

Recreation facilities at Rockdale and Brighton-Le-Sands

Addendum Review of Environmental Factors
Transport for NSW | July 2020

Recreation facilities at Rockdale and Brighton-Le-Sands

Addendum review of environmental factors

Transport for NSW | July 2020

Prepared by AECOM and Transport for NSW

ISBN: 978-1-922463-11-1

Publication number: 20.291

Copyright: The concepts and information contained in this document are the property of Transport for NSW. Use or copying of this document in whole or in part without the written permission of Transport for NSW constitutes an infringement of copyright.

Document controls

Approval and authorisation

Title	Recreation facilities at Rockdale and Brighton-Le-Sands Addendum review of environmental factors
Accepted on behalf of Transport for NSW by:	
Signed:	
Dated:	

Document status

Document status	Date	Prepared by	Reviewed by
Draft 1 Chapters 1-5	24.06.2020	Jessica Zickar	Kelly Pearsall
V2 Chapters 1-5 comments addressed	01.07.2020	Jessica Zickar	Kelly Pearsall
V3 Chapter 6 – 7 comments addressed	02.07.2020	Jessica Zickar	Kelly Pearsall

Executive summary

Background

The M6 Stage 1 project will construct a motorway between the New M5 at Arncliffe and President Avenue at Kogarah. During the development of the Environmental Impact Statement (EIS) for the M6 Stage 1 project, potential impacts to recreation facilities were identified. This included recreation facilities within Rockdale Bicentennial Park, where impacts to a playground with equipment, a skate park, an open recreation oval and up to three soccer playing fields were identified. To mitigate the impacts to these facilities, Transport for NSW (formally Roads and Maritime Services) are preparing to deliver new and upgraded recreation facilities at McCarthy Reserve/Ador Park Precinct at Rockdale and Brighton Memorial Fields at Brighton-Le-Sands, on behalf of Bayside Council.

A review of environmental factors (REF) was prepared for the Recreation facilities at Rockdale and Brighton-Le-Sands in November 2019 (the project REF). The project REF was placed on public display between Monday 2 December 2019 and Friday 20th December 2019 for community and stakeholder comment. A submissions report was prepared and published 20 April 2020 to respond to issues raised.

The proposed modifications

Transport for NSW (TfNSW) proposes to implement a number of modifications of the Recreation facilities at Rockdale and Brighton-Le-Sands project to support the successful delivery of the project.

The proposed modifications would be located at McCarthy Reserve/Ador Park Precinct at Rockdale and Brighton Memorial Fields at Brighton-Le-Sands. The key features of the proposed modifications are detailed below.

McCarthy Reserve/Ador Park Precinct

- Trimming of street trees on Bay Street and installation of root zone protection devices to mitigate vegetation removal and to accommodate the approved construction site access driveway
- Modifications to allow for the construction of the cyclist bridge over Muddy Creek next to West Botany Street (as described in the project REF), including:
 - Moving the project boundary about 40 metres north to provide the space required for construction of the cyclist bridge
 - Removal and reinstatement of the boundary fencing
 - De-energising overhead powerlines during the lifting and placing of the bridge deck structure (up to two days)
 - Relocating a private power pole away from the modified project boundary, to allow for the safe construction and operation of the cyclist bridge. The private power pole would be reinstated following the completion of the construction of the cyclist bridge

Brighton Memorial Fields

- Site offices would be established at 65, 67 and 69 O'Neill Street, Brighton-Le-Sands for TfNSW and the Principal Contractor management and administrative support activities
 - The project boundary would be modified to include Sybil Lane to accommodate the demolition and make-good works at the southern end of the existing tennis court on Sybil Lane (as described in the project REF) as well as the proposed water connection and road line marking works described below. The project boundary would also be modified along the
-

proposed alignment of the stormwater drainpipe and scour protection outlet to facilitate its construction.

- A new connection to the Sydney Water watermain in Sybil Lane would be established.
- Two sets of piano key road markings would be repainted on speed humps located in Sybil Lane
- A stormwater drainpipe and scour protection outlet would be constructed from the north western corner of Brighton Memorial Fields, extending about 40 to 45 metres west towards Scarborough Ponds.

Need for the proposed modifications

The project REF was based on a concept design. As noted in the project REF, the project design would be further refined and confirmed during the process of detailed design development, in consultation with key stakeholders (including Bayside Council and Sydney Water). Since the publication of the project REF a number of design refinements and changes have been identified as required for the construction and operation of the project that were not assessed in the REF.

The proposed modifications described and assessed in this addendum REF are consistent with the strategic need for the Recreation facilities at Rockdale and Brighton-Le-Sands, as described above. The proposed modifications are required to support the successful delivery of the Recreation facilities at Rockdale and Brighton-Le-Sands project.

Proposal objectives

The objectives of the Recreation facilities at Rockdale and Brighton-Le-Sands project that also apply to the proposed modifications include:

- Provide facilities within the Bayside Local Government Area (LGA) and located where council is able to secure short and/or long term land tenure
- Provide facilities while the existing facilities at Rockdale Bicentennial Park are unavailable for use
- Minimise disruption to the soccer season
- Provide facilities that are of equal value and/or use to that of existing assets
- Consider adjacent road function, local land use activity and access needs
- Comply with relevant council standards for a consistent approach to maintenance and operational activities
- Be consistent with any Plan of Management relating to the land
- Minimise potential environmental impacts and include user safety, road user safety and urban design considerations.

Statutory and planning framework

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to facilitate the effective delivery of infrastructure across the State. Clause 65 of the ISEPP describes development permitted without consent from council.

As the proposal is for the development of recreation areas and recreation facilities (with associated amenities and demolition of existing buildings) and is to be carried out by Transport for NSW on behalf of Bayside Council, it can be assessed under Division 5.1 of the *Environmental Planning and Assessment Act 1979*. Development consent from Bayside Council is not required as council is both the proponent and the determining authority for the proposed works.

Community and stakeholder consultation

To support the development to the addendum REF, local residents were informed of the proposed use of 65, 67 and 69 O'Neill Street as site offices. A community notification was distributed to neighbouring properties on Thursday 18 June 2020. This was supported with phone calls and emails to resident's registered for updates. The use of the properties was also referred to at a virtual street meeting held on Thursday 4 June 2020 and an onsite meeting on Friday 20 June 2020.

The community and stakeholder engagement to be carried out during construction of the proposed modifications would include:

- Updates on the planned construction activities and program.
- Appropriate project representatives would respond to enquiries and concerns in a timely manner, while seeking to minimise potential impacts, where possible
- A Complaints Management System would be in place for the duration of construction of the proposed modifications.
- Stakeholder Liaison Group meetings
- Emails to registered addresses
- Social media campaigns
- Door knocking residents around the sites to discuss the project
- Ongoing engagement with key stakeholders such as St George School, Brighton-Le-Sands Public School, PCYC St George and Brighton RSL Club.

This addendum REF will be made available on the TfNSW website (which will also be linked from the Bayside Council website), so that the community and stakeholders are informed about what is being proposed.

Environmental impacts

A number of potential environmental impacts from the proposed modifications have been avoided or reduced during the design development. The proposed modifications would however result in some residual minor impacts as follows:

- Noise - increased out-of-hours (night) noise impacts to nearby residential receivers at Sybil Lane as a result of the construction of the new Sydney Water watermain connection
- Biodiversity – minor biodiversity and habitat impacts as a result of the removal of about 280 square metres of mainly exotic landscaping vegetation and environmental weeds for the construction of the proposed stormwater drainage line and headwall outlet, and to provide access to the proposed site office at 65 O'Neill Street
- Traffic and access - temporary and minor traffic impacts as a result of changes to access arrangements (including pedestrian diversions) during construction
- Landscape character and visual amenity – potential for minor light spill impacts as a result of out of hours works at Sybil Lane and Bay Street, and from the proposed site offices on O'Neill Street.

With the implementation of safeguards and management measures detailed in this addendum REF, and as provided in the project REF, the proposed modifications would not result in any new environmental impacts; a change in the nature of impacts; or, an increase in the significance of any impact that has been described in the project REF.

Justification and conclusion

This Addendum REF has been prepared with regards to sections 5.5 and 5.7 of the EP&A Act, and clause 228 of the EP&A Regulation, to ensure that TfNSW takes into account to the fullest extent possible, all matters affecting or likely to affect the environment as a result of the proposed modifications.

Should the proposed modifications proceed, any potential associated adverse impacts would be appropriately managed in accordance with the mitigation measures outlined in this Addendum REF, and the project REF. This would ensure the proposed modifications are delivered to maximise benefit to the community and would minimise any adverse impacts on the environment.

In considering the overall potential impacts associated with the proposed modifications and proposed mitigation measures outlined in this Addendum REF, the proposed modifications are unlikely to significantly affect the environment including critical habitat or threatened species, populations, ecological communities or their habitats.

Contents

1	Introduction.....	1
1.1	Proposed modification overview.....	1
1.2	Purpose of the report.....	6
2	Need and options considered.....	7
2.1	Strategic need for the proposed modification.....	7
2.2	Proposal objectives and development criteria.....	7
2.3	Alternatives and options considered.....	8
3	Description of the proposed modification.....	9
3.1	The proposed modifications and key design features.....	9
3.2	Construction activities.....	12
3.3	Ancillary facilities.....	18
3.4	Public utility adjustment.....	19
3.5	Property acquisition.....	19
4	Statutory and planning framework.....	20
4.1	Environmental Planning and Assessment Act 1979.....	20
4.2	Other relevant NSW legislation.....	23
4.3	Commonwealth legislation.....	24
4.4	Confirmation of statutory position.....	24
5	Consultation.....	25
5.1	Consultation strategy.....	25
5.2	Ongoing or future consultation.....	26
6	Environmental assessment.....	27
6.1	Noise and Vibration.....	27
6.2	Biodiversity.....	30
6.3	Surface water and flooding.....	41
6.4	Soils and contamination, geology and groundwater.....	47
6.5	Property and land use.....	51
6.6	Other impacts.....	56
6.7	Cumulative impacts.....	71
7	Environmental management.....	72
7.1	Environmental management plans.....	72
7.2	Summary of safeguards and management measures.....	72
7.3	Licensing and approvals.....	88
8	Conclusion.....	89
9	Certification.....	90
10	References.....	91

Tables

Table 3-1 Construction methodology at McCarthy Reserve/Ador Park Precinct	12
Table 3-2 Indicative construction methodology at Brighton Memorial Fields	13
Table 4-1 Rockdale LEP 2011 assessment of objectives	22
Table 6-1: Ambient noise measurements	28
Table 6-2 Catchment distances for residential receivers	29
Table 6-3: Recommended minimum working distances for vibration intensive plant	30
Table 6-4 MUSIC Model results for existing carpark at Brighton Memorial Fields without water quality treatment device (Cardno 2020)	44
Table 6-5 Pollutant reductions achieved for the new carpark with treatment device (Cardno 2020)	45
Table 6-6 Stormwater reductions targets recommended for urban development in Botany Bay Catchment	45
Table 6-7 Consistency of proposal Bayside Council PoM assessment of current and future permitted use at McCarthy Reserve/Ador Park Precinct	52
Table 6-8 Consistency of proposal Bayside Council PoM assessment of current and future permitted use at Brighton Memorial Park	53
Table 6-9 Other environmental considerations - existing environment and potential impacts	56
Table 6-10 Other impacts - safeguards and management measures	69
Table 7-1 Summary of safeguards and management measures	73
Table 7-2 Summary of licensing and approval required	88

Figures

Figure 1-1: Location of the proposed modifications	3
Figure 1-2: The proposed modifications and project construction site layout at McCarthy Reserve/Ador Park Precinct	4
Figure 1-3: The proposed modifications at Brighton Memorial Fields	5
Figure 3-1 Example of piano keys road markings (Source: safetyfirstlinemarking.com.au)	10
Figure 6-1 Location of proposed headwall outlet at Brighton Memorial Fields	33
Figure 6-2 Vegetation at 65 O'Neill Street, Brighton-Le-Sands	34
Figure 6-3 <i>Casuarina glauca</i> and <i>Corymbia maculata</i> at Bay Street entrance	34
Figure 6-4 Biodiversity features at Brighton Memorial Fields	37

Appendices

Appendix A - Consideration of clause 228(2) factors and matters of National Environmental Significance and Commonwealth land

Appendix B - Statutory consultation checklists

1 Introduction

1.1 Proposed modification overview

Transport for NSW (formally Roads and Maritime Services) is preparing to deliver new and upgraded recreation facilities at the McCarthy Reserve/Ador Park Precinct at Rockdale and Brighton Memorial Fields at Brighton-Le-Sands, on behalf of Bayside Council, in lieu of compensation for the recreation land area to be acquired for the M6 Stage 1 project. The location of these facilities is shown in Figure 1-1.

As part of the Recreation facilities at Rockdale and Brighton-Le-Sands project, both sites will provide a mix of full and mid-sized sports fields, new amenity and toilet buildings, upgraded and expanded car parking, a network of pedestrian and cyclist pathways, play areas and other amenities. Each site will have new lighting and a landscaping scheme suitable for the surrounds. A skate park and regional scale playground will be installed at the Ador Park Precinct.

A review of environmental factors (REF) was prepared for the Recreation facilities at Rockdale and Brighton-Le-Sands in November 2019 (referred to in this report as the project REF). The project REF was placed on public display between Monday 2 December 2019 and Friday 20 December 2019 for community and stakeholder comment. A submissions report was prepared and published 20 March 2020 to respond to issues raised during the public display period. The project was determined by Bayside City Council's Director of City Futures in accordance with sections 5.5 and 5.7 of the EP&A Act on 1 April 2020.

