 EIS
[2] February 2017 project change application
[3] November 2018 project change application

- threshold for consultation (all receptors): 10mm/s

Preliminary screening calculations were undertaken for each of the nearby sensitive receptors and heritage sites. Screening calculations provide a range of construction vibration levels to account for variation in the vibration source location across each of the receiving sites.

The results show that that there were no predicted exceedances of the threshold for consultation and all construction activities would generate vibration levels below the human threshold of perception of vibration (approximately 0.1 mm/s), except for vibratory compaction for some receptors.

Screening calculations predicted that ground remediation works requiring dynamic compaction or vibratory compaction may result in high ground vibration levels that exceed human comfort criteria or heritage building damage criteria. The receptors that were predicted to have exceedances for vibratory compaction during ground remediation activities are shown in the table below.

Table 4.5 Receptors with predicted exceedances of the project vibration goals

Receptor	Predicted range of vibratory compaction	Applicable vibration goal
Heritage building damage criteria exceeded for:		
Transcontinental Hotel	<0.1 – 2.75 mm/s	2 mm/s
King George Chambers	<0.1 – 2.75 mm/s	2 mm/s
Human comfort project vibration goals exceeded for:		
The Supreme Court	0.1 – 3.33 mm/s	0.4 mm/s
Former Bank of Queensland	<0.1 – 1.1 mm/s	0.4 mm/s
Baby Clinic (Former)	<0.1 – 0.5 mm/s	0.4 mm/s

With these exceedances it is worth noting that these calculations were based on the maximum predicted values and the assessment was deliberately conservative. For example, a five per cent chance of exceedance was predicted for the largest vibratory compacter size. Selection of a smaller vibratory compactor would therefore result in significantly lower vibration levels. To this end, the proponent has committed to considering the use of smaller equipment in detailed design to further aim to achieve the project vibration goals.

If vibratory compaction is required, the proponent has committed to the following mitigation measures, which I require the proponent to include in their CEMP:

- undertaking a detailed vibration impact assessment and/or implementing the property damage sub-plan procedure for ground remediation works to include:
  - advance communication with King George Chambers and the Transcontinental Hotel
  - procedures for building condition surveys both in advance and following Project Works, including provision for consultation with property owners and occupants
  - monitoring to be undertaken for potential impacts to property.

In addition to ground remediation, the other activity that may potentially result in vibration impacts is demolition, that is, impacts from construction debris being dropped from a height. The extent of the impact is dependent on the size and height from which the debris is dropped. Without a detailed demolition plan the impact from construction debris is difficult to predict. Therefore the maximum energy permissible for demolition works without exceeding the vibration goals has been calculated as follows:

- *human comfort criteria:* 117.3 kJ (most sensitive receptor Supreme Court)
- *building damage:* 1.5 MJ (most sensitive receptor King George Chambers)
- *threshold for consultation:* 4.25 MJ.

Using the above permissible energy levels as a maximum allowed limit, planning of the demolition sequence should control the size and height of any debris being dropped so that vibration impacts do not occur.

To reduce the potential vibration impacts of the proposed changes to the project at Roma Street, the proponent has advised that it will undertake the following mitigation measures to avoid the need to drop materials from heights, including:

- collecting materials in skips on each floor and then craning the skips down to the ground
- use of chutes treated with vibration-damping resilient materials to reduce secondary noise generation
- bins and receptacles being lined with resilient materials to reduce noise from materials being loaded.

In addition to the site-specific noise and vibration mitigation measures indicated above prior to the commencement of works the proponent has committed to implementing a Construction Noise and Vibration Monitoring Plan, which is to be prepared by the contractor and signed off by a qualified acoustic consultant. The plan is to include the proposed demolition methodology and technical details of the plant and equipment that will be used to undertake the demolition. This will enable the development of management measures to mitigate noise and vibration and identify any areas in which the method of demolition needs to be altered.

4.3.3. Coordinator-General's conclusion

I am satisfied that the proponent has appropriately assessed the potential noise and vibration impacts resulting from the proposed changes to the project at Roma Street.

With the proposed demolition of the BTC east tower and Hotel Jen being closer in proximity to sensitive receptors, the proponent has predicted the noise impacts to most sensitive receptors to be increased.

The proposed changes to the project at Roma Street are expected to result in increases of up to 15 dB at the worst affected receptor (the Brisbane Supreme Court) and up to 8 dB at the worst affected residential receptor (Abbey Apartments).

Based on the assessment undertaken by the proponent, construction vibration impacts of the proposed changes to the project at Roma Street would result in negligible increases in vibration levels with the exception of ground remediation works (depending on the adopted methodology for compaction) and impact vibration from building demolition.

I require the proponent to fulfil their commitment to undertake the additional demolition works at Roma Street in accordance with the project wide conditions for noise and vibration.

I require that prior to demolition works commencing, the proponent will undertake the following assessments to inform the production of a CEMP for the works:

- detailed predictions using a noise model to predict the extent of noise impacts at more distant receptors to ensure compliance with project noise goals
- detailed vibration impact assessment to be completed based on detailed ground remediation methodology to ensure compliance with project vibration goals.

I require that, in accordance with a site-specific CEMP to be established prior to commencement of demolition works that incorporates, the mitigation measures outlined in the approved OEMP and site-specific mitigation measures listed in this report will adequately mitigate and manage the potential noise and vibration impacts of the proposed changes to the project at Roma Street.

4.4. Air quality

4.4.1. Introduction

The proponent conducted a qualitative assessment to determine the potential air quality impacts of the proposed changes to the project at Roma Street, based on the assessment undertaken for the 2011 EIS and February 2017 project change application.

Background air quality data for the February 2017 project change application assessment was collected from four monitoring stations located in Cannon Hill, the Brisbane CBD, South Brisbane and Rocklea. Monitoring results are summarised in Table 4.6.

The Cross River Rail project air quality goals presented in Table 4.6 are consistent with the National Environment Protection Measure (Ambient Air Quality) 2017 and Environmental Protection Policy (Air) 2008 air quality objectives.

The proponent predicted that the potential air quality impacts of the proposed changes to the project at Roma Street would predominantly arise as a result of site excavation works and vehicle exhaust emissions generated through spoil removal and transportation during the demolition works. Sensitive receptors to the north-east of the Roma Street demolition worksite are anticipated to be most impacted during demolition, due to the predominantly south-westerly wind direction in Brisbane.

Nearby sensitive receptors include:

- Queen Elizabeth II Courts of Law (Supreme and District Courts), 40 m directly across Roma Street
- Abbey Apartments, approximately 60 m to the west
- Brisbane Magistrates Court, approximately 100 m south-east
- Meriton Apartments, approximately 110 m south.

Table 4.6 Background air quality concentrations and 2017 Cross River Rail project air quality goals (Source: Appendix A – air quality technical note, November 2018 project change application)

Air quality indicator	Averaging period	Units	Background concentration	Cross River Rail project air quality goal	Criterion
Dust deposition	30 days	$mg/m^2/day$	60	120	Nuisance
Total suspended particles (TSP)	24 hour	$\mu g/m^3$	26	80	
	Annual	$\mu g/m^3$	24	90	Human health
PM_{10}[4]	24 hours	$\mu g/m^3$	17	50	
	Annual	$\mu g/m^3$	14.5	25	
$PM_{2.5}$[5]	24 hours	$\mu g/m^3$	8.3	25	
	Annual	$\mu g/m^3$	6.5	8	

Sensitive receptors would also include office workers in the area, including those that may still be present within the adjacent BTC west tower prior to demolition, as well as transient receptors such as community members and train passengers entering and leaving the Roma Street station.

The key air quality impacts of the proposed changes to the project at Roma Street are discussed below.

[4] Particulate matter less than 10 micrometres in diameter
[5] Particulate matter less than 2.5 micrometres in diameter

4.4.2. Impacts and mitigation

Construction dust

The proponent predicted that the potential construction dust impacts from the proposed changes to the project at Roma Street would be similar to those identified in the February 2017 project change application, which assessed the demolition of the BTC west tower and podium. The February 2017 project change application predicted that dust emissions during construction works were unlikely to be significant, provided that the proponent committed to installing purpose-built dust enclosures and/or acoustic sheds at the Roma Street station worksite.

In terms of cumulative air quality impacts, the demolition works at Roma Street would be completed prior to the construction of the new underground Roma Street Station. The proponent also anticipates that there would be no overlap between the construction of the temporary coach terminal and the demolition of the buildings at Roma Street, therefore cumulative impacts will not occur.

The assessment undertaken by the proponent concluded that whist there would be an increased duration of demolition impacts (for an additional seven-month period) from the proposed changes to the project at Roma Street, there would be no predicted increase in the intensity or the level of air quality impacts associated with the proposed changes to the project.

The project change application considers that the potential air quality impacts of the proposed changes to the project at Roma Street could be effectively managed by the implementation of the management measures provided in the approved OEMP that I require the proponent to update based on the proposed changes to the project. The air quality mitigation measures include:

- managing dust creating works according to meteorological conditions. When adverse meteorological conditions are experienced, measures to avoid impacts of unreasonable dust or odour on adjacent properties will be implemented. Measures would include:
  - modification of construction methods
  - increase in dust suppression methods
  - cessation of work until meteorological conditions improve (where no other reasonable or practicable measure available)
- scaffolding with zero wind penetration sheeting used to confine dust. Water points will also be available on each floor and strategically positioned around external site areas to manage dust
- water sprays of all materials to be crushed
- water sprays of all materials to be moved, prior to moving and during movement, and covering loads of material transported from the worksites
- sealing of access roads and heavily trafficked areas within worksites, and ensure sealed access roads are kept relatively dust free with regular sweeping and washing of access roads

- pavements and slabs will be swept periodically throughout the demolition process to eliminate tracking of sediment across the site and onto roads
- installation of hoardings and barriers on worksite perimeters to act as wind breaks.

The proponent has, in their application, committed to undertaking dust monitoring throughout the demolition works at an apartment complex at Roma Street Parkland and near the Abbey Apartments, the Supreme Court and other receptors directly across Roma Street. This would assist in identifying and responding to potential exceedances of the project air quality goals. The proponent anticipates that through the application of mitigation measures and implementation of additional dust monitoring sites, the demolition works would not exceed the project air quality goals, as previously approved.

Construction traffic emissions

The proposed changes to the project at Roma Street require the removal of approximately 90,000 tonnes of additional demolition material. The removal of this additional demolition material will require approximately on average four haulage vehicle movements per hour, or eight haulage vehicle movements as a worst-case scenario. The proponent predicted that for both average and worst-case vehicle movements, there would be a small increase in traffic on Roma Street associated with the proposed changes to the project at Roma Street which includes an additional seven-months of demolition work. This increase is similar to the amount of traffic required for the demolition of adjacent buildings considered as part of the February 2017 project change application, which assumed that six vehicles would access the Roma Street construction worksite per hour.

Therefore, the potential impacts resulting from the proposed changes to the project at Roma Street are expected to be similar to those previously assessed and approved as part of the February 2017 project change application (June 2017 CGCR). The proponent concluded that construction traffic would not result in an increase in local air quality impacts arising from congestion.

The proponent has identified that construction vehicles will use only designated routes developed in accordance with the demolition plan and CEMP. Demolition material haulage would be limited to approved project hours, avoiding the need to haul these materials during peak traffic periods. I require that mitigation measures implemented for the changes to the project would be consisted with those detailed in the approved OEMP, that I require the proponent to update based on the proposed changes to the project and include:

- managing the movement of construction vehicles to avoid queuing near sensitive receptors
- adopting procedures to avoid construction vehicles idling for excessive periods (longer than five minutes).

4.4.3. Coordinator-General's conclusion

I am satisfied that the proponent has assessed the potential air quality impacts resulting from the proposed changes to the project at Roma Street. The proponent

predicted that the potential air quality impacts would be similar to those assessed and approved in the June 2017 CGCR. Through the implementation of the mitigation measures outlined in the approved OEMP, that I require the proponent to update based on the proposed changes to the project, the proponent anticipates that the proposed changes to the project at Roma Street would achieve compliance with the project air quality goals (Appendix 1).

Cumulative construction impacts are not expected to occur, as the Roma Street demolition works would be completed prior to the construction of the new underground Roma Street station and following the construction of the temporary coach terminal.

Despite the anticipated similarity in potential impacts, sensitive receptors may experience potential air quality impacts for an additional seven-month period from the proposed changes to the project at Roma Street. I require that, in accordance with a site-specific CEMP (prepared by the proponent prior to the commencement of project works) that is consistent with the mitigation measures outlined in the approved OEMP, the potential air quality impacts of the project will be mitigated and managed. I require the proponent to update the approved OEMP based on the proposed changes to the project.

4.5. Cultural heritage

4.5.1. Introduction

The assessment of potential impacts to Indigenous and non-Indigenous cultural heritage resulting from the proposed changes to the project at Roma Street was based on an assessment of the heritage values of the Roma Street precinct. This included a desktop review of existing studies and heritage register entries, followed by a field study undertaken by the proponent. The assessment identified potential impacts to current values for both Indigenous and non-Indigenous cultural heritage and recommended mitigation actions to inform the detailed design.

4.5.2. Impacts and mitigation

Non-Indigenous Cultural Heritage

There are seven heritage places of State and local significance within 200m of the Roma Street demolition worksite, summarised in Table 4.7.

Table 4.7 Non-Indigenous cultural heritage places of relevance to the project

Heritage listed place	Address	Register listing	Distance from project
King George Chambers	154-158 Roma St, Brisbane	Local	39 m
The McDonnell and East & Co Building	414 George Street, Brisbane	State	141 m
Transcontinental Hotel	462-468 George Street, Brisbane	State	35 m

Heritage listed place	Address	Register listing	Distance from project
Former Bank of Queensland	458-460 George Street, Brisbane	Local	72 m
Baby Clinic (former)	51 Herschel Street, Brisbane	Local	105 m
Roma Street Railway Station	15 Countess Street, Brisbane	State	46 m
Roma Street Railyards	15 Countess Street, Brisbane	Local	0 m

The 2011 EIS and 2017 Request for Project change application identified that the potential impacts of the project on State and local heritage values at the Roma Street precinct were low to nil due to the distance between the heritage places and the proposed Roma Street station. However, the previous assessments did note the potential adverse impacts on the physical fabric of known heritage places from dust, vibration and or ground settlement caused by construction works.

The project change application indicates that the additional demolition activity proposed within the Roma Street precinct would result in an increased duration of the potential impacts to cultural heritage, due to the sequential demolition of buildings and potential negative visual and social amenity impacts to both State and local heritage places in the Roma Street precinct.

The assessment also considered the deposition of dust from construction activities, which could potentially be detrimental to the fabric of the heritage places. To mitigate this the proponent has committed to dust management measures. For further information relating to dust management, refer to Section 4.4 Air Quality.

The potential vibration impacts of the proposed changes to the project at Roma Street were also assessed, concluding that vibration levels would be under the construction vibration goal for heritage structures of 2mm/s for all demolition activities, except for vibratory compaction undertaken in ground remediation. For this activity the proponent has identified that the Transcontinental Hotel and King George Chambers may experience exceedances of the heritage building damage goals. For information relating to vibration impacts, refer to Section 4.3 Noise and Vibration.

The proponent's assessment concluded that due to the large amount of open space required for the demolition worksites there may be some disturbance to locally heritage listed places near the proposed underground Roma Street station. The impact area for the Roma Street demolition works overlap with a portion of the locally listed Roma Street Railyards on Lot 35 Plan SP207219, shown on Figure 4.3.

The assessment also indicated that the proposed changes to the project at Roma Street may increase the possible disturbance or destruction of subsurface archaeological deposits due to the increase in disturbed surface area. This is particularly the case where excavation occurs within the demolition site and the relevant part of the Lot 60 area adjacent to Hotel Jen.

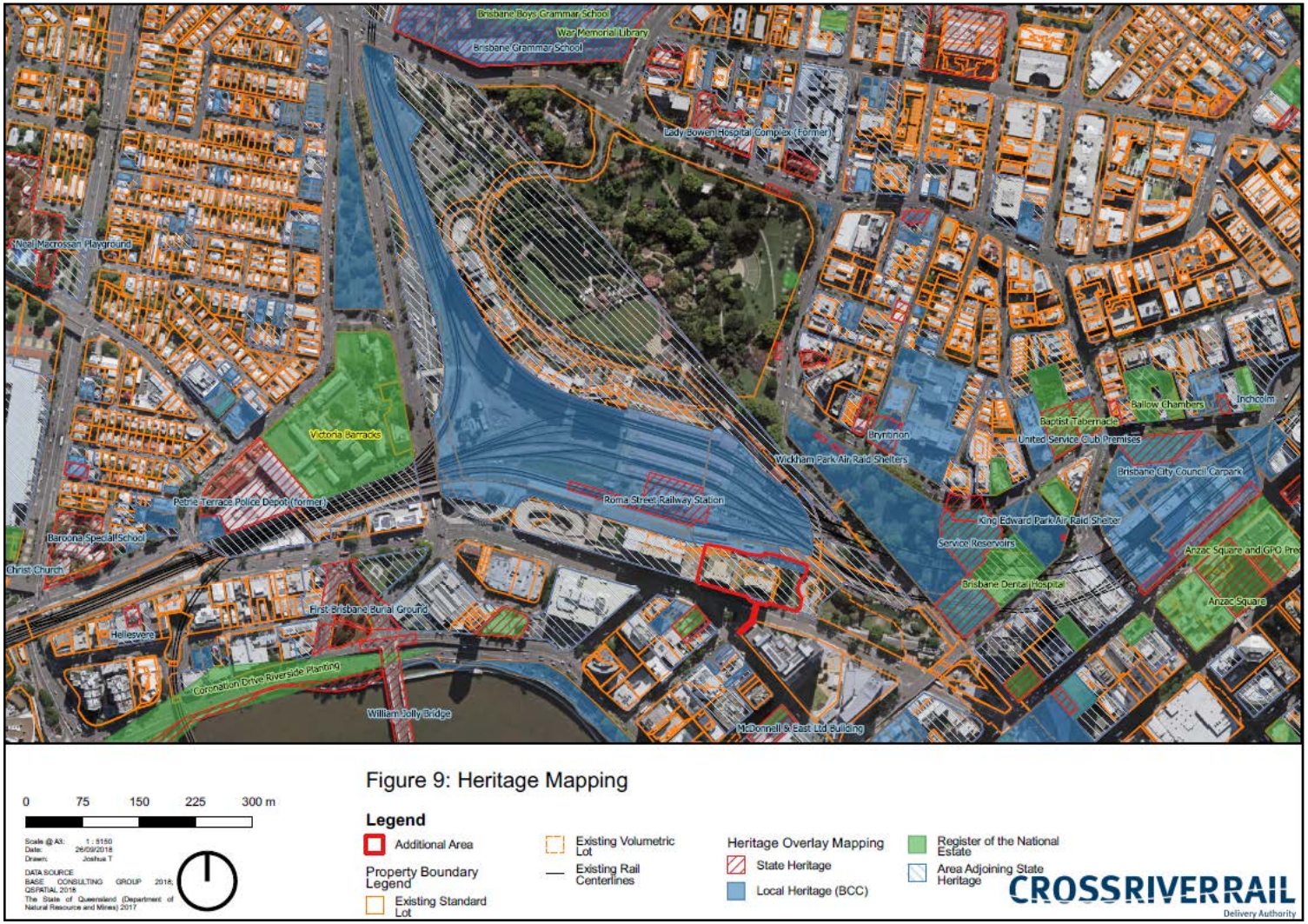

Figure 4.3 Heritage values within and surrounding the Roma Street worksite (Source: proponent March 2019)

The proponent has advised that potential impacts to non-Indigenous cultural heritage would be detailed in the Non-Indigenous Cultural Heritage Management Plan and include the following mitigation measures:

- conducting Heritage condition surveys prior to commencing construction work of the State listed Roma Street Station
- continuous vibrational monitoring undertaken during vibration generating activities at sites predicted to exceed the heritage building damage threshold
- archival (photographic) recording prior to demolition and construction works
- implementation of suitable management measures that comply with heritage legislation if/where the assessment identified the potential damage of a heritage listed place or item
- implementation of management measures to avoid the risk of construction activities damaging the existing fabric of the building or platform of the Roma Street Heritage Station
- erection of temporary fencing or other barricading prior to construction works to minimise the risk of inadvertent impacts
- State and locally listed heritage places are not to be used as access routes to construction zones or for the storage of any project related equipment or materials beyond essential requirements for worksites as nominated on the impact plan
- plan maintaining of public access to State and locally listed heritage places throughout the project works where safe to do so.

Indigenous Cultural Heritage

The proponent previously undertook an assessment of Indigenous cultural heritage within the Roma Street precinct as part of the February 2017 project change application. A search of the Department of Aboriginal and Torres Strait Islander Partnerships (DATSIP) Aboriginal and cultural heritage database and register undertaken in September 2018 revealed that no new or additional known Indigenous cultural heritage sites or places have been recorded for project works (including the additional worksite area) since the last assessment.

The proponent's assessment noted that whilst this search is not definitive to the existence of Indigenous Cultural Heritage there would be no change to known impacts for Indigenous Cultural Heritage. Further the proponent noted that there is an increased potential for unknown finds within the additional disturbance area.

In accordance with the *Aboriginal Cultural Heritage Act 2003*, the proponent has advised that a Cultural Heritage Management Plan (CHMP) for the project is being negotiated. The approved CHMP will detail how project activities may be managed to avoid or minimise harm to Indigenous cultural heritage.

The proponent has advised that mitigation measures for Indigenous Cultural Heritage will be provided for in the project's CHMP that will be executed prior to the commencement of works including being reviewed and approved by DATSIP. Construction works will be undertaken in accordance with the approved CHMP which will include the presence of cultural heritage monitors during construction.

4.5.3. Coordinator-General's conclusion

I am satisfied that the proponent has assessed the potential Indigenous and non-Indigenous cultural heritage impacts of the proposed changes to the project at Roma Street.

I acknowledge that the proposed changes to the project at Roma Street will increase the duration of construction works within the Roma Street precinct and the associated potential for dust deposition impacts, and social and visual amenity impacts to the local and State listed heritage values in the Roma Street Precinct. I note the proponent's assessment identified possible exceedances of the heritage building goals for vibration impacts during ground remediation for two locations and has committed to undertake continuous vibrational monitoring during vibration generating activities and will implement management measures to meet the requirements of relevant heritage legislation.

I acknowledge that the proponent is currently consulting with the Indigenous parties of and I note the proponent's commitment to reach an agreement on a CHMP. I require that in accordance with the approved CHMP the Indigenous cultural heritage impacts will be managed and mitigated to ensure that all reasonable and practicable measures will be taken to avoid harm to Indigenous Cultural Heritage.

I am satisfied that with the implementation of mitigation measures consistent with those listed in this report and in the approved OEMP, updated based on the proposed changes to the project, the non-Indigenous and Indigenous cultural heritage impacts of the proposed changes to the project be mitigated and managed.

4.6. Nature Conservation

4.6.1. Introduction

The proponent undertook an assessment of potential nature conservation impacts resulting from the demolition of BTC east tower and Hotel Jen, as well as the inclusion of the approximately 0.25-hectare additional area adjacent to Hotel Jen. This additional area is a landscaped park that has retained few ecological values.

The assessment methodology included a review of assessments previously undertaken as part of the 2011 EIS and February 2017 project change application, as well as a targeted survey specifically undertaken for the assessment of the Roma Street demolition works. The assessment considered flora, fauna and habitat, and were performed through a combination of desktop and field studies.

The assessment undertaken by the proponent identified that there are no flora or fauna species listed under the *Environment Protection and Biodiversity Conservation Act 1999* occurring within the Roma Street demolition works site area.

4.6.2. Impacts and mitigation

State protected flora and fauna

The proponent advised that the Queensland Wildlife Online Search Tool identified species that have potential to occur within 3 km of the Roma Street demolition works include:

- two terrestrial vertebrate fauna species (Powerful Owl and Tusked Frog), both listed as vulnerable under the *Nature Conservation Act 1997* (NC Act)
- one terrestrial vertebrate fauna species (Koala) listed as vulnerable under the EPBC Act and NC Act
- four species listed as special least concern under the NC Act
- three species listed as significant fauna and 14 species listed as significant flora species under the Brisbane City Plan Biodiversity areas overlay code.

The targeted field assessment identified that no State EVNT flora and fauna species were present within the Roma Street demolition worksite.

Local protected flora and fauna

The proponent advised that vegetation in the Roma Street demolition worksite is mapped as Significant Urban Landscape value under the *Natural Assets Local Law 2013* (NALL), and a search of the Brisbane Heritage Register identified that no protected heritage trees are in the proposed Roma Street demolition worksite.

The proponent has indicated that, as the project is subject to approval under State legislation, it is not bound by NALL and will not require permitting to trim or remove this vegetation.

However, the proponent has committed to having regard to the significance of vegetation protected under NALL, as the works will involve the removal of street trees and trees in public parks. The proponent has advised they will consult with BCC to outline the proposed clearing and seek agreement on the proposed offset requirements for any cleared Significant Landscape Trees prior to any clearing works being undertaken.

The field assessment identified eight trees (including both native and exotic species) in the additional area adjacent to Hotel Jen and surrounding street frontages that have a diameter at breast height (DBH) of 15 cm and were assessed by an arborist as having a medium to high retention value.