Transport for NSW (TfNSW) proposes a number of modifications to the future recreation facilities at Rockdale and Brighton-Le-Sands project (the proposed modifications). Key features of the proposed modification at McCarthy Reserve/Ador Park Precinct are shown on Figure 1-2 and would include:

- Trimming of street trees on Bay Street and installation of root zone protection devices to mitigate vegetation removal and to accommodate the approved construction site access driveway
- Modifications to allow for the construction of the cyclist bridge over Muddy Creek next to West Botany Street (as described in the project REF), including:
 - Moving the project boundary about 40 metres north to provide the space required for construction of the cyclist bridge
 - Removal and reinstatement of the boundary fencing
 - De-energising overhead powerlines during the lifting and placing of the bridge deck structure (up to two days)
 - Relocating a private power pole away from the modified project boundary, to allow for the safe construction and operation of the cyclist bridge. The private power pole would be reinstated following the completion of the construction of the cyclist bridge

Key features of the proposed modification at Brighton Memorial Fields are shown on Figure 1-3 and would include:

- The project boundary would be modified to include Sybil Lane to accommodate the demolition and make-good works at the southern end of the existing tennis court on Sybil Lane (as described in the project REF) as well as the proposed water connection and road line marking works. The project boundary would also be modified along the proposed alignment of the stormwater drainpipe and scour protection outlet to facilitate its

construction. This boundary modification would comprise a corridor between 10 and 15 metres wide that travels about 40 metres to the west of Brighton Memorial Fields before turning and continuing about 10 metres to the north.

- Site offices to be established at 65, 67 and 69 O'Neill Street, Brighton-Le-Sands for TfNSW and the Principal Contractor management and administrative support activities
- A new connection to the Sydney Water watermain in Sybil Lane. The water main connection point is located about four metres outside of the approved project boundary
- Two sets of piano key road line markings would be repainted on speed humps located in Sybil Lane
- A stormwater drainpipe and scour protection outlet would be constructed from the north western corner of Brighton Memorial Fields, extending about 40 to 45 metres west towards Scarborough Ponds

Chapter 3 describes the proposed modifications at McCarthy Reserve and Brighton Memorial Fields in more detail.



Figure 1-1: Location of the proposed modifications



Figure 1-2: The proposed modifications and project construction site layout at McCarthy Reserve/Ador Park Precinct



Figure 1-3: The proposed modifications at Brighton Memorial Fields

1.2 Purpose of the report

This addendum REF has been prepared by AECOM on behalf of TfNSW. For the purposes of these works, TfNSW is the proponent and Bayside Council is the determining authority under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This addendum REF is to be read in conjunction with the project REF and submissions report that was prepared for the project, as described in Section 1.1. The purpose of this addendum REF is to describe the proposed modifications, to document and assess the likely impacts of the proposed modification on the environment, and to detail mitigation and management measures to be implemented where appropriate.

The description of the proposed works and assessment of associated environmental impacts has been undertaken in context of clause 228 of the Environmental Planning and Assessment Regulation 2000, *Is an EIS Required? Best Practice Guidelines for Part 5 of the Environmental Planning and Assessment Act 1979* (Is an EIS Required? guidelines) (DUAP, 1995/1996), Roads and Road Related Facilities EIS Guideline (DUAP, 1996), the *Biodiversity Conservation Act 2016* (BC Act), the *Fisheries Management Act 1994* (FM Act), and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

In doing so, this addendum REF helps to fulfil the requirements of Section 5.5 of the EP&A Act including that TfNSW examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

The findings of this addendum REF would be considered when assessing:

- Whether the proposed modifications are likely to result in a significant impact on the environment and therefore the necessity for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning and Public Spaces under Division 5.2 of the EP&A Act
- The significance of any impact on threatened species as defined by the BC Act and/or FM Act, in section 1.7 of the EP&A Act and therefore the requirement for a Species Impact Statement or a Biodiversity Development Assessment Report
- The significance of any impact on nationally listed biodiversity matters under the EPBC Act, including whether there is a real possibility that the activity may threaten long-term survival of these matters, and whether offsets are required and able to be secured
- The potential for the proposed modifications to significantly impact any other matters of national environmental significance or Commonwealth land and therefore the need to make a referral to the Australian Government Department of Agriculture, Water and the Environment for a decision by the Australian Government Minister for the Environment on whether assessment and approval is required under the EPBC Act.

2 Need and options considered

2.1 Strategic need for the proposed modification

Chapter 2 of the project REF addresses the strategic need for the project, the project objectives and the options that were considered.

The M6 Stage 1 project will construct a motorway between the New M5 at Arncliffe and President Avenue at Kogarah. During the development of the Environmental Impact Statement (EIS) for the M6 Stage 1 project, potential impacts to recreation facilities were identified. This included recreation facilities within Rockdale Bicentennial Park, where impacts to a playground with equipment, a skate park, an open recreation oval and up to three soccer playing fields were identified. To mitigate the temporary unavailability of these facilities, the project will be delivered to upgrade nearby similar facilities to offset this loss, prior to any impact to facilities within Rockdale Bicentennial Park. The delivery of the Recreation facilities at Rockdale and Brighton-Le-Sands project is therefore needed to help provide the required recreation facilities to meet the needs of users during the period the M6 Stage 1 project is being built.

The proposed modifications described and assessed in this addendum REF are consistent with the strategic need for the project, and are needed to support the successful delivery of the project.

2.2 Proposal objectives and development criteria

Section 2.3 of the project REF identifies the objectives and development criteria for the project, and that would also apply to the proposed modifications, and include:

- Provide facilities within the Bayside Local Government Area (LGA) and located where council is able to secure short and/or long-term land tenure
- Provide facilities while the existing facilities at Rockdale Bicentennial Park are unavailable for use
- Minimise disruption to the soccer season
- Provide facilities that are of equal value and/or use to that of existing assets
- Consider adjacent road function, local land use activity and access needs
- Comply with relevant council standards for a consistent approach to maintenance and operational activities
- Be consistent with any Plan of Management relating to the land
- Minimise potential environmental impacts and include user safety, road user safety and urban design considerations.

Development criteria were established to align with the objectives described above. Potential sites were compared against the key criteria, including:

- Proximity to Rockdale Bicentennial Park and the local user community (eg within a one kilometre radius)
- Availability of public open space owned either by Bayside Council or Transport for NSW
- Suitability of land (minimal site constraints such as utilities, and public accessibility, with vehicle access, parking and public and active transport links)

- Opportunity to improve the existing facilities or provide new community facilities where there were none.

The proposed modifications align with the project objectives and development criteria.

2.3 Alternatives and options considered

Due to the minor nature of the proposed modifications and as their purpose would be to facilitate the construction and operation of the approved project, alternatives and options for the proposed modifications were not considered.

DRAFT

3 Description of the proposed modification

3.1 The proposed modifications and key design features

TfNSW proposes to implement a number of modifications to the future Recreation facilities at Rockdale and Brighton-Le-Sands project to support the successful delivery of the project.

3.1.1 McCarthy Reserve/Ador Park Precinct, Rockdale

Vegetation trimming on Bay Street

Two to three mature native trees, located on Bay Street, Rockdale, would be trimmed to accommodate construction vehicles at the approved construction site access point on Bay Street. The location of these trees is shown on Figure 1-2 and an image of the trees is provided in Figure 6-2.

To avoid the need to remove the trees, protection devices would be installed to protect the root zone of these trees which may otherwise be impacted by the egress of vehicles and machinery. Root zone protection devices may include such things as the installation of geotextile, gap graded aggregate, and rumble boards or corduroy. With the implementation of root zone protection devices, the trees would be able to be retained and will withstand the temporary access requirements throughout construction.

Modifications to facilitate the construction of the cyclist bridge at Muddy Creek

The approved project boundary would be extended about 40 metres north, generally along the footpath and bike track adjacent to Muddy Creek. This boundary modification would provide the space required to construct the cyclist bridge over Muddy Creek next to West Botany Street (as described in the project REF). The extent of this boundary change is shown on Figure 1-2.

Modifications to allow for the construction of the cyclist bridge over Muddy Creek next to West Botany Street (as described in the project REF), including:

- Moving the project boundary about 40 metres north to provide the space required for construction of the cyclist bridge
- Removal and reinstatement of the boundary fencing
- De-energising overhead powerlines during the lifting and placing of the bridge deck structure (up to two days)
- Relocating a private power pole away from the modified construction boundary, to allow for the safe construction and operation of the cyclist bridge. The private power pole would be reinstated following the completion of the construction of the cyclist bridge

3.1.2 Brighton Memorial Fields, Brighton-Le-Sands

Modification of project boundary

The project boundary would be modified to include Sybil Lane, to the south and west of the project site.

This project boundary modification is required to accommodate the demolition and make-good works at the southern end of the existing tennis court on Sybil Lane that were described in the project REF. This project boundary adjustment would also allow for a new utility connection to be made to the existing water main in Sybil Lane, as described below.

The project boundary would also be modified to accommodate the construction of the stormwater drainage line and outlet. This boundary modification would comprise a corridor between 10 and 15 metres wide that travels about 40 metres to the west of Brighton Memorial Fields before turning and continuing about 10 metres to the north.

Connection to Sydney Water watermain in Sybil Lane

A new connection to the Sydney Water watermain in Sybil Lane would be constructed. This would provide potable water to the amenity buildings and toilet block that will be delivered as part of the project. The new pipe to the watermain connection point would be about four metres in length from the approved project boundary, and would be installed underground using an open trench method. This is discussed in more detail in section 3.2.1.

The existing water main connection at Brighton Memorial Fields would be retired, capped and left in place. No demolition or removal of the retired water connection pipe is proposed.

Road markings within Sybil Lane

'Piano key' road markings would be repainted on Sybil Lane, to delineate two existing speed humps. The location of these piano key road markings are shown on Figure 1-3.

Piano key road markings are a painted series of alternating length stripes, placed in pairs on each side of a speed hump (example provided in Figure 3-1). Piano key road markings are used to increase the visibility speed humps and high pedestrian traffic zones. These road markings improve road safety by providing a visual reinforcement for motorists to slow down on approach to the speed hump.



Figure 3-1 Example of piano keys road markings (Source: safetyfirstlinemarking.com.au)

Site offices

Site offices for the project would be established at 65, 67 and 69 O'Neill Street. The former residential properties are currently owned and managed by TfNSW and consist of three vacant houses.

To make the former residential properties suitable as a safe and functional workspace, a number of minor internal and external alterations would be required. These alterations would include:

- Minor internal works to upgrade the communication and power network within each building. This would include the installation of cabling and associated wall sockets

- Minor internal cosmetic renovations which may include painting of internal walls, carpet cleaning and minor repairs or appliance replacements as required
- Establishment of a small paved area in the front or rear yard area of each property to provide parking spaces for workers (light vehicles) as follows:
 - 65 O'Neill Street – 6 spaces
 - 67 O'Neill Street – 3 spaces
 - 69 O'Neill Street – 6 spaces
- The small brick fences outside 65, 67 and 69 O'Neill Street would be removed to allow safe vehicle access to the property
- The gardens associated with each property would undergo maintenance and clean up. Minor trimming of vegetation would be undertaken at 67 and 69 O'Neill Street to tidy the properties and to provide a safe outdoor space for office workers. At 65 O'Neill Street, the vegetation between the house and the northern property boundary fence currently restricts access to the rear of the property. This vegetation would be removed to allow for light vehicle access to the rear of the property.

The site offices would be occupied by office and administrative support workers during the construction of the project. Two of the properties would be utilised by the construction contractor and their support staff. One of the properties would be utilised by TfNSW.

It is anticipated that each building would typically accommodate up to six office workers at a time. However, it is not expected that the office would be at full capacity at all times.

The majority of workers would park within the boundary of the property at which they are located, or within the designated construction site parking as per the approved REF. Should office workers would be required to utilise the existing street parking on O'Neill Street, it would be as a last resort, that is, only in the instance that no on-property parking is available.

The hours of operation of the site offices during the construction period would be consistent with the work hours outlined in the approved REF, and as described in section 3.2.2 of this report.

Construction of stormwater drainage line and outlet

As described in the project REF, the playing fields at the Brighton Memorial Fields site will contain cross/longitudinal falls and subsurface drainage consisting of slotted subsoil pipes according to the synthetic turf manufacturer's specifications. The project REF identified that stormwater conveyance from the site would be investigated further during detailed design.

A stormwater network consisting of pipes, junction pits and surface inlet pits would be installed around the boundary and through the centre of the site to convey collected stormwater from the facility.

The majority of stormwater would be conveyed to the existing stormwater network, however during heavy rain/flooding events, any stormwater overflow would be conveyed offsite. It is proposed that a new stormwater pipe and headwall outlet with scour protection would be constructed to convey stormwater to Scarborough Ponds.

The new stormwater pipe and headwall outlet with scour protection would be constructed from the north-west corner of the site. From here the pipe would extend about 40 metres to the west, before turning and continuing about five metres to the north. The stormwater pipe network at Brighton Memorial Fields would be installed underground using an open trench method. This is discussed in more detail in section 3.2.1.

The pipe would terminate at a headwall outlet with scour protection. The headwall outlet would comprise a stacked rock headwall about 1.5 metres high. The scour protection zone

would be about five metres long and 5.5 metres wide and would include anti-scour features such as planted sedges and rushes, rip-rap comprising large cobbles and coarse gravel, and geofabric.

3.2 Construction activities

3.2.1 Work methodology

Prior to commencement of construction works for the proposed modifications, nearby residents would be notified. Site establishment activities would be undertaken including:

- Using "Dial 1100 Before You Dig" all services in the vicinity of the works would be located, pegged-out and noted in the work plans prior to any excavation works
- Establishment of site fencing to secure the construction sites
- Any adjacent vegetation to the works that is to be retained would be clearly flagged or fenced off
- Erosion and sediment controls would be established where any ground disturbance is proposed.

Finalised methodologies for construction of each aspect of the proposal would be determined once a contractor has been engaged for the work. For the purposes of this assessment, indicative construction methodologies have been outlined in Table 3-1 for works that would take place at McCarthy Reserve/Ador Park Precinct and Table 3-2 for works that would take place at Brighton Memorial Fields.

Construction stockpiles, compound areas and site access would be provided within the construction boundary for each site, consistent with and as described in the project REF. The location of construction site access and compounds is shown on Figure 1-2 and Figure 1-3.