The proposed changes to the project at Roma Street will result in the removal of additional landscape vegetation currently on the affected portion of Lot 60 on SP207215. The vegetation to be removed includes eight tree species and landscaped plants mapped as Significant Urban Landscape value under the NALL. This includes the eight trees that were identified by an arborist as having medium to high retention value due to life expectancy and minimal structural defects of each tree. No vegetation removal from Emma Miller Place has been proposed.

The impacts to fauna as a result of the Roma Street demolition works were assessed as being minimal, which is consistent with the previously approved February 2017

project change application. The proponent's assessment noted that there was limited fauna habitat provided by the vegetation being removed within the open space adjacent to Hotel Jen and BTC east tower.

To prevent and manage the risk of impacts to nature conservation associated with the proposed changes to the project at Roma Street, the proponent has committed to the following mitigation measures:

- consultation with BCC regarding the proposed clearing and seeking general agreement regarding the proposed offset requirements for any Significant Landscape Trees proposed for removal prior to any clearing works being undertaken.
- minimise clearing or trimming of native vegetation that is necessary for construction, that will reduce rehabilitation costs and minimise exposed surfaces that could lead to erosion and sediment issues
- where reasonable and practicable, locate construction site infrastructure, such as site offices, vehicle access and parking, material storage and cleaning areas for plant and equipment away from large trees and their drip zones
- ensure a qualified fauna spotter/catcher is present prior to and during the removal any habitat trees to capture and relocate any fauna that is disturbed. The fauna spotter/catcher must be registered with the Department of Environment and Science (DES) and hold applicable licenses and permits.

4.6.3. Coordinator-General's conclusion

I am satisfied that the proponent has assessed the potential nature conservation impacts resulting from the proposed changes to the project at Roma Street.

I acknowledge that there will be increased vegetation loss with the removal of eight additional trees and landscape plants when compared to the impacts assessed and approved in June 2017 CGCR. However, I note these species are not listed as EVNT species and removal of these species does not trigger any requirements under State or Commonwealth legislation.

I note that the proponent has committed to consulting with BCC regarding the proposed clearing and will seek general agreement on the proposed offset requirements for any cleared Significant Landscape Trees. It is expected that this agreement will be finalised prior to any clearing works being undertaken.

I note that there is limited fauna habitat within the open space adjacent to Hotel Jen and BTC east tower so there is likely to be minimal, if any, increased impact on fauna and fauna habitat. I require that in accordance with the OEMP a qualified fauna spotter catcher is present prior to and during the removal of any habitat trees.

I require that, in accordance with a site-specific CEMP, the mitigation measures outlined in the approved OEMP, updated based on the proposed changes to the project, the site-specific mitigation measures listed in this report will be implemented to mitigate and manage potential nature conservation impacts.

4.7. Social and visual amenity, landscape and lighting

4.7.1. Introduction

The assessment analysed the potential visual and social amenity, landscape and lighting impacts of the proposed changes to the project at Roma Street through a comparison of the previously approved impacts of the February 2017 project change application. The proposed works involve new property impacts and additional demolition works not previously assessed.

The assessment takes into consideration the increase in the overall construction area by approximately 1.1 hectares, as well as the proposed sequential demolition works which would increase the construction timeframe within the Roma Street precinct by an additional seven-months.

4.7.2. Impacts and mitigation

The existing Roma Street precinct is highly urbanised with high rise buildings dominating the landscape and amenity. There is localised green space with nearby Emma Miller Place which includes established trees, palms and terraced grass areas. This green space forms part of a pedestrian link connecting Roma Street Station to the Queen Street Mall.

It should be noted the construction impacts of the project are recognised as being temporary, with the demolition works at Roma Street, including BTC, podium, Hotel Jen and the removal of the pedestrian footbridge taking approximately 18 months.

Landscape and Visual Amenity

For the construction works, the assessment predicted that the overall impact on landscape and visual amenity within the Roma Street precinct would be increased due to the proposed changes to the project at Roma Street. The demolition works will be visible from the adjacent buildings and surrounding road network.

Potential landscape impacts of the proposed changes to the project at Roma Street include the removal of a mature fig tree adjacent to the BTC east tower, and the removal of the vegetation on the eastern side of Hotel Jen. The proposed changes to the project at Roma Street would also bring the construction works closer to Emma Miller Place, a park that includes remnants of the original Roma Street station garden. This area is not included on the local or state heritage register.

The proposed changes to the project at Roma Street will result in an increase in the visual exposure of this locality and will also open up greater sightlines with the removal of the buildings; reducing the urban scale and form in the area.

Adding to this will be the permanent loss of the pedestrian link over Roma Street. It should be noted that these increased sightlines and views to the higher topography of Wickham Park may be temporary due to possible future redevelopment that may occur on the site, separate to the project. However, this would be an opportunity to promote the redevelopment of the Roma Street precinct. With the absence of built form there

will be opportunities to improve views of the heritage listed Roma Street Station building and its interface with the surrounding precinct as well as the possibility of achieving views to Mt Coot-tha from Wickham Park. Consistent with the impacts of 2011 EIS and 2017 project change application, the proponent considers that the project will provide an opportunity to catalyse the redevelopment of the Roma Street precinct.

To manage the potential landscape and visual amenity impacts resulting from the proposed changes to the project at Roma Street, the proponent has committed to implement the following mitigation measures:

- where possible, undertake pruning and selective trimming of mature trees in preference to their removal
- consultation with a suitably qualified arborist regarding the management of mature vegetation to be retained
- where possible, fence and protect trees of particular significance that fall within construction worksites and laydown areas
- provide noise barriers and hoardings around construction worksites to mitigate the views of construction works, particularly where worksites are visible to residential or recreational users.

Lighting Impacts

A review of construction lighting requirements for the proposed changes to the project at Roma Street found the impacts would be consistent with those of the previously approved project that proposed just the demolition of BTC west tower and podium. These impacts would however continue for an extended period, estimated to be an additional seven-months.

It is expected that lighting will be required to facilitate night-time work activities and ensure the safety and security of personnel and property. Whilst lighting would be focused over a particular activity, there is the potential for light spill which would be visible to nearby sensitive receptors. As identified in the previously approved project, sensitive receptors with limited visual barriers, such as high fences or vegetation, could be susceptible to light glare from passing construction vehicles and demolition activity.

The assessment identified that operational lighting requirements for the proposed changes to the project at Roma Street will focus on ensuring the safety and security of the area during construction. The assessment considers that the lighting impacts that could potentially arise during the additional demolition work would be negligible and generally consistent with the lighting impacts of the previously approved project.

To manage the potential lighting impacts of the proposed changes to the project at Roma Street, the proponent has committed to implementing the following mitigation measures:

- program and schedule the construction phase of works to minimise night-time impacts of lighting on residential properties
- where appropriate, use directionally-controlled, shielded lights that are mounted at a sufficient height to allow the light to be appropriately targeted to minimise light spill

to surrounding properties, maintain safe driving conditions for motorists on adjacent roads and minimise impacts on local fauna

- project lighting to be designed in accordance with the relevant standard such as *AS 4282:1997 Control of the obtrusive effects of outdoor lighting* and the Rail Infrastructure Manager's requirements such as Queensland Rail's Lighting Standard for Railway Station guidelines.

Social Amenity Impacts

The previously approved project identified social amenity impacts for communities adjacent to project construction activities due to increased construction noise, changed access, traffic diversions and construction traffic issues including parking.

The proponent's assessment noted the potential social amenity impacts of the proposed changes to the project at Roma Street would be incrementally greater than the previously approved project, due to the increased duration and extent of the proposed works.

The proponent's assessment identified the following social infrastructure is likely to be impacted by the proposed changes to the project at Roma Street:

- permanent removal of the commercial tenancies of BTC east tower and Hotel Jen
- permanent removal of pedestrian footbridge over Roma Street
- temporary utilisation of the park directly adjacent Hotel Jen
- temporary changes to access for traffic cyclists and pedestrians.

The proponent identified that with the loss of the commercial tenancies of BTC east tower and Hotel Jen there is the potential for increased positive social amenity with possible future development of the site, subject to the Roma Street precinct master planning process. The removal of the pedestrian footbridge over Roma Street will require pedestrian traffic to be accommodated on Roma Street. This will have some impact on the existing pedestrian movements and the local road network due to required changes to signal phases to facilitate pedestrian crossings.

Encroachment of works into the park directly adjacent Hotel Jen will mean the loss of public access and use of the park for the duration of the 5.5-year construction period for the project. The increase in project footprint would bring project work closer to Emma Miller Place which was identified as providing a public meeting place and local amenity in the 2011 EIS. Whilst access and use of the park would not be directly impacted there is the potential for reduction in social amenity provided by this public place with an increase in noise levels for some demolition activities. Temporary air quality impacts are expected to be similar to those previously assessed in the February 2017 project change application. With demolition works occurring sequentially, the air quality impacts would not be cumulative, yet the duration of the impacts would be increased with the additional demolition period extended by approximately seven months For further detail of the potential noise and vibration and air quality impacts of the proposed changes to the project at Roma Street, refer to Section 4.3 Noise and Vibration and Section 4.4 Air Quality.

Temporary changes to access for traffic, cyclists and pedestrians during the demolition works to accommodate access by haulage vehicles would be managed through a traffic management plan. As previously approved, access for pedestrians and cyclists would be maintained along Roma Street, however some footpath narrowing may be required for safety reasons. Further, the proposed project changes at Roma Street are not anticipated to significantly affect public transport operations near the site. For further detail of the potential traffic and transport impacts of the proposed changes to the project at Roma Street, refer to Section 4.2 Traffic and Transport.

The proponent has committed to implement the following mitigation measures for potential social amenity impacts:

- where possible, external night time construction activities and traffic movement within the worksites will be minimised
- update and implement a traffic management plan for the demolition works to mitigate and manage any temporary changes in access that may arise during demolition
- use of all practical and feasible noise mitigation measures in the planning of the demolition activities, including scheduling the demolition sequence to be “inside out” wherever possible to allow the building façade to provide partial noise screening of demolition activities
- engagement of stakeholders; undertaken as per the requirements of the Community and Stakeholder Engagement Plan which forms part of the approved OEMP for the project.

4.7.3. Coordinator-General’s conclusion

I am satisfied that the proponent has appropriately assessed the potential social and visual amenity, landscape and lighting impacts resulting from the proposed changes to the project at Roma Street.

I note that the social amenity, visual, landscape and lighting impacts would largely be consistent with the previously approved project. However, the potential impacts within the Roma Street precinct would occur for an additional seven-month duration from the proposed changes to the project. Additional impacts from the proposed changes to the project at Roma Street include an increase in noise levels at some sensitive receivers during the demolition period, the temporary loss of the park directly adjacent Hotel Jen and the removal of the pedestrian footbridge over Roma Street.

I am satisfied that with the proponent’s proposed mitigation measures listed in this report and those detailed in the approved OEMP to be updated by the proponent based on the proposed changes to the project, the potential social amenity, visual, landscape and lighting impacts of the proposed changes to the project will be mitigated and managed.

5. Conclusion

This report concludes my evaluation of the proposed project change pursuant to section 35I of the SDPWO Act.

I am satisfied that the requirements of the SDPWO Act have been met and that sufficient information has been provided to enable the evaluation of the project change and the amendment of conditions of approval.

I consider that the changes to the project would result in acceptable overall outcomes. Accordingly, I approve the changes to the Cross River Rail project as set out in the November 2018 project change application, subject to the conditions in Appendix 1. The imposed conditions (Appendix 1) aim to mitigate and manage the works associated with the inclusion of the BTC west tower, Hotel Jen and park area to the east of the Parkland Boulevard roundabout within the project footprint.

In addition, I have amended the Cross River Rail project wide imposed conditions to reflect the changes to the project at Roma Street (Appendix 1).

Appendix 1 and 2 of this report replaces Appendix 2 (Amended project wide imposed conditions – Cross River Rail Project) and Appendix 3 (Coordinator-General's recommendations for the Cross River Rail project) of the August 2018 CGCR (Temporary Roma Street Coach Terminal), therefore Appendix 2 and 3 of the August 2018 CGCR (Temporary Roma Street Coach Terminal) no longer have effect.

Appendix 1 of the August 2018 CGCR (Imposed conditions – Temporary Roma Street Coach Terminal Works) is also replaced by Appendix 3 of this change report, therefore Appendix 1 of the August 2018 CGCR (Temporary Roma Street Coach Terminal) no longer has effect.

In accordance with section 35K of the SDPWO Act, the Coordinator-General's report on the EIS for the project, and the Coordinator-General's change report, both have effect for the project. However, if the reports conflict, this Coordinator-General's change report prevails to the extent of the inconsistency. The proponent must implement all conditions in this report.

In accordance with s.35 of SDPWO Act, this report will lapse on 8 June 2020.

A copy of this report will be issued to the proponent.

A copy of this report and all relevant EIS assessment documentation are available on the Department of State Development's website at **www.dsdmip.qld.gov.au/crr**

Appendix 1. Project wide imposed conditions – Cross River Rail Project

Part A. Imposed Conditions (General)

Condition 1. General conditions

(a) The project must be carried out generally in accordance with:

(i) the Cross River Rail Request for Project Change dated February 2017, including the amended Volume 3 Design Drawings publicly notified in April 2017;

(ii) amendments to the Project identified in the Cross River Rail Request for Project Change dated June 2018;

(iii) amendments to the Project identified in the Cross River Rail Request for Project Change dated November 2018.

(b) The proponent must notify the Coordinator-General and all nominated entities in Schedule 2 in writing of the commencement of Project Works and the commencement of the commissioning and operational phases of each 'construction site' at least 20 business days prior to the relevant commencement date.

(c) The temporary coach terminal works must be carried out in accordance with the conditions imposed at Appendix 3.

Condition 2. Outline Environmental Management Plan

(a) Two months prior to the commencement of Project Work submit a final Outline Environmental Management Plan to the Coordinator-General for approval.

(b) The Outline Environmental Management Plan must:

(i) Include the environment outcomes and performance criteria for each environmental element from the draft outline EMP except as amended by these conditions;

(ii) include possible mitigation measures, monitoring and reporting for each environmental element to achieve the environmental outcomes;

(iii) include an outline of:

(A) the Construction Environmental Management Plan

(B) the Commissioning Environmental Management Plan

(iv) be consistent with the Environmental Design Requirements in Schedule 1

(v) include the following sub-plans:

(A) Community and Stakeholder Engagement Plan

(B) Construction Worksite Management Plan

(C) Construction Traffic Management Plan (CTMP)

(D) Construction Vehicle Management Plan

(E) Water Quality Monitoring Plan

(F) Erosion and Sediment Control Plan

(G) Spoil Placement Management Plan

(H) Noise and Vibration Management Plan

(I) Air Quality Management Plan

(J) Settlement Management Plan

(K) Non-Indigenous Cultural Heritage Management Plan

(L) Indigenous Cultural Heritage Management Plan

(vi) Be made available on the proponent's website once approved by the Coordinator-General and for the duration of the construction of the project and for a period of five years from commencement of operation.

(c) Any further amendments to the Coordinator-General approved Outline Environmental Management Plan will be issued to the Coordinator-General 20 business days prior to the commencement of Relevant Project Works.

Part B. Imposed Conditions (Design)

Condition 3. Design

(a) The project must achieve the Environmental Design Requirements in Schedule 1.

Part C. Imposed Conditions (Construction)

Condition 4. Construction Environmental Management Plan

(a) Prior to the commencement of Project Work, a Construction Environmental Management Plan for those works (Relevant Project Work) must be developed by the Proponent and endorsed by the Environmental Monitor as being consistent with the Outline EMP and these imposed conditions.

(b) The endorsed Construction Environmental Management Plan must be submitted to the Coordinator General at least 20 business days prior to the commencement of Relevant Project Works.

(c) The Construction Environmental Management Plan must:

(i) describe the Relevant Project Work;

(ii) be based on predictive studies and assessments of construction impacts which have regard to the scale, intensity, location and duration of construction works, and location of Directly Affected Persons;

(iii) be generally consistent with the Outline EMP and incorporate its environmental outcomes and performance criteria;

(iv) incorporate and respond to the Imposed Conditions (Construction);

(v) demonstrate that the Imposed Conditions (Construction) will be complied with during Relevant Project Work;

(vi) incorporate the community engagement plan, including the complaints management process, in accordance with Condition 9;

(vii) where predictive studies indicate impacts beyond those provided for in the performance criteria, incorporate mitigation measures to achieve the environmental outcomes;

(viii) establish specific mitigation measures and processes for consultation with Directly Affected Persons for Project Works under Conditions 9(c), 11(c), and 11(e);

(ix) contain a program and procedures for ongoing monitoring to identify the effectiveness of mitigation measures in achieving the Imposed Conditions (Construction) and the environmental outcomes in (iii)

(x) include a process for regular review and if required updating of the Construction Environmental Management Plan, including a process to review and implement additional or different mitigation measures in response to monitoring results;

(xi) incorporate the EMP sub-plans required by the Imposed Conditions or as required by the approved Outline EMP.

(d) The Construction Environmental Management Plan must be implemented for the duration of Relevant Project Work.

(e) Relevant Project Work is authorised if it is undertaken in accordance with the Construction Environmental Management Plan.

(f) The Construction Environmental Management Plan must be publicly available on the project website for the duration of the construction phase.

(g) The Construction Environmental Management Plan may be updated.

(i) updates to the Construction Environmental Management Plan that include new or additional Relevant Project Work must be endorsed by the Environmental Monitor as being consistent with condition 2 before Relevant Project Work may proceed.

(h) Updates to the Construction Environmental Management Plan that are limited to new or different mitigation measures for Managed Work may be endorsed by the Environmental Monitor.

Condition 5. Compliance

(a) The proponent must notify the Environmental Monitor and the Coordinator-General in writing, within 48 hours after becoming aware of a Non-Compliance Event.

(b) The notification must include:

(i) a description of the Non-Compliance Event, including details of the location, date and time of the Non-Compliance Event;

(ii) the name and contact details of a designated contact person;

(iii) an outline of actions that have been or will be taken to respond to the Non-Compliance Event.

(c) Within 14 days following the notification of a Non-Compliance Event, written advice detailing the following information must be provided to the Environmental Monitor and the Coordinator-General:

(i) a description of the Non-Compliance Event, including details of the location, date and time of the Non-Compliance Event;

(ii) the name and contact details of a designated contact person;

(iii) the circumstances in which the Non-Compliance Event occurred;

(iv) details of any complaint in relation to the Non-Compliance Event;

(v) the cause of the Non-Compliance Event;

(vi) a description of the environmental effects of the Non-Compliance Event;

(vii) the results of any sampling or monitoring performed in relation to the Non-Compliance Event;

(viii) actions taken to mitigate the environmental effects of the Non-Compliance Event;

(ix) proposed actions to prevent a recurrence of the Non-Compliance Event, including timing and responsibility for implementation.

(d) The Non-Compliance Event report must be made available on the project website and remain available for the duration of the construction phase for the project.

Condition 6. Reporting

(a) The Proponent must prepare a Monthly Report that summarises compliance and monitoring results for the duration of construction works.

(b) The Monthly Report must include:

(i) monitoring data required by the imposed conditions or Construction Environmental Management Plan undertaken for the period and, where required, an interpretation of the results;

(ii) details of any Non-Compliance Event, including a description of the incident, resulting effects, corrective actions, revised construction practices to prevent a recurrence, responsibility and timing;

(iii) reporting of complaints, including the number of complaints, description of issues, responses and corrective actions.

(c) The Monthly Report must be provided to the Coordinator-General and the Environmental Monitor, and made available on the project website within four weeks of the end of the month to which the report relates, and continue to be available on the project website until commissioning is complete.

(d) The Proponent must provide annual reports to the Coordinator-General and the Environmental Monitor (Annual Report) no later than 31 July in any year during the construction phase about compliance with the imposed conditions.

(e) The Annual Report must include:

(i) a compliance evaluation table detailing the relevant imposed condition, whether compliance with the condition was achieved and how compliance was evaluated

(ii) an evaluation of compliance in relation to the CEMP and its sub-plans;

(iii) a summary of any Non-Compliance Events during the reporting period;

(iv) a summary of any Non-Compliance Events during the previous reporting period, with details of site remediation activities, corrective actions taken or to be taken and revised practices implemented or to be implemented (as relevant).

Condition 7. Environmental Monitor

(a) The Proponent must engage an independent, appropriately skilled and experienced entity, approved by the Coordinator-General, as the Environmental Monitor for the duration of construction.

(b) The Proponent must ensure that the Environmental Monitor has reasonable site access and access to all information required to perform its function, including, without limitation:

  (i) all approvals;

  (ii) the Construction Environmental Management Plan;

  (iii) results of all monitoring required under the Imposed Conditions (Construction) including through the Construction Environmental Management Plan;

  (iv) all information relating to complaints, including access to the complaints database.

(c) The Environmental Monitor must:

  (i) monitor compliance with the imposed conditions during the construction of the project;

  (ii) monitor compliance with the Construction Environmental Management Plan and sub-plans;

  (iii) maintain a register of mitigation measures agreed between the Proponent and Directly Affected Persons (Mitigation Register);

  (iv) review the compliance reports required by Condition 5, and the monthly reports and annual reports required by Condition 6, and provide advice to the Coordinator-General and the Proponent on the contents and adequacy of those reports;

  (v) review the results of monitoring, which may be verified by the Environmental Monitor including by independent monitoring;

  (vi) provide advice to the Proponent about compliance with the Imposed Conditions for construction, including by providing the results of independent monitoring where required;

  (vii) provide advice to the Proponent about issues raised in complaints and the response to complaints, including advice from the Community Relations Monitor;

  (viii) endorse the Construction Environmental Management Plan as consistent with the Outline EMP and complying with the Imposed Conditions (Construction);

Condition 8. Community Relations Monitor

(a) The proponent must engage an independent, appropriately skilled and experienced entity, approved by the Coordinator-General, as the Community Relations Monitor for the duration of construction.

(b) The Community Relations Monitor must:

(i) review and provide advice to the Environmental Monitor on the community engagement plan required by Condition 9;

(ii) receive monthly reports from the proponent on complaints;

(iii) attend each meeting between the Proponent and a Directly Affected Person to consult on mitigation measures, including providing input on standard responses for similar impacts;

(iv) provide advice to the Environmental Monitor in relation to complaints, community engagement and consultation on mitigation measures;

(v) be available to members of the community in accordance with Condition 9(f)(vi).

Condition 9. Community engagement plan

(a) The Proponent must develop a community engagement plan as part of the Construction Environmental Management Plan consistent with the Outline EMP's Community and Stakeholder Engagement Plan.

(b) The community engagement plan must be given to the Community Relations Monitor for advice at least 10 business days prior to the Construction Environmental Management Plan being provided to the Environmental Monitor.

(c) The community engagement plan must provide for:

(i) Directly Affected Persons to be consulted prior to commencement of Project Works and ongoing thereafter about Project Works, predicted impacts and mitigation measures;

(ii) Directly Affected Persons to be consulted about possible mitigation measures;

(iii) local communities near Project Works to be informed about the nature of construction, including the timing, duration and predicted impacts of the works in advance of their commencement;

(iv) information to be provided to public transport, road users, pedestrians and cyclists about the predicted effects of Project Works on road, rail and pedestrian and cycle network operations, in advance of their commencement;

(v) specific community consultation plans for identified key stakeholders;

(vi) implementation of an Indigenous employment policy, providing for Indigenous training and employment opportunities;

(vii) a process for advance notification to local communities of Project Works, including the timing, duration, predicted impacts and mitigation measures, which is available on the project website and through other media.

(d) The community engagement plan must incorporate a complaints management system developed specifically for the Project, which is established prior to the commencement of Project Works.

(e) The complaints management system must deliver a prompt response to community concerns with relevant information, action where required, and reporting of incidents.

(f) As a minimum, the complaints management system must include the following elements:

(i) a procedure for receiving complaints on a 24 hour, seven days a week basis, during Project Works;

(ii) a mechanism for notifying the community of the complaints procedure and how it may be accessed;

(iii) a process for registering and handling complaints received, including a database for tracking of complaints and actions taken in response;

(iv) a procedure for verifying complaints through monitoring and detailed investigation, and escalating and resolving verified complaints;

(v) a procedure for complaints to be notified to the Community Relations Monitor, including information about the complaint and its resolution;

(vi) access by the community to the Community Relations Monitor; and

(vii) regular reporting via the monthly environmental report, to the community of complaints and corrective actions, maintaining appropriate confidentiality.

(g) All information regarding complaints, including the information collected in Condition 9(f)(iii) must be made available to the Community Relations Monitor.

Condition 10. Hours of work

(a) Surface works for the Project are authorised to be undertaken within the hours of work set out in Table 1.