Table 3-1 Construction methodology at McCarthy Reserve/Ador Park Precinct

Project aspect	Proposed construction methodology
<p>Vegetation trimming and root zone protection on Bay Street</p>	<p>Two to three mature trees, located on Bay Street, would be trimmed as follows:</p> <ul style="list-style-type: none"> • Depending on the width of branches to be trimmed tools required may include hand tools such as handsaws, loppers and secateurs or power tools such as a pole saw or chainsaw. • Hard to reach branches would be trimmed using an elevated work platform (cherry picker, scissor lift or similar) • Trimming is anticipated to be limited to lower branches, to facilitate the egress of construction vehicles, plant and machinery • Removed vegetation would be mulched and re-used on site or disposed of appropriately at a green-waste facility. • Any trimming of trees would be carried out in accordance with <i>Australian Standard AS 4373-2007, Pruning of Amenity Trees and the NSW WorkCover Code of Practice for the Amenity Tree Industry</i> (1998) and would be undertaken by an appropriately qualified arborist. <p>Root zone protection devices would be installed over the root zone of any potentially impacted trees. This may take the form of the following (or similar) options:</p>

	<ul style="list-style-type: none"> • Laying of geotextile • Laying of gap graded aggregate • Laying of rumble boards or corduroy
Modifications to facilitate the construction of the cyclist bridge at Muddy Creek	<ul style="list-style-type: none"> • The project boundary would be modified about 40 metres north to provide the space required for construction of the cyclist bridge • Removal and reinstatement of the boundary fencing, this would involve: <ul style="list-style-type: none"> - Existing footings would be excavated, depending on the depth of the footings and the composition of the footings and ground conditions, this may be carried out using handheld shovels, jackhammer, or bobcat. - The fence would be removed, and the footings would be temporarily backfilled - Fence would be temporarily stored onsite in the designated construction compound - Following completion of works, footings would be re-established and the fence would be reinstated - Any disturbed areas would be reinstated. • Overhead powerlines would be de-energised for the lifting and placing of the bridge deck structure (up to two days) • A private power pole will be relocated to a safe distance away from the modified construction boundary for the cyclist bridge as follows: <ul style="list-style-type: none"> - De-energise power line and remove pole from current location - The private power pole would be reinstated following the completion of the construction of the cyclist bridge - Construct new pole footings. This would involve excavation to a depth of about 60 centimetres. Depending on ground conditions, this may be carried out using handheld shovels, jackhammer, or bobcat. Install pole in new location, set in footing with concrete, and complete electrical cabling - Any disturbed areas would be reinstated.

Table 3-2 Indicative construction methodology at Brighton Memorial Fields

Project aspect	Proposed construction methodology
Modification of project boundary	<p>The project boundary would be modified to include Sybil Lane and to include the extent of the proposed stormwater drainage line and scour protection, described in more detail below.</p> <p>This is an administrative change and no construction methodology would be applicable.</p>
Site offices at 65, 67 and 69 O'Neill Street, Brighton-Le-Sands for TfNSW and the Principal Contractor management and	<ul style="list-style-type: none"> • Installation of cabling and associated wall sockets for upgraded communication and power networks in each building, including: <ul style="list-style-type: none"> - Locate existing cabling in walls using a handheld cable detector and studs using a handheld electronic stud finder - Drill through wall to establish new power board locations

<p>administrative support activities</p>	<ul style="list-style-type: none"> - Where required, new cabling would be installed to provide adequate power outlets throughout the premise - Light switch and power outlet covers would be installed and any remaining holes in walls would be repatched. • Additional internal modifications may include painting, carpet cleaning, minor repairs and appliance replacements. • Removal of front brick fences and creation of a small paved area in the front or rear yard area of each property. This may include the following: <ul style="list-style-type: none"> - Demolition of brick fences using handheld tools and small machinery such as a bobcat - Minor grading of areas to be paved - Shoring would be erected, and concrete would be poured - Shoring would be removed once concrete has dried. • Minor trimming of vegetation at 67 and 69 O'Neill Street. At 65 O'Neill Street, the vegetation located on the northern property boundary, along the fence line would be removed. Removed vegetation would be mulched and re-used on site or disposed of appropriately at a green-waste facility. • Soft landscaping works may be carried out that may involve establishment of landscape borders, planting of vegetation, and mulching.
<p>Connection to Sydney Water watermain in Sybil Lane</p>	<p>The pipeline installation and connection to the existing Sydney Water main would be achieved using conventional open excavation (trenching) methodology. Installation of the new pipeline to the Sydney Water watermain connection point would involve:</p> <ul style="list-style-type: none"> • Notification of the residents in the vicinity of the project that may be impacted by the road closure or water connection interruptions • Appropriate safety signage, pedestrian and traffic diversions, and lighting installed the community and construction workers during construction • Where excavation of Sybil Lane is required, the Contractor would implement traffic control measures in accordance with Council and TfNSW requirements specified in the relevant Road Occupancy Permit • Locating the existing Sydney Water watermain and exposing the pipe using not destructive digging techniques such as vacuum excavation • Excavate trench for new pipe, stockpiling of spoil material on the upslope side of trenches • Shoring of trenches (depending upon trench depth) • Spreading of granular material such as sand or gravel along the bottom of the trench prior to laying • Laying new pipe • Disconnecting redundant mains • Plugging decommissioned main connection with concrete

	<ul style="list-style-type: none"> • Transferring all services to the newly installed infrastructure • Backfilling the trench with bedding material and excavated soil • Compacting trench fill material. <p>Following the installation of the new water mains, the pipes would be pressure tested with water and then chlorinated to ensure that they are clean and safe for use. Following satisfactory chlorination test results, the new main would be connected to the system.</p> <p>Open excavation dimensions would generally be between 1.1 to 1.5 metres in depth, with a trench width of about 0.7 metres to 1.5 metres.</p> <p>Following trenching, disturbed areas of Sybil Lane (including the road verge) would be returned to (as close as practicable) its pre-construction condition.</p> <p>It may be required to temporarily disconnect water supply to nearby residents. If this is required, residents would be notified in advance. Any disruption to water services would be very short term (typically less than one day).</p> <p>Access to private properties would be maintained throughout construction of the watermain connection.</p> <p>No requirement for dewatering is anticipated.</p>
<p>Road markings within Sybil Lane</p>	<p>Two sets of piano key road markings would be repainted on two existing speed humps in Sybil Lane. The scope of works would be as follows:</p> <ul style="list-style-type: none"> • Notification of the residents in the vicinity of the project that may be impacted by the road closure • The Contractor would implement traffic control measures in accordance with Council and TfNSW requirements specified in the relevant Road Occupancy Permit • Line marking carried out by hand and with the use of stencils • Clean up and disestablish work zone and traffic management.
<p>Stormwater drainage line and scour protection</p>	<p>It is anticipated that the stormwater drainage line (pipe) would be constructed using an open trenching method as follows:</p> <ul style="list-style-type: none"> • Excavate trench for new pipe, stockpiling of spoil material on the upslope side of trenches • Shoring of trenches (depending upon trench depth) • Spreading of granular material such as sand or gravel along the bottom of the trench prior to laying • Lay new pipe • Re-instate surface to existing condition • Remove any excess stockpiles, materials and equipment • Rehabilitate areas disturbed by the works (re-lay grass etc). • The headwall and scour protection would be constructed as follows: • Vegetation clearance would be required in the area in which the headwall and scour protection would be constructed

	<ul style="list-style-type: none"> • Excavate the headwall and scour protection area to a subgrade level • Stockpile excavated materials for re-use where possible • Prepare the subgrade surface, including bedding layer of geofabric • Install headwall • Backfill around headwall and remove any temporary supports • Install remaining scour protection elements including planting of sedges and rushes and installation of rip-rap • Re-instate surrounding surface to existing condition • Remove any excess stockpiles, materials and equipment • Rehabilitate areas disturbed by the works (re-lay grass etc). <p>Trenches are anticipated to be up to two metres wide and 1.5 metres deep. Trenching activities would generally require a 10 to 15 metre corridor for access for excavators and/or other machinery. To minimise the area required to construct the stormwater drainage line, the ground surface would be reinstated progressively along the alignment, following the completion of works in any one location. This would maximise the available space for access for excavators and other machinery.</p> <p>Stockpiles used for reinstatement during trenching activities would be located within the construction compound area, described in the project REF and shown on Figure 1-3.</p>
--	---

3.2.2 Construction hours and duration

Most works required for the proposal would be undertaken during standard construction hours as follows:

- 7:00 am to 6:00 pm Monday to Friday
- 8:00 am to 1:00 pm Saturdays
- No work on Sundays or public holidays.

Some out of hours works (OOHW) would be required, particularly for the water connection and road markings in Sybil Lane.

The vegetation trimming works and installation of root zone protections on Bay Street (classified as a State road) may require a road occupancy licence. It is therefore possible that this work may also be completed as OOHW.

Where OOHW works would be required, they would be carried out Sunday to Thursday from 9:00 pm until 5:00 am, as per the project REF. These works are anticipated to be minor in nature and of short duration.

3.2.3 Plant and equipment

The following provides an indicative list of plant and equipment which may be required for the construction of the modification:

- Dump/tipper trucks
- Excavators/loaders/graders
- Rolling equipment

- Watercarts
- Concrete truck/pumps/vibrators
- Electrical generator
- Mobile cranes
- Elevated works platform
- Hand tools
- Utility vehicles
- Milling and paving machine
- Saw cutters
- Jackhammers
- Chainsaw
- Mulcher
- Water pumps
- Light vehicles.

The plant and equipment list would be subject to change depending on the construction methodology adopted by the awarded contractor.

3.2.4 Earthworks

Earthworks would be required during construction for:

- Minor excavation to relocate the private power pole at McCarthy Reserve/Ador Park Precinct
- Minor grading at the proposed site offices at O'Neill Street
- New connection to the Sydney Water watermain in Sybil Lane, at the Brighton Memorial Fields
- Construction of stormwater drainage and scour protection at the Brighton Memorial Fields

Where possible, the earthworks would be balanced to minimise spoil removed from site or the need for material to be brought in.

It is anticipated that any specifically required fill materials (such as base for the installation of pipes) would be brought in from off-site.

Brighton Memorial Fields does not have a history of being filled with man-made material or contamination and it is unlikely that the works in this location would generate a large quantity of spoil.

Excavations at McCarthy Reserve/Ador Park Precinct have the potential to encounter man-made fill materials at the site. However, as ground disturbance as a result of the proposed modifications at this site would be limited to the relocation of a private power pole, the potential to encounter man-made fill materials would be minimal.

Issues associated with unexpected fill material, including potential contamination issues, have been assessed further in section 6.4.

3.2.5 Source and quantity of materials

Materials would be sourced from local suppliers where possible. Reuse of existing and recycled materials would be undertaken where practicable. The quantity of materials required would be calculated for the proposed modifications with the aim to minimise the potential to generate waste, and to be as consistent with the materials described in the project REF as far as practicable.

Waste management strategies will be implemented in accordance with the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) and by adopting the Resource Management Hierarchy principles (in order of priority) of avoidance, resource recovery and disposal. As detailed in the project REF, these principles will be included in the CEMP.

3.2.6 Traffic management and access

Traffic generated by construction activities would include light vehicles for construction workers (for example utilities, cars and vans), as well as heavy vehicles for periodic delivery and removal of materials and transport of construction plant and equipment. Vehicle types and sizes would vary depending on the required use but would typically include medium and large rigid vehicles and articulated vehicles for import or removal of materials, plant and machinery.

As described in the project REF, heavy and light vehicle construction traffic for McCarthy Reserve would access the site via Bay Street, in the south western corner of the reserve. Construction traffic for the Ador Park Precinct would access the site via West Botany Street, and at times from Bay Street. The proposed modifications are not expected to result in any discernible increase to the 10 light vehicles and 20 heavy vehicles per day described in the project REF.

Construction traffic for Brighton Memorial Fields would access the site via the existing Sybil Lane access from O'Neill Street and exiting back out onto O'Neill Street. Construction traffic would not enter via Crawford Road. Temporary road closures are expected to occur as a result of:

- Vegetation trimming and installation of root zone protection on Bay Street
- Connection to Sydney Water watermain in Sybil Lane
- Painting road markings within Sybil Lane.

While these works would result in temporary road closures, traffic management measures would be established that provide appropriate detours where required, and that maintain access to nearby residences. Traffic and access impacts associated with the proposed modifications are assessed in section 6.6.

3.3 Ancillary facilities

As part of the proposed modification, site offices would be established at 65, 67 and 69 O'Neill Street. These site offices would be used for administrative office functions only. No stockpiling, equipment storage or laydown would occur at these properties.

As per the project REF, construction stockpiles, compound areas and site access will be provided within the construction boundary at each site. The location of construction site compounds is shown on Figure 1-2 and Figure 1-3. No new construction compounds for stockpiling, storage or laydown are proposed to be used as part of the proposed modifications beyond those discussed in the project REF.

3.4 Public utility adjustment

As part of the proposed modification, a connection to the Sydney Water watermain in Sybil; Lane would be established. Sydney Water owns and operates several pipelines which pass beneath both sites.

A private power pole and associated overhead wiring is located where works will be undertaken to install the cyclist bridge over Muddy Creek. To complete these works, it is proposed that the private power pole would be permanently relocated a short distance from its current location. This proposed relocation would require the temporary deenergising of the powerline. This interruption would be short term and temporary and no long term impacts to the operation of the private power pole are anticipated.

3.5 Property acquisition

The proposed modifications would occur within land which is owned and managed by Bayside Council and TfNSW. As the work would be carried out on behalf of the council, there is no requirement for property acquisition or lease agreements.

DRAFT

4 Statutory and planning framework

4.1 Environmental Planning and Assessment Act 1979

4.1.1 State Environmental Planning Policies

State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to facilitate the effective delivery of infrastructure across the State.

Clause 65 of ISEPP describes development permitted without consent for certain park and other public reserve purposes. This includes, under clause 65(3), development carried out by or on behalf of a council without consent on a public reserve under the control of or vested in the council:

(3) Any of the following development may be carried out by or on behalf of a council without consent on a public reserve under the control of or vested in the council:

(a) development for any of the following purposes:

(i) roads, pedestrian pathways, cycleways, single storey car parks, ticketing facilities, viewing platforms and pedestrian bridges,

(ii) recreation areas and recreation facilities (outdoor), but not including grandstands,

(iii) visitor information centres, information boards and other information facilities,

(iv) lighting, if light spill and artificial sky glow is minimised in accordance with the Lighting for Roads and Public Spaces Standard,

(v) landscaping, including landscape structures or features (such as art work) and irrigation systems,

(vi) amenities for people using the reserve, including toilets and change rooms,

(vii) food preparation and related facilities for people using the reserve,

(viii) maintenance depots,

(ix) portable lifeguard towers,

(b) environmental management works,

(c) demolition of buildings (other than any building that is, or is part of, a State or local heritage item or is within a heritage conservation area).