Table 1. Construction hours

Worksite	Surface works—standard hours	Extended work hours	Managed Work	Spoil haulage and materials/ equipment delivery
Southern portal	Monday to Saturday, 6.30am-6.30pm	For approved rail possession—80 hrs continuous work (Other extended work) 6:30pm - 10:00pm, Monday to Friday	24 hrs, 7 days	24 hours, 7 days
Boggo Road Railway Station	Monday to Saturday, 6.30am-6.30pm	For approved rail possession—80 hrs continuous work (Other extended work) Monday to Friday 6:30pm - 10:00pm,	24 hrs, 7 days	Monday to Friday: 6.30am - 7.30am 9.00am - 2.30pm 4.30pm - 6.30pm Saturday 6.30am - 6.30pm
Dutton Park Railway Station (track connection)	Monday to Saturday, 6.30am-6.30pm	For approved rail possession—80 hrs continuous work	n/a	24 hours, 7 days, except for: Monday to Friday: 7:00am - 9:00am 4:30pm - 6:30pm

Worksite	Surface works—standard hours	Extended work hours	Managed Work	Spoil haulage and materials/ equipment delivery
Woolloongabba Railway Station	Monday to Saturday, 6.30am-6.30pm	Monday to Friday 6:30pm- 10:00pm	24 hrs, 7 days	24 hours, 7 days, except for: Monday to Friday: 7:00am - 9:00am 4:30pm - 6:30pm
Albert Street Railway Station	Monday to Saturday 6.30 am – 6.30 pm,	Monday to Friday 6.30 pm – 10.00 pm	24 hours, 7 days	Monday to Friday: 6.30 am – 10.00 pm Saturday 6:30am - 6:30pm
Roma Street Railway Station	Monday to Saturday, 6.30am-6.30pm	Monday to Friday 6:30pm- 10:00pm	24 hrs, 7 days	Monday to Friday 6.30am - 7.30am 9.00am - 4.30pm 6.30pm - 10:00pm Saturday 6.30am - 6.30pm
Northern portal	Monday to Saturday, 6.30am-6.30pm	For approved rail possession—80 hrs continuous work (Other extended work) Monday to Friday 6:30pm - 10:00pm,	24 hrs, 7 days	Monday to Friday: 6.30 am – 10.00 pm Saturday 6:30am - 6:30pm
Exhibition Railway Station	Monday to Saturday, 6.30am-6.30pm		24 hours, 7 days	Monday to Saturday: 6:30am - 6:30pm
Mayne Railway Yard	Monday to Saturday, 6.30am-6.30pm		24 hours, 7 days	24 hours, 7 days

(b) Project Works that are underground, or in a ventilated acoustic enclosure, may be undertaken at any time provided the environmental outcomes are achieved.

(c) Works carried out because of an emergency that:

(i) is endangering the life or health of a person; or

(ii) is endangering the structural safety of a building; or

(iii) is endangering the operation or safety of community infrastructure that is not a building; or

(iv) is required to prevent environmental harm, may be undertaken outside the hours set out in Table 1.

(d) The following work may be undertaken during Extended Work Hours as set out in Table 1. subject to compliance with a specific Construction Environmental Management Plan sub-plan in accordance with Condition 4:

(i) Project Works within rail corridor land;

(ii) Project Works within a road reserve or busway that cannot be undertaken reasonably nor practicably during standard hours due to potential disruptions to peak traffic flows or bus operations;

(iii) Project Works involving the transport, assembly or decommissioning of oversized plant, equipment, components or structures;

(iv) delivery of "in time" materials such as concrete, hazardous materials, large components and machinery;

(v) Project Works that require continuous construction support, such as continuous concrete pours, pipe-jacking or other forms of ground support necessary to avoid a failure or construction incident.

(e) Blasting must not occur on public holidays, and is only authorised to occur during the hours of 7:30am to 4:30pm Monday to Saturday, and not on Sundays or public holidays.

(f) Prior to blasting events, at least 48 hours' notice must be provided to persons who may be adversely affected.

Condition 11. Construction Noise and Vibration

(a) Project Works must aim to achieve the project noise goals for human health and well-being presented in Table 2.

Table 2. Noise goals (internal) for Project Works

	Monday – Saturday 6.30am – 6.30pm	Monday – Friday 6.30pm – 10.00pm (Gabba, CBD only)	Monday – Saturday 6.30pm – 6.30am Sundays, Public Holidays	For Blasting Monday – Saturday 7.30 am – 4:30 pm only
Continuous ($LA_{eq\ adj}$)(1hr)	AS 2107 Maximum design level	40 dBA $LA_{eq\ adj\ (1hr)}$	35 dBA $LA_{eq\ adj\ (1hr)}$	130 dB Linear Peak
Intermittent ($LA_{10\ adj}$)(15min)	AS 2107 Maximum design level + 10 dBA	50 dBA $LA_{10,\ adj}$	42 dBA $LA_{10\ adj}$	

Notes

1. All goals are internal noise levels for human health and well-being outcomes.
2. Where internal noise levels are unable to be measured or monitored, the typical noise reductions presented in the relevant State guideline, such as the Guideline Planning for Noise Control, Ecoaccess, DEHP, January 2017 (currently under review).

(b) During construction monitor and report on noise and vibration in accordance with the Noise and Vibration Management Plan, a sub-plan of the Construction Environmental Management Plan.

(c) Project Works predicted to or monitored as generating noise levels more than 20dBA ($L_{A\ eq\ 10min,\ adj}$) above the relevant goal in Table 2. are authorised to occur in a locality only:

(i) when advance notification and consultation has been undertaken with Directly Affected Persons or potentially Directly Affected Persons about the particular predicted impacts and the approach to mitigation of such impacts;

(ii) where mitigation measures addressing the particular predicted or measured impacts have been developed on a 'case by case' basis in consultation with Directly Affected Persons;

(iii) where the mitigation measures are incorporated in a mitigation register and implemented prior to undertaking the Project Works;

(iv) between the hours 7:00am to 6:00pm Monday to Friday, with a respite period between 12:00noon and 2:00pm each day;

(d) Project Works must aim to achieve the construction vibration goals in Table 3.

Table 3. The construction vibration goals

Receiver type	Cosmetic Damage			Human comfort (mm/s PPV)		Sensitive building contents (mms/PPV)
	Continuous vibration (mm/s PPV)	Transient vibration (mm/s PPV)	Blasting vibration (mm/s PPV)	Day	Night	
Residential	According to BS7385 reduced by 50%[4]	According to BS7385	50[1]	According to AS2670	0.5[2]	
Commercial	According to BS7385 reduced by 50%[4]	According to BS7385	50	According to AS2670	-	0.5[3]
Heritage structures	2	-	10	-	-	

Notes:

1. All residential receivers in the vicinity of the Project blasting sites are regarded as reinforced or framed structures (i.e. BS7385)
2. Residential sleep disturbance
3. Equipment specific vibration criteria are required for highly sensitive equipment (i.e. electron microscopes, MRI systems or similar), as part of future site-specific detailed investigations
4. If resonance is present, or if investigation to detect resonance were not able to be undertaken due to a lack of access

(e) Where vibration protection criteria are available for sensitive building contents, predictive modelling must take into account the manufacturer's specifications for tolerance to vibration. To the extent reasonable and practicable, those specifications apply in lieu of the construction vibration goals in Table 3. Where predictive modelling indicates the specified criteria would not be achieved by the

Project Works, such works may proceed only in accordance with specific mitigation measures agreed with the potentially Directly Affected Persons.

(f) Project Works predicted to or monitored as generating vibration levels more than 2mm/s for continuous vibration and 10mm/s for transient vibration may occur only:

(i) between the hours 7:00am to 6:00pm Monday to Friday, with a respite period between 12:00noon and 2:00pm each day; or

(ii) in accordance with the mitigation measures developed in consultation with and agreed by Directly Affected Persons that are incorporated in the Mitigation Register.

Condition 12. Property Damage

(a) Prior to the commencement of Project Works, predictive modelling must be undertaken of potential ground movement that may be caused by the Project Works. Such predictive modelling must ascertain the potential for damage due to ground movement being caused to property by Project Works.

(b) Where predictive modelling indicates the Project Works would lead to impacts above the vibration goals for cosmetic damage in Table 3. the proponent must prepare and submit a property damage sub-plan, prior to the commencement of such works, as part of the Construction Environmental Management Plan. The property damage sub-plan must set out the procedure for:

(i) advance communication with potentially Directly Affected Persons;

(ii) procedures for building condition surveys both in advance of and following Project Works, including provision for consultation with property owners and occupants;

(iii) monitoring to be undertaken for potential impacts to property; and

(iv) mitigation measures.

(c) Where a post-construction building condition survey identifies that property damage has occurred as a consequence of the Project Works, such damage must be repaired as soon as practicable by the Proponent at no cost to the property owners. Such repairs must be undertaken in consultation with the property owners and occupants and must return the premises at least to the condition existing prior to commencement of Project Works. The Proponent must agree the timing, method and extent of works required with the affected landowner and must gain permission to undertake such reparation works prior to their commencement.

Condition 13. Air quality

(a) Project Works must aim to achieve the goals in Table 4.

Table 4. Air quality criteria and goals

Criterion	Air quality indicator	Goal	Averaging period
Human Health	Total Suspended Particulates (TSP)	90 µg/m^3	1 year

Criterion	Air quality indicator	Goal	Averaging period
	Particulate matter ((PM_{10})[1]	50 µg/m^3	24 hours
		25 µg/m^3	1 year
Nuisance	TSP[2]	80 µg/m^3	24 hours
	Deposited dust[3]	120 mg/m^2/day	30 days

(b) During construction monitor and report on air quality in accordance with the Air Quality Management Plan, a sub-plan of the Construction Environmental Management Plan.

Condition 14. Traffic and transport

(a) Project construction traffic must be managed to avoid or minimise adverse impacts on road safety and traffic flow, public transport, freight rail movements, pedestrian and cyclist safety, and property access.

(b) During construction workforce car parking must be provided and managed to avoid workforce parking on local streets.

(c) Access for emergency services to project worksites and adjoining properties must be maintained throughout the construction phase.

(d) Practicable access is maintained to adjacent properties throughout the construction phase.

(e) Heavy construction vehicles use only designated routes for spoil haulage and deliveries of major plant, equipment and materials, in accordance with the Construction Environmental Management Plan. The designated haulage routes for each worksite must follow major or arterial roads to the extent practicable and be developed in consultation with the Department of Transport and Main Roads and the Brisbane City Council in preparation of the Construction Environmental Management Plan.

(f) The Outline Environmental Management Plan must be supported by a road safety assessment for the spoil haulage route.

(g) Construction traffic must operate within the requirements of a construction traffic management sub-plan (Construction Traffic Management Plan) incorporated within the Construction Environmental Management Plan.

(h) The Construction Traffic Management Plan must include:

  (i) the proposed access to worksites, with local or minor roads only used where unavoidable to access a project worksite;

  (ii) a process for advance notice to Directly Affected Persons and local communities within the vicinity of the spoil haulage routes and worksite accesses;

  (iii) local traffic management measures developed in consultation with Brisbane City Council for key intersections:

    (A) in Bowen Hills including Bowen Bridge Road, College Road and O'Connell Terrace;

    (B) in the CBD including Albert Street, Charlotte Street, Elizabeth Street and Roma Street;

(C) at Woolloongabba including Leopard Street, Stanley Street, Vulture Street and Main Street;

(D) at Dutton Park including Annerley Road, Peter Doherty Street, Joe Baker Street and Boggo Road, as well as Kent Street, Cornwall Street and Ipswich Road.

(iv) specific traffic management measures developed in consultation with other key stakeholders, including:

(A) the department administering the *Economic Development Act 2012* with regards traffic management in the Queens Wharf Brisbane priority development area;

(B) Queensland Rail about maintaining access to railway stations; and

(C) the department administering the *Transport Infrastructure Act 1994* and the Brisbane City Council about maintaining operations for bus services along streets affected by the Project Works.

(i) Project Works must be designed, planned and implemented to maintain acceptable footpath and cycle paths in areas adjacent to project worksites in terms of capacity, legibility and pavement condition. The proponent must consult with the Brisbane City Council and Queensland Rail about changes in pedestrian and cycle paths required to facilitate Project Works.

Condition 15. Water quality

(a) Discharge of surface water and groundwater from Project Works must comply with the Brisbane River Estuary environmental values and water quality objectives (Basin no. 143 - mid-estuary) in the Environmental Protection (Water) Policy 2009.

(b) During construction monitor and report on water quality in accordance with the Water Quality Management Plan, a sub-plan of the Construction Environmental Management Plan.

Condition 16. Water resources

(a) Prior to the commencement of Project Works involving excavation, the Proponent must undertake predictive modelling of the potential for groundwater drawdown. The predictive modelling must be based on validated monitoring data and must address the likely extent of any drawdown over time, up to the time when such movement reaches equilibrium.

(b) Project Works must be designed, planned and implemented to avoid where practicable and otherwise minimise the inflow of groundwater to the Project Works, including excavations, the underground stations and tunnels, having regard for the predictive modelling.

(c) The Proponent must monitor the inflow of groundwater to the Project Works and compare monitoring data with the predictive modelling. If the rate of groundwater inflow rate exceeds 1L/sec in any worksite, the proponent must revise work methods and devise and implement mitigation measures as soon as practicable.

Condition 17. Surface water

(a) Project Works, and worksites, must be designed and implemented to avoid inundation from stormwater due to a 2 year (6hr) ARI rainfall event and flood waters due to a 5 year ARI rainfall event.

(b) Project works must be designed and implemented to avoid afflux or cause the redirection of uncontrolled surface water flows, including stormwater flows, outside of worksites.

Condition 18. Erosion and sediment control

(a) An erosion and sediment control sub-plan that is consistent with the Guidelines for Best Practice Erosion and Sediment Control (International Erosion Control Association, 2008) and the Department of Transport and Main Roads' Technical Standard MRTS52 – Erosion and Sediment Control must be submitted as part of the Construction Environmental Management Plan.

Condition 19. Acid sulphate soils

(a) Acid sulphate soils must be managed in accordance with the methods and requirements of the latest edition of the *Queensland Acid Sulphate Soil Technical Manual*.

Condition 20. Landscape and open space

(a) Project Works are designed and implemented to minimise impacts on landscape and open space values.

(b) Project works and worksites in Victoria Park must be designed, planned and implemented to avoid, or minimise the loss of trees and ornamental plantings, and must minimise the area of the park directly impacted during such works.

(c) Worksites in Victoria Park must be enclosed with a visually solid screen and any night lighting including security lighting must be situated to minimise the spill of light beyond the worksite enclosures.

(d) Existing pathways and recreational facilities in Victoria Park must be relocated within the park for the duration of the works, in consultation with the Brisbane City Council. Upon completion of the project works, such pathways and facilities must be re-established in locations in the park in consultation with the Brisbane City Council.

Condition 21. Worksite rehabilitation

(a) Worksites for project infrastructure, such as the surface connections, stations and ancillary buildings must be rehabilitated as soon as practicable upon completion of the works.

(b) All other worksites required to support commissioning activities must be rehabilitated as soon as practicable on completion of commissioning or sooner where possible.

(c) Rehabilitation must address soil erosion and sedimentation, dust nuisance and landscape and visual impact.

(d) Any planting, landscaping and streetscape works undertaken as part of rehabilitation must be undertaken in accordance with landscape and urban design plans prepared in consultation with the Brisbane City Council.

Part D. Imposed Conditions (Commissioning)

Condition 22. Environmental design requirements

(a) The Proponent must conduct such testing and monitoring as is necessary to demonstrate that the Environmental Design Requirements in Schedule 1 have been satisfied.

(b) At the completion of Commissioning, the Proponent must give written notice to the Coordinator-General that the Project has achieved the Environmental Design Requirements in Schedule 1.

Condition 23. Commissioning

(a) Commissioning may be carried out in stages.

(b) Testing for commissioning must be supported by advanced notice to local residents and businesses.

(c) Testing for commissioning must not cause an exceedance of the goals in Table 2, Table 3, Table 4 or Condition 15.

Schedule 1. Environmental Design Requirements

1. Traffic and transport

(a) Emergency access and evacuation for each station and the tunnel is designed in consultation with the Emergency Service Authorities.

(b) Station plazas and forecourts are of a sufficient size and dimension to avoid peak pedestrian flows spilling onto adjacent carriageways. Where the overflow of pedestrians onto carriageways cannot be avoided, local traffic management measures addressing such circumstances must be designed and implemented prior to the commencement of Project operations.

(c) Pedestrian and cycle pathways in the vicinity of stations are designed in accordance with Rail Infrastructure Manager's and TMR's requirements.

(d) The design of driveways and roadworks for the Project avoid conflicts between construction traffic and cyclists and pedestrians.

(e) New footpaths, pedestrian walkways and pedestrian road crossings in the vicinity of stations are designed, in consultation with BCC and emergency services authorities, to allow safe and efficient pedestrian movement during peak periods and, where applicable, major events at the Brisbane Cricket Ground (Woolloongabba Station), Lang Park (Roma Street Station) and the RNA Showgrounds (Exhibition Station).

(f) The Project design provides for pedestrian connectivity between the PA Hospital, Boggo Road Busway Station and Park Road Railway Station, and incorporates appropriate crime prevention through environmental design (CPTED) principles and Disability Discrimination Act 1992 (DDA) compliant vertical transport facilities.

2. Air Quality

(a) Ventilation outlets from underground stations are designed and sited so as not to cause an increase in air temperature of more than one degree Celsius, measured as an hourly average, or concentrations of ambient air contaminants that exceed air quality objectives.

(b) The Project is designed so that it does not cause the air quality objectives specified in Table 5 to be exceeded.

(c) The ventilation outlets are designed to avoid discharging directly into an air intake for any other ventilation or air conditioning system that is in place at the time of detailed design and construction of the relevant ventilation outlet.

Table 5. Ambient air quality outcomes

Pollutant	Air Quality Objective	Average Period
Total Suspended Particulates (TSP)	90 µg/m^3	Annual
Particulates as PM10 (<10 µm)	50 µg/m^3	24 hours
	25 µg/m^3	Annual

3. Noise and Vibration

(a) Where practicable, the Project is designed to achieve the following noise criteria for railway surface track airborne noise emissions:

(i) 65 dBA, evaluated as the 24 hour average equivalent continuous A-weighted sound pressure level;

(ii) 87 dBA, evaluated as a Single Event Maximum sound pressure level.

(b) Where practicable, the Project is designed to achieve the goals for ground-borne noise provided in Table 6 and for vibration provided in Table 7.

(c) Ventilation systems, mechanical plant, and electricity feeder stations at or near stations are designed and sited to operate within the noise goals outlined in Table 8.

Table 6. Ground-borne noise design criteria (rail operations)

Receiver	Time of day	Internal noise design criteriod (dBA)
Residential	07:00-22:00	40dBA
	22:00-07:00	35dBA
Schools, educational institutions, places of worship.	When in use	40dBA to 45dBA
Retail areas	When in use	50dBA to 55dBA
General office areas	When in use	45dBA
Private offices and conference rooms	When in use	40dBA
Theatres	When in use	35dBA

Table 7. Ground-borne vibration design criteria (rail operations)

Receiver type	Period	Vibration goal (vibration velocity)
Residential	Day/ night	106dBV (0.2 mm/s)
Commercial and community facilities (including schools and places of worship)	When in use	112dBV (0.4 mm/s)
Industrial	When in use	118dBV (0.8 mm/s)
Sensitive equipment within medical or research facilities	When in use	82dBV (0.013 mm/s)

Table 8. Mechanical plant noise goals (operations)

Receiver	Time of day	Background (b/g) noise creep dBA LA_{90} (1 hour)	Acoustic quality objectives dBA LA_{eq} (1 hour)
Residential (for outdoors)	07:00 - 22:00	b/g + 0	-
	22:00 - 07:00	b/g + 0	50
Residential (for outdoors)	07:00 - 22:00	-	35

Receiver	Time of day	Background (b/g) noise creep dBA LA_{90} (1 hour)	Acoustic quality objectives dBA LA_{eq} (1 hour)
	22:00 - 07:00	-	30
Library and educational institution (for indoors)	When in use	-	35
Commercial and retail activity (for indoors)	When in use	-	45

4. Settlement

(a) Detailed design of the alignment and underground stations will be informed by a detailed ground settlement analysis, based on hydrogeological and geological modelling

(b) The settlement analysis will indicate the predicted horizontal and vertical extent of ground settlement for the Project Works and the time period over which such ground settlement would occur.

5. Hydrology

(a) A hydrogeological model will be developed during detailed design and before construction of relevant sections to determine ground conditions along the tunnel section.

(b) Further borehole investigations, groundwater monitoring and permeability testing at the station locations and along the tunnel alignment to identify and characterise any major transmissive features and better constrain the local hydrogeological model for detailed design.

(c) Review available bore construction records and target aquifers to determine the suitability of monitoring bores installed during the geotechnical investigations for ongoing groundwater monitoring for construction and commissioning. Following this review, additional bores may be proposed to address gaps identified in the groundwater monitoring network.

(d) Identify through surveys and consultation, water bores in the area potentially affected by groundwater drawdown and implement measures to mitigate potential effects on identified bores.

(e) In the event a new 'groundwater feature' (e.g. areas of high groundwater flow/ yield) is identified along the Project alignment, further detailed groundwater monitoring would be undertaken to characterise the feature and identify potential impacts to the environment. Additional management measures would be developed, where required.

(f) Develop and implement design measures and construction methods to minimise groundwater inflows in to the construction area.

(g) The Project design provides for the capture of groundwater seepage, should it enter the underground structures, and the subsequent treatment of such groundwater prior to its release to an approved discharge point.

(h) Where the project design anticipates groundwater entering underground structures, the design provides:

(i) measures to minimise settlement due to project-induced drawdown;

(ii) measures to ensure structural integrity and Project operational safety; and

(iii) measures to minimise the risk of exposing acid sulphate soils to air or the chance for oxidation.

(i) The Project design achieves the water quality objectives stated for the Brisbane River Estuary environmental values and water quality objectives (Basin No. 143 mid-estuary) referred to in the Environmental Protection (Water) Policy 2009 for any water, including groundwater, released from Project infrastructure to surface waters.

(j) The Project design is based on current flooding information to achieve flood immunity to the tunnel infrastructure and underground stations in a 1 in 10,000 year annual exceedance probability (AEP) regional flood event, and a 1 in 100 AEP overland flow event.

(k) The Project design will not cause property damage from flood impacts to third parties for events up to and including the 1 in 100 AEP flood event.

(l) Project Works in Mayne Rail Yard must be designed on the basis of detailed flood modelling.

6. Cultural Heritage

(a) The Project design reflects and minimises the impact on the cultural and historical significance of places where surface works occur, and where reasonable and practicable, avoids or minimises the direct impact on heritage values of such places.

(b) The Project design acknowledges a locality's historical significance or cultural significance to Aboriginal people through input to:

(i) place naming;

(ii) interpretative signage and other landmarks; and

(iii) the themes for public art.

(c) In developing the Project design, the Proponent would provide opportunities for architectural design sympathetic to the cultural heritage landscape and streetscape.

7. Climate change and sustainability

(a) Project ventilation systems are designed to minimise energy consumption while achieving acceptable passenger comfort and air quality outcomes in both the ambient environment and the Project stations and tunnel system.

(b) The Project is designed to be adaptable to conditions that may arise as a result of climate change, including accommodating the predicted 1.0 m sea level rise scenario in 2100 (upper range).

(c) Sustainability initiatives, particularly in relation to energy consumptions and savings throughout the Project lifecycle are incorporated in detailed design and tracked via a Sustainability Tool (e.g. ISCA's rating tool) through to Project implementation.

(d) In design and construction, devise and implement a process for optimising energy efficiency in construction planning and delivery (e.g. component sourcing and transportation, spoil and materials handling – no double handling, programing to avoid re-work or redundant work).

(e) In operations, energy efficient design that meets the performance criteria of all Project plant and equipment would be included in the design specification.

8. Land use and tenure

(a) Minimise the 'footprint' of the Project during both construction and operations to reduce impacts on existing land uses through design refinement.

(b) The Project design seeks to optimise land use and transport integration with:

- (i) PA Hospital, Boggo Road Busway Station, Park Road Railway Station and Boggo Road Urban Village;
- (ii) Woolloongabba Priority Development Area (PDA);
- (iii) Albert Street;
- (iv) Roma Street; and
- (v) Bowen Hills PDA.

(c) The Project is to be designed in consultation with:

- (i) Rail Infrastructure Manager in relation to use of Railway land required for project worksites; and
- (ii) Proponents for urban development projects at Boggo Road Urban Village, Woolloongabba PDA, Albert Street and Roma Street redevelopment and Royal National Agricultural and Industrial Association of Queensland (RNA) redevelopment.

(d) The Project design minimises the loss of public open space in Victoria Park during construction.

9. Visual amenity and lighting

(a) The Project design seeks to minimise the visual impact of the above-ground infrastructure with regards to its scale, height and bulk. Specific urban design and visual impact studies are required to inform detailed design for:

- (i) the station ventilation outlets and intake structures;
- (ii) the above-ground electricity feeder stations;
- (iii) the portals and transition structures; and
- (iv) noise barriers and other impact mitigation devices or structures.

(b) Where required, noise barriers are designed to reduce the visual impacts to surrounding properties and roadways by:

- (i) incorporating urban design treatments and landscape elements such as massed plantings;
- (ii) using clear or transparent materials to maintain existing expansive views beyond the rail corridor, subject to security and maintenance considerations being evaluated; and

(iii) avoiding the use of highly reflective materials and materials that support graffiti.

(c) Landscaping, urban design and public art treatments sympathetic to heritage landscape and streetscape values are incorporated into the design of Project Works at stations and thoroughfares accessing stations.

10. Social environment

(a) The design of stations and public spaces developed as part of the Project stations incorporate CPTED principles to maximise commuter safety.

11. Waste

(a) The Project is designed to minimise waste generation and maximise the reuse and recycling of waste materials generated by the Project during its construction and operation.

(b) Opportunities are investigated during the detailed design phase for the use of recycled materials, including for Project infrastructure produced from concrete, road base, asphalt and other construction materials.

(c) During detailed design, the feasibility of re-using material excavated from the Project is investigated.

Schedule 2. Nominated entities with jurisdiction for conditions

Table A1 lists the organisations/agencies responsible for each of the Coordinator-General's imposed conditions (Appendix 1).