Development for the following purposes is relevant to the project:

- Recreation areas and recreation facilities (outdoor), but not including grandstands
- Amenities for people using the reserve, including toilets and change rooms
- Demolition of buildings (other than any building that is, or is part of, a State or local heritage item or is within a heritage conservation area).

Bayside Council is the determining authority for the proposed modifications. The proposed modifications can be carried out without development consent, subject to the consideration of environmental impacts under Division 5.1 of the *Environmental Planning and Assessment Act 1979* as the proposed modifications are:

- To support the project, which involves the development of recreation areas and recreation facilities (with associated amenities and demolition of existing buildings)

- To be carried out on public reserve land that is owned by Bayside Council
- To be carried out by Transport for NSW on behalf of Bayside Council.

The proposal is not located on land reserved under the *National Parks and Wildlife Act 1974* and does not affect land or development regulated by the State Environmental Planning Policy (State and Regional Development) 2011 or State Environmental Planning Policy (State Significant Precincts) 2005.

Part 2 of the ISEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. As Transport for NSW would be undertaking the work on behalf of Bayside Council, consultation under Part 2 of the ISEPP is not required. This is described further in Chapter 0.

State Environmental Planning Policy (Coastal Management) 2018

The State Environmental Planning Policy (Coastal Management) 2018 (Coastal Management SEPP) provides a strategic framework and objectives for managing coastal issues in NSW, with an aim to protect and enhance coastal environments, habitats and natural processes.

At Brighton Memorial Fields, the proposed modifications are partially located on land mapped as a 'Proximity Area' to mapped 'Coastal Wetlands' under the Coastal Management SEPP, as discussed in more detail in section 6.2 and shown on Figure 6-4. The McCarthy Reserve/Ador Park Precinct site is not located on land mapped under the Coastal Management SEPP.

As per Clause 8 (2) of the Coastal Management SEPP, development consent for the proposed modifications is not required under the Coastal Management SEPP as the work is permissible without consent under the ISEPP.

Clause 11 (1) of the Coastal Management SEPP, which requires a consent authority to be satisfied of certain matters before granting consent for development on land within Proximity Areas, does not apply as the work is permissible without consent under the ISEPP. Regardless, to provide a robust environmental assessment, potential impacts to nearby waterbodies (mapped as 'Coastal Wetlands') are assessed in section 6.3. The design of the proposed modifications has been developed to reduce environmental risks as far as practicable. That considered, with the implementation of safeguards described in section 6.2 and 6.3, it is not expected that the proposed modifications would result in significant impacts on Coastal Wetlands.

4.1.2 Local Environmental Plans

Rockdale Local Environmental Plan 2011

Bayside Council is an amalgamation of the former Botany Bay and Rockdale City Councils. As the proposed modifications would be carried out within the former Rockdale City LGA, the Rockdale Local Environmental Plan 2011 is the relevant LEP.

Under the Rockdale LEP 2011, the proposed modifications at McCarthy Reserve/Ador Park Precinct would be located within areas zoned as RE1 Public Recreation. The proposed modifications at Brighton Memorial Park would be located within areas zoned as RE1 Public Recreation, as well as SP2 Classified Road (the stormwater pipe and headwall outlet, and the site offices on O'Neill Street), and R2 Low Density Residential (piano key road markings and Sydney Water watermain connection).

Details of the objectives of these land use zone and a discussion of the proposal's consistency with these objectives is included in Table 4-1.

Table 4-1 Rockdale LEP 2011 assessment of objectives

Landuse classification	Objective	How proposal meets objective
RE1 Public Recreation	<ul style="list-style-type: none"> • To enable land to be used for public open space or recreational purposes • To provide a range of recreational settings and activities and compatible land uses • To protect and enhance the natural environment for recreational purposes 	<ul style="list-style-type: none"> • The proposed modifications would support the project to provide improved recreational facilities • The proposed modifications would support the project in the delivery of multi-use playing fields which would providing for a range of activities • The safeguards and management measures outlined in Chapter 7 will protect and enhance minimise the potential impacts of the proposed modifications on the natural environment.
SP2 Classified Road	<ul style="list-style-type: none"> • To provide for infrastructure and related uses • To prevent development that is not compatible with or that may detract from the provision of infrastructure. 	<p>The M6 Stage 1 project will construct a motorway between the New M5 at Arncliffe and President Avenue at Kogarah. The construction of the M6 Stage 1 would result in impacts to recreation facilities. To mitigate the temporary unavailability of these facilities, the project will be delivered. The proposed modifications would support the project to provide improved recreational facilities. As the proposed modifications would support the delivery of the M6 Stage 1 project, they would be consistent with the objectives for SP2 Classified Road.</p>
R2 Low Density Residential	<ul style="list-style-type: none"> • To provide for the housing needs of the community within a low density residential environment. • To enable other land uses that provide facilities or services to meet the day to day needs of residents. • To ensure that land uses are carried out in a context and setting that minimises any impact on the 	<p>The proposed modifications that would be carried out within areas zones R2 Low density Residential would include the repainting of piano key markings on the existing speed humps in Sybil Lane, and the establishment of a water connection to the existing Sydney Water watermain in Sybil Lane. These works would be short term and temporary in nature and any disturbed areas would be reinstated following</p>

	character and amenity of the area.	the completion of construction. As such, the proposed modifications would not result in any long term conflicts with the objectives for R2 Low Density Residential.
--	------------------------------------	---

4.2 Other relevant NSW legislation

4.2.1 Biodiversity Conservation Act 2016

The aim of the *Biodiversity Conservation Act 2016* (BC Act) is to conserve and improve biodiversity in NSW, including protecting against harm to threatened flora and fauna.

Section 6.2 provides an assessment of direct and indirect impacts to threatened species listed under the BC Act. The assessment found that the proposed modifications are not expected to significantly impact threatened species or ecological communities or their habitats. Therefore, the preparation of a Biodiversity Development Assessment Report (BDAR) is not required. Nevertheless, environmental safeguards to manage and minimise potential biodiversity impacts are outlined in section 7.2.

4.2.2 Heritage Act 1977

The *Heritage Act 1977* provides for the protection and conservation of non-Aboriginal cultural heritage items (such as buildings, works, relics and other places of historic, cultural, social, archaeological, architectural, natural and aesthetic significance) both of local and state heritage significance in NSW.

There are no listed State heritage items located within 200 metres of McCarthy Reserve/Ador Park Precinct or the Brighton Memorial Fields.

Brighton Memorial Fields are listed on the NSW War Memorial Register, which is a database of war memorials in New South Wales. The Register is non-statutory and is hosted and maintained by the NSW Office for Veterans Affairs and the State Library of New South Wales.

Patmore Swamp, located about 90 metres southwest of the proposed site offices on O'Neill Street, is listed as a State significant heritage item on the Rockdale LEP, however, it is not listed under the NSW Heritage Act. As discussed in more detail in section 6.6 no impacts to this heritage item, or any other Rockdale LEP listed heritage items are anticipated as a result of the proposed modifications.

4.2.3 Water Management Act 2000

The aim of the *Water Management Act 2000* is to provide for the sustainable and integrated management of the water sources of NSW. Transport for NSW, a state-owned body, is exempt from requiring a Controlled Activity Approval as per Schedule 4 of the Water Management (General) Regulation 2018 providing:

- a) the activity does not cause any change in the course of the river, and*
- b) the body, after considering the environmental impact of the activity in accordance with section 5.5 of the Environmental Planning and Assessment Act 1979 (as if the body were the determining authority under that section), is satisfied that the activity is not likely to significantly affect the environment.*

The proposed modifications would not cause any change in the course of Muddy Creek at McCarthy Reserve/Ador Park Precinct. In addition, with the implementation of standard

mitigation measures outlined in the project REF and Chapter 7, construction works would be unlikely to result in significant surface water impacts to Muddy Creek. Therefore, Transport for NSW are exempt from requiring a Controlled Activity Approval.

As per good practice, design of infrastructure and construction works on waterfront land at Muddy Creek has been undertaken in accordance with the Controlled Activities on Waterfront Land guidelines (DPI 2012).

4.3 Commonwealth legislation

4.3.1 Environment Protection and Biodiversity Conservation Act 1999

Under the EPBC Act a referral is required to the Australian Government for proposed actions that have the potential to significantly impact on matters of National environmental significance or the environment of Commonwealth land. This is considered further in Appendix A and potential impacts are assessed in section 6.2. Chapter 7 describes the safeguards and management measures to be applied.

4.4 Confirmation of statutory position

The proposed modifications are categorised as development for the purpose of recreation areas and recreation facilities (including associated amenities and demolition works) and the work is being carried out by Transport for NSW on behalf of another public authority i.e. Bayside Council. The proposed modifications are therefore permissible without consent. The proposed modifications are not State significant infrastructure or State significant development. The proposed modifications can therefore be assessed under Division 5.1 of the EP&A Act. Bayside Council is the proponent and determining authority for the proposed modifications. This REF fulfils Bayside Council's obligation under section 5.5 of the EP&A Act including to examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the activity.

5 Consultation

This chapter discusses the stakeholder and community consultation undertaken to date for the project and describes planned future consultation activities for the proposed modifications.

5.1 Consultation strategy

TfNSW has adopted an 'inform and consult' engagement approach for the design and implementation of the community recreational facilities at McCarthy Reserve/Ador Park Precinct which comprises the following goals:

- 'Inform' the community and other stakeholders about project impacts to the playing fields and facilities at Rockdale Bicentennial Park and the proposed upgrades to existing community facilities
- 'Consult' on the proposed community facilities to understand the needs of the community and users of the facilities that may be impacted by the construction of the recreational facilities

TfNSW (then Roads and Maritime Services) commenced engagement with the community and key stakeholders on the M6 Stage 1 project in 2017 with the establishment of a Technical Working Group, comprised of representatives of Bayside Council and TfNSW.

Since that time, TfNSW have continued to encourage community members and stakeholders to provide feedback, ask questions and make comments during direct stakeholder meetings as well as via email, mail or phone contact with TfNSW's project team. Consultation opportunities were available during the exhibition of the EIS and Preferred Infrastructure Report for the M6 Stage 1 project, and during the exhibition of the project REF. Details of community engagement activities that have been undertaken to date are detailed in the following sections.

Community and stakeholder meetings

As part of the Technical Working Group mentioned above, ongoing briefings and meetings have been held between Bayside Council and Transport for NSW since October 2017.

Part of the purpose of the Technical Working Group meetings is to consult and collaborate on key aspects of the design development and delivery of sporting fields and recreational facilities at Ador Park/McCarthy Reserve and Brighton Memorial Playing Fields and Bicentennial Park. These meetings are held on a fortnightly basis. Separate meetings to discuss specific design components with relevant Council staff are held as required.

A Stakeholder Liaison Group was established and includes representatives from Bayside Council, local sporting clubs, Brighton-Le-Sands Public School and a diverse range of community groups, including Rockdale Wetlands Preservation Society and St George Bike User Group. Meetings with the Stakeholder Liaison Group were held on 8 October 2018, 30 December 2018 and 17 December 2019 to determine the needs of the collective, and to provide opportunities for community group representatives to provide feedback on open spaces including the playing fields.

Consultation for the proposed modifications

A meeting with Bayside Council staff, Councillors and several residents of O'Neill Street and Crawford Road took place on Friday 19 June 2020. The use of the properties at 65, 67, and 69 O'Neill St as site offices for the delivery of works was raised at the meeting. The use of the properties was also referred to at a virtual street meeting held on Thursday 4 June 2020

In addition, a notification informing of the use of the properties and was distributed to neighbouring properties on Thursday 18 June 2020. This was supported with phone calls and emails to residents registered for updates. TfNSW has also consulted regularly with Bayside Council regarding the proposed modifications as part of the Technical Working Group meetings process.

5.2 Ongoing or future consultation

TfNSW are responsible for the detailed design of the project and the proposed modifications, and a construction contractor has been engaged to carry out construction. Both TfNSW and the construction contractor would be responsible for communication and engagement with the community and other key stakeholders during construction. The objectives of engagement activities supporting construction of the project are as follows:

- Keep the community informed about the project, including the proposed modifications. This includes matters related to construction activities, work programs and associated impacts
- Ensure there are avenues for the community to provide feedback on the project, including the proposed modifications, or to register complaints about impacts
- Provide a process to resolve complaints and issues raised.

The community and stakeholder engagement carried out during construction would include updates on the planned construction activities and program. Appropriate project representatives would respond to enquiries and concerns in a timely manner, while seeking to minimise potential impacts, where possible.

A Complaints Management System would be in place for the duration of construction of the proposed modifications. This system would include the recording of complaints and how the complaint has been addressed (within a Complaints Register). Complainants would be contacted within 24 hours to follow up and respond to their complaint. A number of different complaint mechanisms would be provided to cater to different needs and preferences.

This addendum REF will be made available on the TfNSW website (which will also be linked from the Bayside Council website), so that the community and stakeholders are informed about what is being proposed.

Other consultation activities during construction may include:

- Community updates, where required
- Scheduled Stakeholder Liaison Group meetings
- Emails to registered addresses
- Social media campaigns
- Door knocking residents around the sites to discuss the project
- Ongoing engagement with key stakeholders such as St George School, Brighton-Le-Sands Public School, PCYC St George and Brighton RSL Club.

6 Environmental assessment

This section of the addendum REF provides a detailed description of the potential environmental impacts associated with the construction and operation of the proposed modifications of the Recreation facilities at Rockdale and Brighton-Le-Sands project. All aspects of the environment potentially impacted upon by the proposed modifications are considered. This includes consideration of the factors specified in the guidelines *Roads and Related Facilities EIS Guideline* (DUAP, 1996) and *Is an EIS required?* (DUAP, 1999) as required under clause 228(1) of the Environmental Planning and Assessment Regulation 2000. The factors specified in clause 228(2) of the Environmental Planning and Assessment Regulation 2000 are also considered in Appendix B.

Site-specific safeguards and management measures are provided to ameliorate the identified potential impacts. These are summarised in Chapter 7.

6.1 Noise and Vibration

6.1.1 Methodology

A noise assessment was completed in accordance with the method described in the Roads and Maritimes Construction Noise and Vibration Guideline (CNVG) (Roads and Maritime, 2016) to assess the potential construction noise impacts as a result of the proposed modifications. The CNVG presents standard noise mitigation measures for construction works and additional mitigation measures which are triggered by certain exceedances of the noise management levels.