Table A1. Entities with jurisdiction for Coordinator-General imposed conditions

Part	Approval	Condition no.	Entity with jurisdiction
A	General conditions	1	Coordinator-General
A	Outline Environmental Management Plan	2	Coordinator-General
B	Design	3	Chief Executive, TMR
C	Construction Environmental Management Plan	4	Chief Executive, TMR
C	Compliance	5	Chief Executive, TMR
C	Reporting	6	Chief Executive, TMR
C	Environmental Monitor	7	Coordinator-General
C	Community Relations Monitor	8	Coordinator-General
C	Community engagement plan	9	Chief Executive, TMR
C	Hours of work	10	Chief Executive, TMR
C	Construction Noise and Vibration	11	Chief Executive, TMR
C	Property Damage	12	Chief Executive, TMR
C	Air Quality	13	Chief Executive, TMR
C	Traffic and Transport	14	Chief Executive, TMR
C	Water quality	15	Chief Executive, TMR
C	Water resources	16	Chief Executive, TMR
C	Surface water	17	Chief Executive, TMR
C	Erosion and sediment control	18	Chief Executive, TMR
C	Acid sulphate soils	19	Chief Executive, TMR
C	Landscape and open space	20	Chief Executive, TMR
C	Worksite rehabilitation	21	Chief Executive, TMR
D	Environmental design requirements	22	Chief Executive, TMR
D	Commissioning	23	Chief Executive, TMR

Schedule 3. Definitions

Directly Affected Persons means an entity being either the owner or occupant of premises for which predictive modelling or monitoring indicates the project impacts would be above the performance criteria in the imposed conditions.

Construction Environmental Management Plan means the Construction Environmental Management Plan referred to in Condition 4.

Outline EMP means the Outline EMP approved by the Coordinator-General in Condition 2.

Managed Work means Project Work for which either the predicted or monitored impacts meet the performance criteria at a Sensitive Place.

Non-Compliance Event means Project Works that do not comply with the Imposed Conditions

Predictive Modelling means the use of appropriate analytical scenario testing, whether or not by numerical measurements, undertaken prior to the commencement of Project Works.

Project Work means any works, including early works, demolition works or site preparation works, for construction of the project. Project Work does not include:

- any works associated with the demolition of buildings and structures on State owned land;
- works involving the relocation or replacement of public utilities when undertaken by a public utility authority or provider;
- the placement and management of spoil at spoil placement locations
- works associated with the temporary Roma Street Coach Terminal.

Sensitive Place means:

- a dwelling (including residential allotment, mobile home or caravan park, residential marina or other residential premises, motel, hotel or hostel)
- a library, childcare centre, kindergarten, school, university or other educational institution
- a medical centre, surgery or hospital
- a protected area
- a public park or garden that is open to the public (whether or not on payment of money) for use other than for sport or organised entertainment
- a work place used as an office or for business or commercial purposes, which is not part of the project activity(ies) and does not include employees accommodation or public roads.

Appendix 2. Coordinator-General's recommendations for the Cross River Rail project

This appendix includes the Coordinator-General's recommendations for the Cross River Rail project.

Recommendation 1. Ecosciences building planning

The proponent should continue to undertake consultation with the key stakeholders to minimise constraints on the planned development of the stage 2 of the Ecosciences Precinct.

Recommendation 2. Greenspace planning

The proponent should liaise with Brisbane City Council to offset the loss of public open space/pocket parks in accordance with Element 6 Nature Conservation of the OEMP.

Recommendation 3. Silicosis

The proponent should consider the findings from the Coal Workers' Pneumoconiosis Select Committee final report, Black Lung White Lies – Inquiry into the re-identification of Coal Workers' Pneumoconiosis in Queensland. Implement relevant recommendations regarding the potential impacts from silica to underground workers involved in tunnelling construction (silicosis) and include in:

(a) The Hazard and Risk sub-plan and/or

(b) The Air Quality sub-plan

Recommendation 4. Mined tunnelling

Mined tunnelling should be implemented in accordance with the *Work Health and Safety Act – Tunnelling Code of Practice 2011* and the Excavation Work Code of Practice 2017.

Recommendation 5. Myer Centre carpark

The proponent should undertake an assessment taking into consideration the potential impacts on surface pedestrian, traffic and public transport networks of the proposed changes to exit arrangements for the Myer Centre carpark in consultation with Brisbane City Council and Myer Centre management.

Recommendation 6. Freight

The proponent should engage and consult with key stakeholders such as the Western Freight Users Group and the Rail Infrastructure Manager regarding the possession of the rail corridor to reduce potential impacts on rail freight movements during construction in accordance with Element 2 of the OEMP.

Recommendation 7. Pavement impacts

In consultation with Brisbane City Council, the proponent should develop mitigation measures to address any assessed pavement damage on local roads from project spoil haulage.

Recommendation 8. Noise and Vibration

The proponent should consult with relevant advisory agencies in the development of mitigation measures for predicted and monitored noise and vibration impacts above the goals for the CEMP.

Recommendation 9. Dust impacts - Southern Portal / Boggo Road Railway Station worksites

The proponent should conduct predictive air quality modelling for early construction earthworks prior to the commencement of Project Works. Should exceedance of the goals in Table 4 of the Imposed Conditions be predicted, I recommend that consultation be undertaken with relevant entities including representatives of the PA Hospital, Leukaemia Foundation ESA Village, Ecosciences Precinct and the TRI building in the development of mitigation measures.

The proponent should establish real-time monitoring, with monitoring stations positioned at appropriate locations around the proposed worksites. Should exceedances of the goals in Table 4 be monitored or occur during construction, that are attributable to the project, the proponent should revise their adaptive management approach where necessary.

Appendix 3. Imposed conditions – Temporary Roma Street Coach Terminal Works

This appendix includes conditions imposed by the Coordinator-General under section 54B of the SDPWO Act.

All of the conditions imposed in this Appendix take effect from the date of this Coordinator-General's change report.

These conditions do not relieve the proponent of the obligation to obtain all approvals and licenses from all relevant authorities required under any other Act.

In accordance with section 54B(3) of the SDPWO Act, I have nominated entities to have jurisdiction for the imposed conditions for the project in Schedule 1.

Pursuant to section 54D of the SDPWO Act, these conditions apply to anyone who undertakes the project, such as the proponent and an agent, contractor, subcontractor or licensee of the Proponent.

Defined terms that are part of the imposed conditions are contained in Schedule 2.

Part A Imposed Conditions (General)

Condition 1. General conditions

(a) The temporary coach terminal works must be carried out generally in accordance with the Cross River Rail Request for Project Change dated June 2018.

(b) The proponent must notify the Coordinator-General in writing of the commencement of construction of the temporary coach terminal and the commencement of the operational phase at least 20 business days prior to the relevant commencement date.

(c) The temporary coach terminal works must be carried out in accordance with the Imposed Conditions (temporary coach terminal works) in Appendix 3.

Part B Imposed Conditions (Temporary Coach Terminal Works)

Condition 2. Construction Environmental Management Plan

(a) A Construction Environmental Management Plan must be submitted to the Coordinator-General for approval at least 20 business days prior to the commencement of construction of the temporary coach terminal.

(b) The Construction Environmental Management Plan (temporary coach terminal works) must:

  (i) describe the temporary coach terminal works;

  (ii) be based on predictive studies and assessments of construction impacts which have regard to the scale, intensity, location and duration of construction works, and impact to Directly Affected Persons;

  (iii) incorporate and respond to the Imposed Conditions (temporary coach terminal works);

(iv) demonstrate how the Imposed Conditions (temporary coach terminal works) will be complied with during the construction of the temporary coach terminal;

(v) incorporate the stakeholder engagement plan, including the complaints management process, in accordance with Condition 5 in this Part B;

(vi) where predictive studies indicate impacts beyond those provided for in the performance criteria, incorporate mitigation measures to achieve the environmental outcomes;

(vii) establish specific mitigation measures and processes for consultation with Directly Affected Persons for temporary coach terminal works under Conditions 5(c), 7(c), and 7(f) in this Part B;

(viii) contain a program and procedures for ongoing monitoring to identify the effectiveness of mitigation measures in achieving the Imposed Conditions (temporary coach terminal works);

(ix) include a process for regular review and if required updating of the Construction Environmental Management Plan, including a process to review and implement additional or different mitigation measures in response to monitoring results;

(c) The Construction Environmental Management Plan (temporary coach terminal works) must be implemented for the duration of construction of the temporary coach terminal.

(d) Temporary coach terminal work is authorised if it is undertaken in accordance with the approved Construction Environmental Management Plan (temporary coach terminal works).

(e) The Construction Environmental Management Plan (temporary coach terminal works) must be available on the Cross River Rail website for the duration of construction of the temporary coach terminal.

(f) The Construction Environmental Management Plan (coach terminal works) may be developed in stages and/or updated. Any major update or additional stage will be submitted to the Coordinator-General 10 business days prior to issuing for use.

Condition 3. Compliance

(a) The proponent must notify the Coordinator-General in writing, within 48 hours after becoming aware of a non-compliance incident (incident) with the Imposed Conditions (temporary coach terminal works)

(b) The notification must include:

(i) a description of the incident, including details of the location, date and time of the Incident;

(ii) the name and contact details of a designated contact person;

(iii) an outline of actions that have been or will be taken to respond to the incident.

(c) Within 14 days following the notification of an Incident, written advice detailing the following information must be provided to the Coordinator-General:

(i) a description of the incident, including details of the location, date and time of the Incident;

(ii) the name and contact details of a designated contact person;

(iii) the circumstances in which the Incident occurred;

(iv) details of any complaint in relation to the incident;

(v) the cause of the incident;

(vi) a description of the environmental effects of the incident;

(vii) the results of any sampling or monitoring performed in relation to the Incident;

(viii) actions taken to mitigate the environmental effects of the incident;

(ix) proposed actions to prevent a recurrence of the Incident, including timing and responsibility for implementation.

(d) The incident report must be made available on the project website and remain available for the duration of the construction phase of the temporary coach terminal.

Condition 4. Reporting

(a) The proponent must prepare a monthly report that summarises compliance and monitoring results for the duration of the temporary coach terminal works.

(b) The Monthly Report must include:

(i) monitoring data required by the Imposed Conditions (temporary coach terminal works) or Construction Environmental Management Plan (temporary coach terminal works) undertaken for the period and, where required, an interpretation of the results;

(ii) details of any incident, including a description of the incident, resulting effects, corrective actions, revised construction practices to prevent a recurrence, responsibility and timing;

(iii) reporting of complaints, including the number of complaints, description of issues, responses and corrective actions.

(iv) an evaluation of compliance in relation to the Construction Environmental Management Plan (temporary coach terminal works);

(v) a summary of any Incidents during the reporting period;

(vi) a summary of any Incidents during the previous reporting period, with details of site remediation activities, corrective actions taken or to be taken and revised practices implemented or to be implemented (as relevant).

(c) The Monthly Report must be provided to the Coordinator-General and made available on the project website within four weeks of the end of the month to which the report relates and continue to be available on the project website for the duration of the construction phase of the temporary coach terminal.

Condition 5. Stakeholder engagement plan

(a) The proponent must develop a stakeholder engagement plan as part of the Construction Environmental Management Plan (temporary coach terminal works).

(b) The stakeholder engagement plan must provide for:

(i) Directly Affected Persons to be consulted prior to commencement of temporary coach terminal works and for the duration of the temporary coach terminal works;

(ii) Directly Affected Persons to be consulted about predicted impacts and possible mitigation measures;

(iii) local communities near temporary coach terminal works to be informed about the nature of construction, including the timing, duration and predicted impacts of the temporary coach terminal works in advance of their commencement;

(iv) information to be provided to public transport, road users, pedestrians and cyclists about the predicted effects of temporary coach terminal works on road, rail and pedestrian and cycle network operations, in advance of their commencement;

(v) specific community consultation plans for identified key stakeholders;

(vi) a process for advance notification to local communities of temporary coach terminal works, including the timing, duration, predicted impacts and mitigation measures, which is available on the project website and through other media.

(c) The stakeholder engagement plan must incorporate a complaints management system developed specifically for the temporary coach terminal works, which is established prior to the commencement of temporary coach terminal works.

(d) The complaints management system must deliver a prompt response to community concerns with relevant information, action where required, and reporting of incidents.

(e) As a minimum, the complaints management system must include the following elements:

(i) a procedure for receiving complaints on a 24 hour, seven days a week basis, during temporary coach terminal works;

(ii) a mechanism for notifying the community of the complaints procedure and how it may be accessed;

(iii) a process for registering and handling complaints received, including a database for tracking of complaints and actions taken in response;

(iv) a procedure for verifying complaints through monitoring and detailed investigation, and escalating and resolving verified complaints;

(v) regular reporting via the monthly environmental report, to the community of complaints and corrective actions, maintaining appropriate confidentiality.