The proposed modifications are expected to be undertaken during standard construction hours. However, some limited out of hours works (no more than two consecutive nights at any given location) would be required for vegetation trimming on Bay Street, adjacent to McCarthy Reserve/Ador Park Precinct and utility/services connections and civil works in Sybil Lane, adjacent to Brighton Memorial Fields.

The site offices at O'Neill Street would be occupied by office and administrative support workers during the construction of the project. It is anticipated that each building would typically accommodate up to six office workers at a time. However, it is not expected that the office would be at full capacity at all times. The hours of operation of the site offices during the construction period would be consistent with the work hours outlined in the approved REF, and as described in section 3.4.2 of this report. The operation of the site offices at O'Neill Street may occasionally require office workers to be present out of hours. However, as this would be occasional, and would be limited to workers completing administrative and office based activities, this would not be considered to generate noise levels above the existing conditions and as such, has not been considered in further detail.

The assessment is based on 'reasonable' worst case construction scenarios and has been carried out using the Roads and Maritime Construction Noise Estimator Tool. This assessment methodology provides a simplified way to identify the cause of potential noise impacts and subsequent feasible and reasonable management and mitigation measures. The noise assessment takes into consideration the type of equipment being used, the character of the noise emissions, time of day, the location and noise sensitivity of the nearest receivers.

6.1.2 Existing environment

McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields are considered to be "suburban/urban" in character, as per the definition provided in the Roads and Maritimes Construction Noise and Vibration Guideline. Apart from recreational and sporting noise

sources, other significant noise sources may include arterial and sub-arterial roads such as West Botany Street, President Avenue and Bay Street. Noise at receivers located further away from these arterial/sub-arterial roads would be exposed to local traffic noise and general suburban noise sources. Other key noise sources include light industry south of Bay Street and overhead aircraft movements.

Potential sensitive noise receivers near to the sites include:

- Residential properties to the east of Ador Park Precinct on West Botany Street, to the west of McCarthy Reserve on Farr Street and Ador Avenue; and to the south on Bay Street
- St George PCYC to the north of McCarthy Reserve
- Residential properties to the east of Brighton Memorial Fields on Crawford Road and to the south on O'Neill Street
- Brighton-Le-Sands Public School to the north of Brighton Memorial Fields
- Active recreational facilities to the west of Brighton Memorial Fields at Rockdale Bicentennial Park and Linden Sports Centre
- Residential properties to the east of Brighton Memorial Fields on Sybil Lane as well as to the south at O'Neill Street and President Avenue

Ambient noise levels were measured previously as part of the noise and vibration assessment for the M6 Stage 1 project EIS. These noise levels are presented in Table 6-1.

Table 6-1: Ambient noise measurements

Noise logger	Location	RBL ¹ , dB(A)			Ambient noise level dB(A)		
		Day (7:00 am to 6:00 pm) LA90,15 min	Evening (6:00 pm to 10:00 pm) LA90,15 min	Night (10:00 pm to 7:00 am) LA90,15 min	Day (7:00 am to 6:00 pm) LAeq,15 hour	Evening (6:00 pm to 10:00 pm) LAeq,4 hour	Night (10:00 pm to 7:00 am) LAeq,9 hour
NL05	CA Redmond Field (Rear of 103 Bruce Street, Brighton-Le-Sands)	39	39	34	56	49	45
NL09	53 Crawford Road, Brighton-Le-Sands	38	38	32	52	51	47

6.1.3 Potential impacts

Construction - noise

The construction at both McCarthy Reserve/Ador Park Precinct and the Brighton Memorial Fields is anticipated to take place during both standard construction hours and as OOHW. However, works would be scheduled such that the greatest noise generating activities would take place prior to 11pm.

Construction noise from the works would require the use of noise intensive equipment at times, which would be located relatively close to sensitive receivers. At any sensitive receiver location, the potential impacts would vary over the duration of the construction of

the proposed modifications, depending upon factors such as the distance to the equipment, time of day, intensity and character of the construction noise.

Indicative construction noise levels for noise generating activities that would be undertaken as OOHW were calculated using Roads and Maritime's Construction Noise Estimator. The following assumptions were made in the Construction Noise Estimator:

- Noise Area Category: R1 General Residential, based on the Rating Background Levels (RBLs) presented in Table 6-1, or suburban/urban” as per the definition provided in the Roads and Maritimes Construction Noise and Vibration Guideline
- No line of sight due to boundary fences and/or buildings
- Noisiest works during standard hours would be bulk earthworks
- Noisiest works during out of hours are assumed to be any concrete sawing or jackhammering associated with utility/service adjustments.
- Based on the construction noise assessment completed using the Construction Noise Estimator, the recommended residential receiver catchment distances for additional mitigation measures are presented in Chapter 7

Table 6-2 Catchment distances for residential receivers

Highest noise generating construction activity	Catchment distance for notification of works	Catchment distance for specific notification of works
Standard hours works - Bulk earthworks	115 metres	-
Out of hours works - Utility/service adjustments (concrete sawing or jackhammering)	540 metres	150 metres

Calculations have been completed for standard construction hours and for OOHW. For works during standard hours, it is likely that construction noise would be noticeable but not significantly intrusive within 115 metres of the works and moderately intrusive for receivers within 35 metres of the works. For OOHW, construction noise would be noticeable but not significantly intrusive within 360 metres of the works, moderately intrusive for 150 metres of the works and highly intrusive within 50 metres of the works. However, OOHW associated with the proposed modifications would be short term and temporary in nature. While construction noise would be noticeable but not significantly intrusive within 360 metres of the works

A number of management measures and safeguards were identified in the Project REF and would be implemented to reduce impacts to nearby sensitive receivers. These are detailed in section Chapter 7.

The CNVG presents standard noise mitigation measures that should be implemented for all construction projects with the potential to affect noise sensitive receivers. These standard mitigation measures are presented in Chapter 7 The CNVG also presents additional noise mitigation measures depending on the predicted construction noise levels and their 'intrusiveness' at sensitive receivers.

In addition to the above, it is anticipated that Brighton-Le-Sands Public School would be subject to increases in noise impacts during the construction of the stormwater pipeline and headwall outlet. For this reason, Brighton-Le-Sands Public School will be notified about the works. Where practical, the timing of these works should avoid any examination periods or other sensitive periods identified during consultation with the school, if deemed necessary.

6.1.4 Construction vibration noise impacts

No significant vibration intensive works are anticipated to occur within proximity of any sensitive receivers as part of the proposed modifications at McCarthy Reserve/Ador Park Precinct.

At Brighton Memorial Fields, vibration intensive works may include the use of drum rollers where the road surface would be reinstated within Sybil Lane following the completion of the new Sydney Water watermain connection. Typical minimum working distances for vibratory rollers are provided in Table 6-3. These minimum working distances are based upon the minimum working distances presented in the CNVG. Should these minimum working distances be maintained, no adverse vibrational impacts are predicted.

Vibration intensive works are not expected to be undertaken within the minimum working distances. If vibration intensive works within the minimum working distances are identified, alternative equipment would be identified and vibration monitoring would be implemented, if necessary. Further mitigation of vibration would not be required where the minimum working distances are adhered to.

Table 6-3: Recommended minimum working distances for vibration intensive plant

Plant	Rating/description	Minimum working distance (m)	
		Cosmetic damage	Human response
		Residential	
Vibratory roller	< 50 kN (Typically 1-2t)	5	15-20
	< 100 kN (Typically 2-4t)	6	20
	< 200 kN (Typically 4-6t)	12	40
	< 300 kN (Typically 7-13t)	15	100
	> 300 kN (Typically 13-18t)	20	100
	> 300 kN (> 18t)	25	100

6.1.5 Safeguards and management measures

As the potential noise and vibration impacts of the proposed modifications would be consistent with those outlined in the project REF, the safeguards and management measures provided in the project REF would adequately address the management of these impacts. No additional safeguards or management measures related to noise and vibration would be required for the proposed modifications.

6.2 Biodiversity

6.2.1 Methodology

Desktop review

This biodiversity assessment, while considering the potential impacts of the proposed modifications on the whole, has also applied a particular focus on the areas which have been determined most likely to experience direct effects of the proposed modifications. These have been identified as:

- Removal of vegetation in the location of the proposed stormwater drainage line and headwall outlet
- Removal of vegetation within 6 O'Neill Street, Brighton-Le-Sands
- Trimming of vegetation around the construction vehicle access driveway to McCarthy Reserve on Bay Street, Rockdale.

A desktop review was undertaken to determine if targeted surveys for specific species were required. Additionally, these searches helped to identify threatened biota known or likely to occur within proximity to the proposed modifications. The following databases and resources were reviewed:

- NSW DPIE BioNet Database within a 10x10 kilometre area centred on the proposed modifications (DPIE 2020a)
- Protected Matters Report that documents all Matters of National Environmental Significance (MNES) within a five kilometre radius of the proposed modifications. MNES include threatened species, communities and migratory species which are listed under the EPBC Act (Department of Agriculture, Water and the Environment (DAWE) 2020)
- NSW Flora Online Search – Rare or Threatened Australian Plants (ROTAP) species (RBGDT 2020)
- NSW DPIE, Vegetation Types Database and Threatened Species Profile Database (DPIE 2020b)
- NSW Department of Primary Industries – Fisheries. Profiles for species, populations and ecological communities (DPI 2020a)
- NSW Department of Primary Industries, WeedWise Priority Weeds List (DPI 2020b)
- OEH, Threatened Species Survey and Assessment: Guidelines for developments and activities (working draft) (DEC 2004).

NSW Department of Primary Industries database for aquatic Threatened Ecological Communities (TECs): <http://www.dpi.nsw.gov.au/fisheries/species-protection/conservation/what-current>.

Field survey

In addition to the desktop review a field survey was undertaken by a qualified and experienced ecologist. The survey took in both areas in which the proposed modifications would take place and their immediate surrounds (the biodiversity study area). The survey included assessment of vegetation present, as well as opportunistic fauna sightings. No detailed fauna survey was undertaken (such as trapping or bat detection), though an assessment of fauna habitat present within the biodiversity study area was carried out.

The field survey was undertaken over approximately three hours, spent within and around the biodiversity study area. No aquatic survey was undertaken as no major rivers, streams, creeks or drainage structures are likely to be affected by the proposed modifications.

Limitations

Limitations to the flora and fauna surveys, which may affect survey results, include:

- The survey focused on particular areas where ecological risks were deemed to be greater, including areas of existing vegetation that are proposed to be removed or trimmed. Areas of greater sensitivity within the biodiversity study area were afforded

greater attention, such as locations with greater coverage of existing vegetation or areas that may be more susceptible to off-site impacts

- While a fauna habitat assessment was undertaken, this technique is not an adequate substitute for full fauna surveys. Fauna are capable of inhabiting sub-optimal habitat, and fragmentation, isolation or species density can all influence the presence and distribution of a particular species. Species likelihood of occurrence was informed by considering habitat characteristics and opportunistic sightings
- Detailed Biodiversity Assessment Methodology (BAM) plot assessments were not undertaken, though relevant vegetation was inspected throughout the biodiversity study area
- No aquatic survey was required or undertaken.

6.2.2 Existing environment

Vegetation

Three flora species listed under the BC Act have been recorded in or have potential habitat within five kilometres of the proposed modifications. These species are also listed as threatened under the EPBC Act and include:

- *Acacia pubescens**
- *Acacia terminalis subsp. terminalis**
- *Syzygium paniculatum**

A review of the NSW DPIE BioNet Database identified one previously recorded individual threatened flora species within 200 metres of the proposed modifications. This consists of a Magenta Lilly Pilly (*Syzygium paniculatum*). Targeted field surveys were undertaken for this species in addition to the remainder of those listed above, though none were identified within the area in which the proposed modifications would take place.

A search of the NSW BioNet database and EPBC Act Protected Matters Search Tool (PMST) identified 27 threatened ecological communities (TECs) with potential to occur within five kilometres of the proposed modifications. A review of existing vegetation mapping narrowed this down to just one TEC adjacent to the proposed modifications: Swamp Oak floodplain swamp forest, Sydney Basin Bioregion and South East Corner Bioregions. This vegetation community is mapped as being behind Brighton-Le-Sands Public School, near to the proposed stormwater drainage line and headwall outlet. This patch was inspected and found to be highly degraded. It was confirmed during the field survey that this TEC was both outside the extent of the proposed works at Brighton Memorial Fields, as well as being unlikely to constitute this TEC due to its poor condition. On this basis, the biodiversity study area was deemed to have no TECs present.

Works at Brighton Memorial Fields (including proposed vegetation removal) to construct the headwall outlet and associated scour protection would be undertaken in an area almost exclusively infested with Lantana (*Lantana camara*) and exotic grasses, as shown on Figure 6-1.

The field survey confirmed that vegetation proposed to be removed at 63 O'Neill Street is largely dominated by planted exotic landscaping species, as shown on Figure 6-2. This includes orange jasmine (*Murraya paniculatum*), banana palm, two species of bamboo, bird of paradise, and yucca. Several environmental weeds are also present in this location and appear to have self-generated, including wild tobacco (*Solanum mauritianum*), castor oil plant (*Ricinus communis*), morning glory (*Ipomoea indica*), small leaved privet (*Ligustrum sinense*) and cobbler's pegs (*Bidens pilosa*).

At the location of the proposed vegetation trimming at Bay Street, vegetation comprises mature planted native species including Casuarinas (*Casuarina glauca*), Spotted Gum (*Corymbia maculata*) and mowed grass, as shown on Figure 6-3.



Figure 6-1 Location of proposed headwall outlet at Brighton Memorial Fields



Figure 6-2 Vegetation at 65 O'Neill Street, Brighton-Le-Sands



Figure 6-3 *Casuarina glauca* and *Corymbia maculata* at Bay Street entrance

Fauna habitat

The nature of terrestrial fauna habitat throughout the biodiversity study area, and the surrounding region varies substantially, due to the region being characterised by historic industrial activities and residential development. Fauna habitat value within these areas largely depends on the density of development and the nature of landscape planting.

Potential habitat at McCarthy Park, at the location of the proposed vegetation trimming at Bay Street was minimal, with the site having no mid-storey vegetation and a ground layer comprised of mowed grass. No hollows were noted in any of the mature Casuarina or other trees present.

At Brighton Memorial Fields habitat is limited to the dense thicket of Lantana identified at the location of the proposed headwall outlet and scour protection, as well as surrounding mature trees not containing hollows. Potential habitat at 65 O'Neill Street is limited, being comprised nearly exclusively of non-native landscaping vegetation and environmental weeds. It is noted that this vegetation may provide some foraging value for some species, particularly urban adapted native species such as brush-tailed possums, certain honeyeaters (such as the noisy miner) and flying foxes. This vegetation may provide some degree of structural value for roosting as well.

None of the land in or around the proposed modifications is listed as critical habitat for any species.

Fauna

A review of the NSW DPIE BioNet Database did not identify any individual threatened fauna species within 200 metres of the proposed modifications at McCarthy Reserve. One sighting of a Grey-headed Flying Fox (*Pteropus poliocephalus*) has been recorded at Brighton Memorial Fields, about 20 metres east of the modified project boundary for the proposed modifications, as shown on Figure 6-4.

Opportunistic field surveys for fauna were also undertaken that did not identify any threatened fauna species. The field survey did however identify potential suitable potential habitat for the Grey-headed Flying Fox – available as cultivated gardens and fruit crops at and near the Brighton Memorial Fields and the proposed site offices on O'Neill Street in particular.

Wildlife connectivity corridors

The proposed modifications are in an area largely surrounded by residential development and public open space. As such wildlife habitat connectivity is fragmented, with substantial areas of land that is completely, or nearly completely, absent of remnant vegetation. Patches of better quality native vegetation are still present on some reserved land in the broader area, with the remainder of native vegetation stands are generally limited to waterways and other public land.

In the immediate vicinity of the proposed modifications, wildlife connectivity is largely facilitated by landscaping vegetation and environmental weeds. The Lantana thicket behind Brighton-Le-Sands Public School is likely to provide a small degree of habitat connectivity longitudinally along the waterway, mainly for small insectivorous birds. Wildlife connectivity potential at McCarthy Reserve/Ador Park Precinct and Brighton Memorial is low.

Priority weeds

Priority weeds are plants classified under the *Biosecurity Act 2015* as presenting a biosecurity risk to the State or a particular region. Of those listed for the Bayside LGA, the following are either present or may have the potential to be encountered during construction of the proposed modifications:

- Bridal veil creeper (*Asparagus declinatus*) - must not be imported into the State or sold
- Green cestrum (*Cestrum parqui*) - plant should not be bought, sold, grown, carried or released into the environment.
- Ground asparagus (*Asparagus aethiopicus*) - must not be imported into the State or sold
- Lantana (*Lantana camara*) - must not be imported into the State or sold
- Madeira vine (*Anredera cordifolia*) - must not be imported into the State or sold
- Pampas grass (*Cortaderia species*) - plant should not be bought, sold, grown, carried or released into the environment

EPBC Matters of National Environmental Significance

The PMST identified the following TECs as potentially occurring within the proposal area:

- Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion
- Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland
- Coastal Upland Swamps in the Sydney Basin Bioregion
- Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion
- Shale Sandstone Transition Forest of the Sydney Basin Bioregion
- Subtropical and Temperate Coastal Saltmarsh
- Turpentine-Ironbark Forest of the Sydney Basin Bioregion
- Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion
- Western Sydney Dry Rainforest and Moist Woodland on Shale.

Observations made during surveys carried out for the assessment confirmed that none of these communities were present within the biodiversity study area. As such, no further assessment is required.

No threatened or migratory species listed under the EPBC Act were recorded during the surveys. Some threatened and/or migratory species may utilise habitat within the study area for foraging or movement on occasion, however, it is noted that the quality of habitat in the broader locality is very low.

State Environmental Planning Policy (Coastal Management) 2018

At Brighton Memorial Fields, the proposed modifications associated with the stormwater drainage line and headwall outlet are located on land mapped as a 'Proximity Area' but would not be within the area mapped 'Coastal Wetlands' under the Coastal Management SEPP, as shown on Figure 6-4. The McCarthy Reserve/Ador Park Precinct site is not located on land mapped under the Coastal Management SEPP.

Clause 11 (1) of the Coastal Management SEPP, which requires a consent authority to be satisfied of certain matters before granting consent for development on land within Proximity Areas, does not apply as the work is permissible without consent under the ISEPP. Despite this, the implications of this policy have been considered as if it did apply. The results of the field survey determined that the construction of the stormwater drainage line and headwall outlet would not result in the removal of any wetland vegetation. Vegetation removal in this location is expected to be limited to the weed species *Lantana camara*.

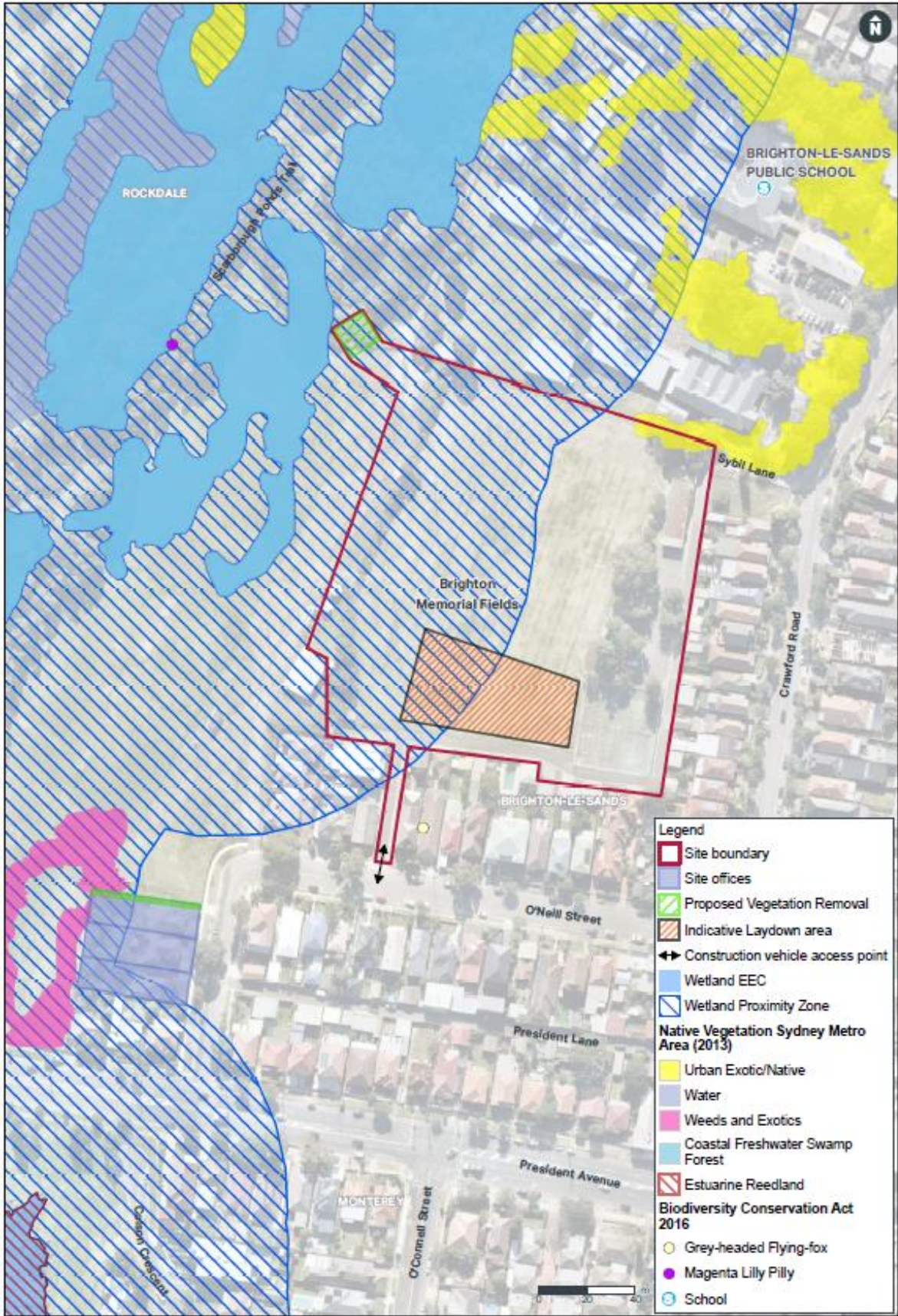


Figure 6-4 Biodiversity features at Brighton Memorial Fields

6.2.3 Potential impacts

The potential impacts associated with the proposed modifications consider:

- Direct and indirect impacts to biodiversity
- The scale (local and regional), timing, frequency and duration of activities that may result in impacts during construction and operational phases of the proposed modification
- The significance of the impact.

Construction

Vegetation

Construction of the proposed modifications would require the removal of a small amount of vegetation. Based on field surveys, the majority of this vegetation is comprised of landscaping vegetation within private properties and public open space, with some naturally propagated species. Within this, the affected vegetation is largely comprised of environmental weeds.

The total area of all vegetation to be removed for the construction of the proposed modifications has been estimated conservatively as about 280 square metres. Most of this vegetation exists within the yard of 65 O'Neill Street and the proposed location of the stormwater outlet headwall. It is noted that this represents a worst-case scenario, and that some of this vegetation would not ultimately require removal. This vegetation includes species ranging from juvenile through to mature and is mostly exotic in origin. One native species Orange jasmine (*Murraya paniculatum*) was identified at the 65 O'Neill Street. Orange jasmine is a common garden plant native to Australia (far north Queensland), as well as south-east Asia, China, India, Bangladesh, Nepal, New Caledonia and Fiji. However, in NSW the plant is regarded as a weed species and is listed on the NSW Department of Primary Industries NSW Weed Wise data base as an environmental weed.

The removal of this vegetation would comprise a minor ecological impact based on the small degree of overall coverage and the abundance of better quality vegetation in the surrounding area.

Fauna and fauna habitat

The proposed modifications would involve the removal of mature and juvenile vegetation, primarily comprised of exotic landscaping species and environmental weeds. In general, this vegetation lacks a clear groundcover midstorey-canopy structure, though some elements of this structure are present in places. For example, the stand of lantana at the proposed headwall outlet provides a good ground layer, though other layers (such as canopy) are largely absent. Around all three locations where vegetation removal or trimming is proposed, groundcovers are generally absent or limited to mowed exotic grasses.

The biodiversity study area is a typical example of an ecologically impoverished urban environment. Areas of fauna habitat, mostly within residential gardens and public parks, are largely comprised of non-native vegetation or other native vegetation not naturally occurring in the Sydney Basin. Whilst there is a greater proportion of flowering plants in these areas, the nature of the vegetation assemblage results in a poor replacement for the habitat provided by native vegetation prior to urbanisation. The removal of this vegetation would result in a loss of some habitat, though it is noted that there is abundant similar habitat throughout the biodiversity study area and therefore the overall impact on common urban native species such as noisy mynahs, Australian magpies and brush-tailed possums, would be negligible.

The construction of the proposed modifications could also result in the potential for some resident native fauna to temporarily avoid areas within and directly adjacent to the proposed modifications due to the presence of people, vehicles, noise and light. Given the generally high degree of existing public use associated with the operation of the sporting fields, the potential for further additional disruption to native species due to construction activities would be minimal. Despite this, measures should be implemented to reduce the potential for adversely impacts upon native fauna, as outlined in Chapter 7.

The use of machinery and other equipment during construction can increase the risk of accidental spills of fuels, lubricants or other substances which can affect the health of terrestrial and aquatic ecosystems, particularly as the proposed modifications at Brighton Memorial Fields would be located within a SEPP Coastal Management Zone/Coastal Wetland Proximity Zone. Construction machinery and vehicles can also disperse weeds throughout the proposed modification area and can transport aquatic weeds if used in wet areas prior to entering the site. These impacts can be managed through the implementation of sufficient safeguards detailed in Chapter 7 and are therefore considered to be minor.

Provided that the prescribed management measures are adequately implemented, it is considered the proposed modifications would not result in a significant impact on terrestrial or aquatic fauna or habitats.

Wildlife connectivity corridors

The proposed modifications would potentially result in the clearing of about 280 square metres of mainly exotic landscaping vegetation and environmental weeds. Whilst some of this vegetation may facilitate some degree of local habitat connectivity, this is likely to be mostly to the benefit of urban-adapted species. These species are typically highly mobile and adaptable and as such the removal of vegetation within the proposal area is not likely to substantially disrupt their movement or dispersal.

On this basis and considering the extensive coverage of open space and generally low density residential development surrounding the proposed modification, the loss of the subject vegetation is not likely to fragment habitat or disrupt wildlife connectivity.

Overall the proposed modifications would result in minimal ecological impact in terms of wildlife connectivity and habitat fragmentation.

Injury and mortality

During construction, the proposed modifications would involve the movement of plant and machinery. Given the generally low value of native fauna habitat in the proposed modification area, the highly urban-adapted suite of species likely to be present, and safeguards and management measures to be implemented, the potential for injury and mortality is considered minimal.

Priority weeds and pests

The increase in construction vehicle movements associated with the proposed modifications during construction would have the potential to facilitate the spread of weeds. This is of a particular risk due to the high incidence of environmental weeds identified within the biodiversity study area.

Suitable management measures have been identified in the Project REF safeguards and management measures for implementation during vegetation clearing activities to prevent the potential spread of weeds further afield during disposal.

By implementing these measures, the overall weed impact associated with construction is expected to be minimal.

The biodiversity study area is likely to be utilised by a range of vertebrate pest species. Impacts from pest species are likely to include ongoing grazing and predation on small to medium native fauna. The proposed modifications are unlikely to alter the occurrence of pest species in and around the site, either positively or negatively, due to the localised nature of the works. As such the overall impact is considered to be neutral with respect to the existing situation.

Key threatening processes

BC Act

The following key threatening processes (KTP) listed under the BC Act are considered relevant to the proposed modification:

- *Invasion and establishment of exotic vines and scramblers*
- *Invasion, establishment and spread of Lantana (*Lantana camara*).*

The proposed modifications would have the potential to aid the spread of weeds, mostly through the movement of people, plant and equipment, as well as through runoff during construction and operation. As noted previously, parts of the biodiversity study area are already infested with exotic vines (morning glory) and lantana. This KTP would be managed through the implementation of a weed management plan and other relevant measures such as control of sediment and erosion.