(f) All information regarding complaints must be made available to the Coordinator-General on request.

Condition 6. Hours of work

(a) Construction works for the temporary coach terminal are authorised to be undertaken within the hours of work set out in Table 1.

Table 1 Construction hours

Standard hours	Extended work hours
Monday to Saturday, 6.30am - 6.30pm	Monday to Friday, 6:30pm - 10:00pm

(b) Works carried out because of an emergency that:

(i) is endangering the life or health of a person; or

(ii) is endangering the structural safety of a building; or

(iii) is endangering the operation or safety of community infrastructure that is not a building; or

(iv) is required to prevent environmental harm, may be undertaken outside the hours set out in Table 1.

(c) The following work may be undertaken during Extended Work Hours as set out in Table 1, subject to compliance with specific measures for Extended Work Hours in the Construction Environmental Management Plan (temporary coach terminal works):

(i) Paving, line marking, structural installation;

(ii) Temporary coach terminal works within a road reserve or busway that cannot be undertaken reasonably nor practicably during standard hours due to potential disruptions to peak traffic flows or bus operations;

(iii) Temporary coach terminal works involving the transport, assembly or decommissioning of oversized plant, equipment, components or structures;

(iv) delivery of "in time" materials such as concrete, hazardous materials, large components and machinery;

(v) Temporary coach terminal works that require continuous construction support, such as continuous concrete pours, or other forms of ground support necessary to avoid a failure or construction incident.

Condition 7. Construction noise and vibration

(a) Temporary coach terminal works must aim to achieve the project noise goals for human health and well-being presented in Table 2.

Table 2. Noise goals (internal) for temporary coach terminal works

	Monday – Saturday 6.30am – 6.30pm	Monday – Friday 6.30pm – 10.00pm
Continuous (LAeq adj)(1hr)	AS 2107 Maximum design level	40 dBA LAeq adj (1hr)
Intermittent (LA10 adj)(15min)	AS 2107 Maximum design level + 10 dBA	50 dBA LA10, adj

Notes

1. All goals are internal noise levels for human health and well-being outcomes.

2. Where internal noise levels are unable to be measured or monitored, the typical noise reductions presented in the relevant State guideline, such as the Guideline Planning for Noise Control, Ecoaccess, DEHP, January 2017 (currently under review).

(b) During construction of temporary coach terminal works monitor and report on noise and vibration in accordance with the Construction Environmental Management Plan (temporary coach terminal works).

(c) Temporary coach terminal works predicted to or monitored as generating noise levels more than 20dBA (LA eq 10min, adj) above the relevant goal in Table 2 may occur only in accordance with the mitigation measures developed in consultation with and agreed by Directly Affected Persons that are incorporated in the Mitigation Register.

(d) Temporary coach terminal works must aim to achieve the construction vibration goals in Table 3.

Table 3. Vibration goals (internal) for Temporary Coach Terminal Works

Receiver type	Cosmetic Damage		Human comfort (mm/s PPV)		Sensitive building contents (mms/PPV)
	Continuous vibration (mm/s PPV)	Transient vibration (mm/s PPV)	Day	Night	
Residential	According to BS7385 reduced by 50%[1]	According to BS7385	According to AS2670	0.5[2]	
Commercial	According to BS7385 reduced by 50%[1]	According to BS7385	According to AS2670		0.5[3]
Heritage Structures	2				

Notes:

1. If resonance is present, or if investigation to detect resonance were not able to be undertaken due to a lack of access

2. Residential sleep disturbance

3. Equipment specific vibration criteria are required for highly sensitive equipment (i.e. electron microscopes, MRI systems or similar), as part of future site-specific detailed investigations

(e) Where vibration protection criteria are available for sensitive building contents, predictive modelling must take into account the manufacturer's specifications for tolerance to vibration. To the extent reasonable and practicable, those specifications apply in lieu of the construction vibration goals in Table 3. Where predictive modelling indicates the specified criteria would not be achieved by the temporary coach terminal works, such works may proceed only in accordance with specific mitigation measures agreed with the potentially Directly Affected Persons.

(f) Temporary coach terminal works predicted to or monitored as generating vibration levels more than 2mm/s for continuous vibration and 10mm/s for transient vibration may occur only in accordance with the mitigation measures developed in consultation with and agreed by Directly Affected Persons that are incorporated in the Mitigation Register.

(g) The temporary coach terminal must incorporate dynamic signage and ensure equitable access is provided for visually impaired persons in accordance with relevant Australian Standards and design principles.

Condition 8. Air quality

(a) Construction of the temporary coach terminal works must aim to achieve the goals in Table 4.

Table 4. Air quality goals

Criterion	Air quality indicator	Goal	Averaging Period
Human health	Total Suspended Particulates (TSP)	90 µg/m^3	1 year
	Particulate matter (PM_{10})	50 µg/m^3	24 hours
		25 µg/m^3	1 year
Nuisance	TSP	80 µg/m^3	24 hours
	Deposited dust	120 mg/m^2/day	30 days

(b) During construction monitor and report on air quality in accordance with the Construction Environmental Management Plan (temporary coach terminal works).

Condition 9. Traffic and transport

(a) Construction traffic associated with the temporary coach terminal works must be managed to avoid or minimise adverse impacts on road safety and traffic flow, public transport, freight rail movements, pedestrian and cyclist safety, and property access.

(b) During temporary coach terminal works, workforce car parking will be provided within the worksite where possible, and parking on local streets is to be avoided.

(c) Access for emergency services to temporary coach terminal worksites and adjoining properties must be maintained throughout the construction phase.

(d) Practicable access is maintained to adjacent properties throughout temporary coach terminal works.

(e) Heavy construction vehicles use only designated routes for spoil haulage and deliveries of major plant, equipment and materials, in accordance with the Construction Environmental Management Plan. The designated haulage routes for each worksite must follow major or arterial roads to the extent practicable.

(f) Construction traffic must operate within the requirements of the Construction Environmental Management Plan (temporary coach terminal works).

(g) Prepare a Construction Traffic Management Plan (temporary coach terminal works) that includes:

(i) the proposed access to worksites, with local or minor roads only used where unavoidable to access a temporary coach terminal worksite;

(ii) a process for advance notice to Directly Affected Persons and local communities within the vicinity of the haulage routes and worksite accesses;

(iii) local traffic management measures developed in consultation with Brisbane City Council for key intersections including the reconfiguration of the intersection between Parkland Boulevard and Parkland Crescent to provide better sight distances and improved safety for road users;

(iv) specific traffic management measures developed in consultation with other key stakeholders, including:

(A) Queensland Rail about maintaining access to railway stations; and

(B) the department administering the *Transport Infrastructure Act 1994* and the Brisbane City Council about maintaining operations for bus services along streets affected by the temporary coach terminal works.

(h) Temporary coach terminal works must be designed, planned and implemented to maintain acceptable footpath and cycle paths in areas adjacent to temporary coach terminal worksites in terms of capacity, legibility and pavement condition. The proponent must consult with the Brisbane City Council and Queensland Rail about changes in pedestrian and cycle paths required to facilitate temporary coach terminal works.

Condition 10. Water quality

(a) Discharge of surface water and groundwater from the construction of the temporary coach terminal works must comply with the Brisbane River Estuary environmental values and water quality objectives (Basin no. 143 - mid-estuary) in the Environmental Protection (Water) Policy 2009.

(b) During construction monitor and report on water quality in accordance with the Construction Environmental Management Plan (temporary coach terminal works).

Condition 11. Surface water

(a) Temporary coach terminal works, and worksites, must be designed and implemented to avoid inundation from stormwater due to a 2-year (6hr) ARI rainfall event and flood waters due to a 5-year ARI rainfall event.

(b) Temporary coach terminal works must be designed and implemented to avoid afflux or cause the redirection of uncontrolled surface water flows, including stormwater flows, outside of worksites.

Condition 12. Erosion and sediment control

(a) An erosion and sediment control sub-plan that is consistent with the Guidelines for Best Practice Erosion and Sediment Control (International Erosion Control Association, 2008) and the Department of Transport and Main Roads' Technical Standard MRTS51 – Environmental Management must be submitted as part of the Construction Environmental Management Plan (temporary coach terminal works).

Condition 13. Cultural heritage

(a) Temporary coach terminal works that involve excavation, construction or other activities that may cause harm to Aboriginal cultural heritage must not take place

without the development and approval of a cultural heritage management plan for the Project in accordance with the *Aboriginal Cultural Heritage Act 2003*.

(b) Temporary coach terminal works that do not have the potential to harm Aboriginal cultural heritage may be carried out without the development and approval of a cultural heritage management plan for the Project, however must be carried out in accordance with the cultural heritage duty of care prescribed under section 23(1) of the *Aboriginal Cultural Heritage Act 2003*.

(c) Temporary coach terminal works that do not constitute Project Works may be carried out for the Project without the development and approval of a cultural heritage management plan for the Project, however must be carried out in accordance with the cultural heritage duty of care prescribed by section 23(1) of the *Aboriginal Cultural Heritage Act 2003*.

Schedule 1. Nominated entities with jurisdiction for conditions

Table A1 lists the organisations/agencies responsible for each of the Coordinator-General's imposed conditions (Appendix 3).

Table A1. Entities with jurisdiction for Coordinator-General imposed conditions

Part	Approval	Condition no.	Entity with jurisdiction
A	General conditions	1	Coordinator-General
B	Construction Environmental Management Plan	2	Coordinator-General
B	Compliance	3	Chief Executive, TMR
B	Reporting	4	Chief Executive, TMR
B	Stakeholder engagement plan	5	Coordinator-General
B	Hours of work	6	Chief Executive, TMR
B	Construction noise and vibration	7	Chief Executive, TMR
B	Air quality	8	Chief Executive, TMR
B	Traffic and transport	9	Chief Executive, TMR
B	Water quality	10	Chief Executive, TMR
B	Surface water	11	Chief Executive, TMR
B	Erosion and sediment control	12	Chief Executive, TMR
B	Cultural heritage	13	Chief Executive, TMR

Schedule 2. Definitions

Definitions

Temporary Coach Terminal Works means all works associated with the design, construction and commissioning of the temporary coach terminal.

Directly Affected Persons means an entity being either the owner or occupant of premises for which predictive modelling or monitoring indicates the temporary coach terminal works impacts would be above the performance criteria in the conditions imposed for the temporary coach terminal works.

Acronyms and abbreviations

AS	Australian Standard
BCC	Brisbane City Council
BTC	Brisbane Transit Centre
CBD	Central business district
CEMP	Construction Environmental Management Plan
CGCR	Coordinator-General's change report
CGER	Coordinator-General's evaluation report
CHMP	Cultural Heritage Management Plan
CPTED	Crime Prevention Through Environmental Design
CRRDA	Cross River Rail Delivery Authority
CTMP	Construction traffic management plan
DATSIP	Department of Aboriginal and Torres Strait Islander Partnerships
DTMR	Department of Transport and Main Roads
dB(A)	adjusted decibels
EIS	environmental impact statement
EMR	Environmental Management Register
ESCP	Erosion and Sediment Control Plan
EPBC Act	*Environment Protection and Biodiversity Act 1999*
EVNT	Endangered, Vulnerable or Near Threatened
km	kilometres
m	metres
NALL	*Natural Assets Local Law 2013*
NC Act	*Nature Conservation Act 1997*
OEMP	Outline Environmental Management Plan
PDA	Priority Development Area
$PM_{2.5}$	particulate matter 2.5 micrometre or less in diameter
PM_{10}	particulate matter 10 micrometres or less in diameter
PAH	polyaromatic hydrocarbons
SDPWO Act	*State Development and Public Works Organisation Act 1971*
TSP	total suspended particles

Glossary

2011 EIS	The EIS publicly notified from 30 August 2011 to 21 October 2011.
2012 CGER	The CGER dated 20 December 2012.
August 2018 CGCR	The CGCR dated 30 August 2018.
coordinated project	A project declared as a 'coordinated project' under section 26 of the SDPWO Act. Formerly referred to as 'significant project'.
Coordinator-General	The corporation sole constituted under section 8A of the SDPWO Act and preserved continued and constituted under section 8 of the SDPWOA Act.
February 2017 project change application	The project change application dated 10 February 2017.
imposed condition	A condition imposed by the Queensland Coordinator-General under section 54B of the SDPWO Act. The Coordinator-General may nominate an entity that is to have jurisdiction for that condition
June 2017 CGCR	The CGCR dated 9 June 2017.
June 2018 project change application	The project change application dated 28 June 2018.
November 2018 project change application	The project change application dated 19 November 2018.
significant project	A project declared (prior to December 2012) as a 'significant project' under section 26 of the SDPWO Act. Projects declared after 21 December 2012 are referred to as 'coordinated projects'.
the project	The project described in the Coordinator-General's Evaluation Report dated 20 December 2012.

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