EPBC Act

Relevant key threatening processes listed under the EPBC Act are:

- *Novel biota and their impact on biodiversity.*

The proposed modifications would have the potential to aid the spread of novel biota (weeds and pests) through the movement of people, plant and equipment, as well as through runoff from the area during construction and operations. This KTP would be managed through the implementation of a weed management plan and other relevant measures such as control of sediment and erosion.

Operation

During operation of the proposed modifications, it is not anticipated that there would be any impacts to the surrounding biodiversity. Additionally, as discussed in section 6.3.2 no downstream water quality impacts are anticipated during the operation of the proposed modifications. As such, impacts to aquatic ecosystems, including wetlands are not anticipated during operation of the proposed modifications.

Conclusion on significance of impacts

As described above, the proposed modifications are not likely to significantly impact threatened species, populations or ecological communities or their habitats, within the meaning of the BC Act and therefore a Species Impact Statement is not required.

The proposed modifications are not likely to significantly impact threatened species, populations, ecological communities or migratory species, within the meaning of the EPBC Act.

6.2.4 Safeguards and management measures

As the potential biodiversity impacts of the proposed modifications would be not exceed those outlined in the project REF, the safeguards and management measures provided in the project REF would adequately address the management of these impacts. No additional

safeguards or management measures related to biodiversity would be required for the proposed modifications.

6.3 Surface water and flooding

A desktop review of existing information was undertaken to inform the qualitative assessment of surface water and flooding impacts from the proposed modifications, with a particular focus applied to the proposed stormwater drainage line and headwall outlet at Brighton Memorial Fields.

The method of assessment for surface water quality included:

- A desktop review and analysis of existing information to determine potential receptors, characterise the existing environment and identify potential issues
- Assessment of potential construction and operational impacts related to surface water, in consideration of the Bayside Council Water Management Strategy 2019 and Botany Bay & Catchment Water Quality Improvement Plan water quality targets, 2011.
- Identifying appropriate measures to mitigate potential impacts.

The method of assessment for flooding included:

- A desktop review of available data and existing flood studies/models, including:
 - Cardno (2020). Design Report 100% (IFT) M6 Stage 1 – Community Recreational Facilities. Prepared for Transport for New South Wales
 - AECOM (2019). Recreational facilities at Rockdale and Brighton-Le-Sands, Review of Environmental Factors. Prepared for Transport for New South Wales, November 2019
 - The flood model developed as part of Spring Street Drain, Muddy Creek and Scarborough Ponds Catchments Flood Study Review (BMT WBM, 2017) and used to inform the flooding assessment in the project REF was also adopted as a base for this assessment
- A broad qualitative assessment of the impact the proposed modifications to the stormwater system would have on flood behaviour and flood hazards
- Assessment of potential measures which are aimed at mitigating the risk of flooding on the proposed modifications and their impact on existing flood behaviour and flood hazards.

6.3.1 Existing environment

Surface water

McCarthy Reserve/Ador Park Precinct

McCarthy Reserve/Ador Park Precinct is within the Muddy Creek catchment which covers an area of about 615 hectares and includes the suburbs of Hurstville, Allawah, Carlton, Kogarah, Bexley, Rockdale, Brighton-Le-Sands and Kyeemagh.

Muddy Creek runs through the site in a north-easterly direction until it meets the Cooks River before ultimately flowing to Botany Bay. Muddy Creek in this location comprises a concrete lined channel owned and maintained by Sydney Water.

The existing stormwater infrastructure that currently provides drainage to McCarthy Reserve/Ador Park Precinct is described as follows:

- West Botany Street – road kerb inlet pits and pipes draining north to an outlet underneath the existing bridge into Muddy Creek
- Bay Street – road kerb inlet pits and pipes draining to an outlet underneath the existing bridge into Muddy Creek
- Ador Avenue – road kerb inlet pits and pipes draining east and crossing through the reserve to an outlet into Muddy Creek.

Brighton Memorial Fields

The Scarborough Ponds catchment comprises a series of smaller sub-catchments including Northern Scarborough Pond sub-catchment, Bicentennial Park Pond sub-catchment, and Southern Scarborough Pond sub-catchment.

Brighton Memorial Fields is within Bicentennial Park Pond sub-catchment. The Bicentennial Park Pond sub-catchment covers an area of around 400 hectares. The Bicentennial Park Pond (open water area) is around 200 metres west of proposed works at Brighton Memorial Fields and was formerly known as Patmore Swamp until 1988 when Rockdale Council (now Bayside Council) filled in the pond and associated wetland to construct an open grassed field with a carpark on the western side and playing fields on the eastern side of the watercourse. Kings Wetland is located to the west of Brighton Memorial Fields and is within the Bicentennial Park Ponds sub-catchment.

Given this development history, Bicentennial Park Pond can be described as a highly modified, freshwater system, around 1.2 to 2.0 metres deep (Storm Consulting 2006). At present, the remaining pond functions as a stormwater detention system, habitat for birds and other species and as an asset for passive recreation (Equatica 2011). The Pond is situated within a sandy aquifer and water levels are likely to be consistent with local groundwater levels during dry periods which are between 1.5 metre AHD to 2 metres AHD in proximity to this waterbody.

Former landfills occur to the east and west of the Rockdale Bicentennial Park Pond, which would have the potential to result in groundwater of high nitrogen content leaching into the pond (Equatica 2011).

The Rockdale Bicentennial Park Pond is separated from the adjacent Northern Scarborough Pond by a 1.8 metre by 0.9 metre box culvert beneath President Avenue. A weir controls water levels within the Rockdale Bicentennial Park Pond, before flowing into the culvert. The culvert discharges into an open channel immediately downstream of President Avenue, which includes a floating boom and litter trap to collect floating litter and plants prior to discharging to the Northern Scarborough Pond.

No works associated with the proposed modifications would be located within the Southern Scarborough Pond sub-catchment. Therefore, the direct receiving waters are considered to be limited to Bicentennial Park Pond and North Scarborough Pond with the Southern Scarborough Pond being a downstream sensitive environment. It is noted that as Kings Wetland is located within the Bicentennial Park Ponds sub-catchment, it would also be considered a downstream sensitive environment.

The existing stormwater infrastructure that currently provides drainage to Brighton Memorial Fields is described as follows:

- Northern perimeter of the site – pits and pipes draining west to an outlet to Bicentennial Park Pond
- O'Neill Street – road kerb inlet pits and pipes draining west to an outlet at Bicentennial Park Pond.

The proposed modifications do not include any works that would directly extract surface water from any of the unregulated water sources during construction or operation. As such

impact as a result of the extraction of water from unregulated water sources is not considered further.

Flooding

McCarthy Reserve/Ador Park Precinct

As described in the project REF, the Bayside Council flood model indicates that McCarthy Reserve and Ador Park Precinct is subject to minor flooding for the 1% AEP for present day conditions. The model also indicates that:

- The southern areas of the reserve experience flooding to depths in the order of 250 millimetres which deepen at Bay Street
- The centre of the site (just south of PCYC St George building) experiences flooding to depths in the order of 500 millimetres
- The eastern portion of the site experiences flooding to depths in the order of 750 millimetres.

Brighton Memorial Fields

As described in the project REF, the Bayside Council flood model indicates that Brighton Memorial Fields is subject to minor flooding for the 1% AEP for present day conditions. The model also indicates that:

- Private properties and road reserves to the east and upstream of Brighton Memorial Fields are flood affected
- The northern area of the site experiences a small area of flooding to depths in the order of 100 millimetres
- The north-eastern boundary of the site at Sybil Lane experiences a small area of flooding to depths in the order of 100 millimetres
- The southern end of the site at Sybil Lane experiences flooding to depths in the order of 250 millimetres.

6.3.2 Potential impacts

Surface water - construction

During construction, the following potential surface water quality and hydrology impacts could be associated with the proposed modifications:

- Erosion of soils, sedimentation of waterways and exposure of contaminated soils, groundwater or acid sulfate soils
- Accidental leaks or spills of chemicals, fuels and oils from construction vehicles, plant, and machinery
- Direct disturbance of waterbodies, waterway beds and riparian areas, or increased scour due to increased discharge flow rates and volumes.

With the implementation of erosion and sediment control and water quality management measures and safeguards, construction works would be unlikely to result in significant surface water impacts.

Surface water - operation

McCarthy Reserve/Ador Park Precinct

Following the completion of construction of the proposed modifications, all disturbed areas would be reinstated and 'made-good'. No ground disturbance during operation is proposed as part of the proposed modifications.

There is a small potential for water quality impacts through accidental fuel or chemical spills from maintenance equipment (such as ride-on mowers). It is considered that with the implementation of suitable management measures, the likelihood for accidental spills resulting in water quality impacts would be low.

Brighton Memorial Fields

During operation, the following potential surface water quality impacts could be associated with the proposed modifications at Brighton Memorial Fields:

- Increased water inputs and associated pollutant loads at the nearby direct receiving waters including Bicentennial Park Pond, North Scarborough Pond and Kings Wetland as a result of the operation of the new stormwater drainage line and headwall outlet
- Scour at outlets to waterways.

Modelling was undertaken by Cardno in June 2020 to calculate the volume of pollutants in the stormwater runoff from the proposed development using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC). The results of this assessment are presented in Table 6-4.

For water that would be collected by the proposed stormwater drainage line, the majority of pollutants are likely to originate from the carpark that will be delivered as part of the project.

To limit the potential for water collected from the carpark to result in downstream water quality impacts, a treatment device will be to be incorporated into the design of the stormwater network. The treatment device will be designed to remove total suspended solids (TSS) and hydrocarbons from stormwater runoff. The MUSIC modelling adopted the following treatment efficiencies for the treatment device:

- 80% removal of total suspended solids (TSS)
- 30% removal of total phosphorus (TP)
- 30% removal of total nitrogen (TN).

MUSIC modelling results for the water collected from the new carpark area at Brighton Memorial Fields without a water quality treatment device are presented in Table 6-4.. In this scenario, water treatment would be limited to that achieved through a combination of grass swale and stormwater pits alone.

MUSIC modelling results for the water collected from the new carpark area at Brighton Memorial Fields with a water quality treatment device treatment are presented in Table 6-5, demonstrating a reduction in of total suspended solids, total phosphorus and total nitrogen that is consistent with the treatment efficiencies described above.

Table 6-4 MUSIC Model results for existing carpark at Brighton Memorial Fields without water quality treatment device (Cardno 2020)

Pollutants	Mean daily load	Annual load	% Reduction
TSS	0.02kg/day	1640kg/y	22.6
TP	0.00004kg/day	3.4kg/y	8.2
TN	0.00028kg/day	5.3kg/y	5.3

Gross Pollutants	0.0039kg/day	313kg/y	0.1
Flow rate	0.0004m ³ /s	11.8ML/y	0

Table 6-5 Pollutant reductions achieved for the new carpark with treatment device (Cardno 2020)

Pollutants	Loads generated without treatment	Residual load	% Reduction
TSS (kg/yr)	612	123	80
TP (kg/yr)	1.03	0.728	29.6
TN (kg/yr)	4.27	2.98	30.2
Gross Pollutants (kg/yr)	49	48.6	0.8
Flow rate (ML/yr)	1.81	1.81	0

Recommended reduction targets from Botany Bay & Catchment Water Quality Improvement Plan (BBWQIP) (Sydney Metropolitan Catchment Management Authority 2011) are presented in Table 6-6. The main objective of the BBWQIP is to set targets for pollutant load reductions (in terms of TN, TP and TSS) required to protect the condition of Botany Bay, its estuaries and waterways. To reduce the stormwater pollution loads coming from urban development to the waterways in the Botany Bay Catchment, the BBWQIP recommends that all new development and/or redevelopment meet the stormwater pollution reduction targets shown below.

Table 6-6 Stormwater reductions targets recommended for urban development in Botany Bay Catchment

Stormwater Pollutant	Greenfield developments Large re-developments	Multi-unit dwellings Commercial developments Industrial developments Small re-developments
	TSS	85%
TP (TP)	60%	55%
TN (TN)	45%	40%
Gross Pollutants	90%	90%

As described in the project REF, the project would slightly increase the imperviousness in affected catchments. During detailed design development, it has been calculated that this increase would have the potential to generate an increase in stormwater runoff volumes to Rockdale Bicentennial Park Pond and Northern Scarborough Pond by 7.0 ML / year and 5.7 ML / year respectively, with a total runoff volume increase to the Scarborough Ponds system of 12.7 ML / year. A surface water balance was undertaken for the total catchment upstream of President Avenue. The results indicate that the annual stormwater runoff volume at President Avenue would be around 765 ML/year.

Therefore, runoff volumes are likely to increase by about two per cent at President Avenue, which is considered to pose a negligible impact on the hydrological regime of Rockdale Bicentennial Park Pond and the Northern Scarborough Pond.

As demonstrated in Table 6-5 and Table 6-6, with the implementation of a suitable water treatment device at Brighton Memorial Fields, BBWQIP stormwater reductions targets would be met for TSS, whereas, this would not be the case for TN, TP and gross pollutants.

However, as discussed above, whilst the proposed development would not meet the water quality targets set out in the BBWQIP, the negligible increase in runoff is also likely to result in negligible water quality impacts. As such, water quality impacts would not represent an increase to those described in the project REF.

The Bayside Water Management Strategy 2019 has been prepared to inform and guide bayside Council's water management agenda to 2029 by setting a series of goals and establishing an action plan from implementation.

Theme 4 Waterways and Foreshores of the Bayside Council Water Management Strategy aims to improve Bayside's waterways and foreshores through a focus on water quality, waterway bank and foreshore stability, ecosystem health, and public amenity and recreation. A key action identified as part of this theme, and relevant to the proposed modifications is as follows:

Waterway/estuary and wetland restoration: Identify waterway/wetland improvement opportunities associated with M6 works and work with Transport for NSW for these to be enabled as part of the M6 project

The proposed modifications would be implemented to support the development of the M6 Stage 1 project. The design of the stormwater drainage at Brighton Memorial Fields has considered and applied design features that would support this key action by reducing pollutant loads that would in turn, improve the health of nearby wetlands, as at present runoff from the existing carpark is not treated to this high standard.

The strategy also identifies water quality impacts resulting from significant development, whereby poorly managed building sites generate high sediment loads, which wash off into drainage systems and waterways. A specific action detailed in the strategy to address this issue is as follows

Ensure best practice sediment and erosion controls are in place for all public domain construction sites

The construction of the proposed modifications would implement robust management measures that are aimed at reducing the potential for increased sediment loads. This would support the specific action detailed above.

All areas subject to vegetation removal would be stabilised or revegetated as soon practical. As such the potential for water quality impacts resulting from increased sediment loads from previously vegetated areas would be low.

Flooding – construction and operation

McCarthy Reserve/Ador Park Precinct is located within the 1% AEP flood extents. The majority of Brighton Memorial Fields is not located within the 1% AEP flood extent and is unlikely to be significantly impacted by flooding.

Given the minor proposed modifications for both sites, flooding-related construction operation impacts are considered to be unchanged compared to those listed in the project REF.

6.3.3 Safeguards and management measures

As the potential surface water and flooding impacts of the proposed modifications would not exceed, or differ from those outlined in the project REF, the safeguards and management measures provided in the project REF would adequately address the management of these

impacts. No additional safeguards or management measures related to surface water and flooding would be required for the proposed modifications.

6.4 Soils and contamination, geology and groundwater

6.4.1 Methodology

The project REF included a soils and contamination, geology and groundwater assessment which was reviewed to inform the assessment for the proposed modifications.

To support the information provided in the project REF, a desktop review of historical records (aerial photographs and historical business directory records) acid sulfate soils map data, NSW EPA public registers of contaminated and licensed sites, and publicly available borehole data was undertaken.

6.4.2 Existing environment

Geology and soil landscape

The existing environment related to geology and soil landscape at McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields was described in Section 6.6 of the project REF and is still relevant to the proposed modification.

Acid sulfate soils and contamination

In NSW, land is classified based on the likelihood of Acid sulfate soils being present in particular areas and at certain depths. The Acid Sulfate Soils Risk Maps show that McCarthy Reserve/Ador Park Precinct is located on Class 3 soils. The majority of Brighton Memorial Fields, and all of Sybil Lane and O'Neill Street is located on Class 4 soils. The area in which the stormwater drainage line and outlet would be located is within an area mapped as Class 3 acid sulfate soils. In accordance with the Guidelines for the Use of Acid Sulfate Soils Risk Maps, the applicable site classifications are as follows:

- **Class 3:** Acid sulfate soils are likely to be found more than one metre below the natural ground surface. Any works that extend beyond one metre below the natural ground surface, or works which are likely to lower water table beyond one metre below the natural ground surface, would trigger the requirement for assessment and may require management
- **Class 4:** Acid sulfate soils are likely to be found more than two metres below the natural ground surface. Any works that extend beyond two metres below the natural ground surface or works which are likely to lower the water table beyond two metres below the natural ground surface, would trigger the requirement for assessment and may require management.

A search of the NSW Office of Environment and Heritage (OEH) Contaminated Site Register revealed that there were no registered contaminated sites recorded within 300 metres of the McCarthy Reserve/Ador Park Precinct or Brighton Memorial Fields. A search of the List of NSW Contaminated Sites Notified to the EPA also identified no sites within 300 metres of the proposed modifications.

Historic aerial maps have been reviewed to determine past land uses of the site. Available historic aerial images go back to 1943 when both sites were undeveloped. These images do not suggest any contaminant generating activities have occurred at the sites. However, based on the historic fill activities at the McCarthy Reserve/Ador Park Precinct and results of borehole logs, it is assumed that this site is likely to contain scattered contaminants, which may include asbestos. It is possible that contaminant concentrations may be above those permissible for open space land use, and as a result this excavated material may need to be

removed from the site. All waste taken from site would be appropriately disposed of at licenced facilities.

Groundwater

Groundwater within the vicinity of the McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields is recharged by rainfall runoff and infiltration.

In lower lying areas, tidal influences are typically experienced within close proximity to the foreshore. Tidal influences may be experienced at both McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields which are respectively located about 600 metres and 500 metres from the shore of Brighton-Le-Sands. As discussed previously, both sites are also relatively low lying at between one and four metres AHD. Seasonal variations in groundwater levels can be expected in response to natural climatic variations.

Results from borehole logs suggest that groundwater is around one to two metres below surface level at both sites.

6.4.3 Potential impacts

Soils, contamination and groundwater – construction

McCarthy Reserve/Ador Park Precinct

Acid sulfate soils and contaminated materials

There is a potential for acid sulfate soils and contaminated materials to be present at this site. Ground disturbance for the proposed modifications at McCarthy Reserve/Ador Park Precinct would be limited to areas that have already been excavated for the installation of the existing fence and private power pole. The works associated with the proposed vegetation trimming, and installation of root zone protection device(s) are not anticipated to require any ground disturbance. For this reason, the likelihood for the proposed modifications at McCarthy Reserve/Ador Park Precinct to encounter acid sulfate soils or contaminated materials would be low, as it is assumed any previously encountered contamination would have been treated or removed.

There is a minor potential for the establishment of the new footing for the relocated private power pole to encounter acid sulfate soils or contaminated materials. However, given the minor nature of ground disturbance associated with this work, the likelihood of encountering contaminated soil is low.

Regardless, a number of safeguards and management measures have been provided to manage the potential to encounter acid sulfate soils or contaminated materials at McCarthy Reserve/Ador Park Precinct.

There would be a potential for the contamination of soil through accidental fuel or chemical spills from construction plant and equipment. It is considered that with the implementation of suitable management measures, the likelihood for accidental spills resulting in contamination would be low.

Soil erosion

The proposed modifications would involve excavation adjacent to Muddy Creek. As discussed above, the extent of excavations associated with the proposed modifications at McCarthy Reserve/Ador Park Precinct would be minor in nature and no significant ground disturbance or stockpiling of materials is anticipated. As such the potential for these works to result in soil erosion impacts would be low. Nonetheless, erosion and sediment control measures would be implemented, in accordance with the Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book) (Landcom, 2004) to further reduce the potential for soil erosion impacts.

Groundwater

The proposed modifications at McCarthy Reserve/Ador Park Precinct are not anticipated to require excavation that would intercept underlying groundwater or require dewatering.

The proposed modifications would not comprise the use of fill or construction of structures which could alter groundwater flow, as such there would be no discernible impacts to the existing groundwater profile.

Brighton Memorial Fields

Acid sulfate soils and contaminated materials

Acid sulfate soils are naturally occurring soils containing iron sulphides, which on exposure to air, oxidise and create sulfuric acid. Disturbance of acid sulfate soils and/or potential acid sulfate soils can result in adverse impacts on surface and groundwater quality, flora and fauna, and degradation of habitats.

Where excavations would encounter and disturb potential acid sulfate soils, they can oxidise and generate sulfuric acid which can mobilise heavy metals such as aluminium and iron into water bodies. Runoff from areas of acid sulfate soils can affect water quality by lowering pH. These effects can lead to declining health and in some cases, the death of aquatic organisms.

Unless managed correctly, there is a potential risk that acid groundwater and or leachate from stockpiles generated by these works could migrate into surrounding soils and waterways. In accordance with the Guidelines for the Use of Acid Sulfate Soils Risk Maps, an Acid Sulfate Soil Management Plan (ASSMP) would be required. Prior to construction, the contractor may undertake acid sulfate soil testing to identify any potential acid sulfate soils and to inform management of acid sulfate soils.

The construction of the proposed stormwater drainage line and outlet would take place within an area mapped at Class 3 acid sulfate soils. The new stormwater pipe would be installed using an open trenching method, which would require excavation dimensions of about 1.5 metres deep and up to two metres wide. Additionally, vegetation clearance would be required to construct the headwall outlet with scour protection, and the area would be excavated to a subgrade level. As Class 3 acid sulfate soils are known to be found more than one metre below the natural ground surface, it is likely that these works would encounter acid sulfate soils.

The construction of the new water connection point to the existing Sydney Water watermain in Sybil Lane would require excavation dimensions of between 1.1 to 1.5 metres deep and about 0.7 metres to 1.5 metres wide. This work would be located in an area mapped as Class 4 acid sulfate soils at two metres below natural ground surface and as such, are not anticipated to encounter acid sulfate soils.

The establishment of paved parking, the removal of the small brick fences, vegetation removal and landscaping at the proposed site offices on O'Neill Street would require a minor amount of ground disturbance and would be unlikely to reach or exceed depths of one metre below the ground surface. As such these works are not anticipated to encounter acid sulfate soils.

As no historical contaminating land uses have been recorded or observed at Brighton Memorial Fields, no impacts related to encountering contaminated materials in this location are anticipated. Regardless, a number of safeguards and management measures have been provided to manage any potential to encounter unexpected contaminated materials at Brighton Memorial Fields.

There would be a potential for the contamination of soil through accidental fuel or chemical spills from construction plant and equipment. It is considered that with the implementation of

suitable management measures, the likelihood for accidental spills resulting in contamination would be low.

Soil erosion

The proposed modifications would involve excavation adjacent to existing stormwater drains in Sybil Lane and O'Neill Street and adjacent to a nearby sensitive receiving environment (Kings Wetland). Excavations, earthworks and associated stockpiling, if not adequately managed, would have the potential to result in:

- Soil disturbance and erosion of exposed soil and stockpiled materials
- Dust generation from excavation and vehicle movements over exposed soil
- An increase in sediment loads entering the stormwater system and/or local runoff, with associated water quality impacts.

The movement and exposure of soil would subsequently increase the potential for erosion and mobilisation of soil by wind and water action. This may result in impacts to surface water quality in the nearby stormwater drainage lines. Sediment laden water also has the capacity to block stormwater drainage.

Appropriate erosion and sediment control measures would be implemented in accordance with the Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book) (Landcom, 2004) to limit the potential for soil erosion impacts.

Groundwater

The proposed modifications are not anticipated to require any excavation that would intercept underlying groundwater or require any dewatering. According to borehole logs in the vicinity, groundwater in the area is typically at about 1.5 to two metres below ground surface and excavations associated with the proposed modifications at Brighton Memorial Fields would be at a depth of about 1.5 metres.

It is noted that groundwater can be found closer to the surface at lower lying areas and nearby waterways. Kings Wetland is located nearby the proposed headwall outlet and scour protection zone. If groundwater is encountered, excavation would occur through groundwater. The sediment/groundwater mix would be treated as excavated material, placed next to the excavation and used as fill on completion where possible. Any excess excavated materials would be disposed offsite at an appropriately licensed facility. Disturbed areas would be reinstated with the preserved excavated material.

The proposed modifications would not comprise the use of fill or construction of structures which could alter groundwater flow, as such there would be no discernible impacts to the existing groundwater profile.

Soils and contamination – operation

Following the completion of construction of the proposed modifications, all disturbed areas would be reinstated and 'made-good'. No ground disturbance during operation is proposed as part of the proposed modifications.

The proposed modifications are being carried out to support the development of recreation facilities at McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields. McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields would be used for ongoing recreation activities and as described in the project REF, no impacts related to acid sulfate soils, contamination or soil erosion are anticipated during operation.

Groundwater – operation

The proposed modifications would not comprise the use of fill or construction of structures which could alter groundwater flow, as such there would be no discernible impacts to the existing groundwater profile.

No ground disturbance is proposed during operation of the proposed modifications and no ongoing operational impacts to groundwater are anticipated during operation.

6.4.4 Safeguards and management measures

As the potential soils and contamination impacts of the proposed modifications would not significantly differ from those outlined in the project REF, the safeguards and management measures provided in the project REF would adequately address the management of these impacts. No additional safeguards or management measures related to soils and contamination would be required for the proposed modifications.

6.5 Property and land use

6.5.1 Existing environment

McCarthy Reserve/Ador Park Precinct

The existing land use of McCarthy Reserve/Ador Park Precinct is for public open space which is reflected in the land use zoning of 'RE1 Public Recreation' under the Rockdale LEP. McCarthy Reserve has an established playing field with an associated amenity building and is currently predominantly used for organised sporting activities (soccer training and recreation soccer games). Ador Park Precinct is un-marked with no notable recreation infrastructure (besides fencing and the carpark area) and is predominantly used for passive recreation activities and informal sporting activities.

The site is owned and operated by Bayside Council. Muddy Creek, which bisects McCarthy Reserve and Ador Park Precinct, is an infrastructure asset owned and managed by Sydney Water.

The existing land use surrounding the site is predominantly low density residential (reflected in the 'R2 Low Density Residential' under the Rockdale LEP). This is typified by one to two storey detached dwellings. Further south is the Kirby Industrial Estate which is over 30 hectares of predominately light industrial land use.

Brighton Memorial Fields

The existing land use of Brighton Memorial Fields is for public open space which is reflected in the land use zoning 'RE1 Public Recreation' under the Rockdale LEP.

There is an existing grass playing field with an associated amenity building which is predominantly used for organised sports activities (soccer training and recreation games). There is also an existing playground area next to the carpark and two tar-sealed, marked tennis courts which are predominantly used for passive recreation and informal sporting activities. The Brighton Memorial Fields themselves are owned and managed by Bayside Council.

The proposed location of the stormwater drainage line and outlet, as well as the site offices on O'Neill Street are situated within land zoned 'SP2 Infrastructure (Classified Road)' under the Rockdale LEP, which is associated with land designated for the M6 Stage 1 project. Lot 2 DP 849264 immediately west of the site, in the location of the proposed stormwater drainage line and outlet is owned by the State Planning Authority. The O'Neill Street properties (65, 67 and 60) are owned by TfNSW.

The proposed Sydney Water watermain connection works in Sybil Lane would be located adjacent to Brighton Memorial Fields, Brighton-Le-Sands Public School and the rear of residential properties that face onto Crawford Road. These works would be undertaken in an area zoned at SP2 Low Density Residential under the Rockdale LEP.

Potential impacts

Construction

McCarthy Reserve/Ador Park Precinct

The Bayside Council Plan of Management (PoM) provides guidelines for the short, medium, and long-term management of all council owned, managed or maintained community land. Table 6-7 outlines the relevant objectives and policies and permitted uses for community land and public open space as prescribed by the Bayside Council PoM for McCarthy Reserve/Ador Park Precinct. While Clause 65 of ISEPP permits the proposed modifications without consent, the proposed modifications would nonetheless comply with the 'permitted purposes' and 'permitted uses as prescribed by the Bayside PoM, as they would support the construction of the project. This is demonstrated in Table 6-7.

Table 6-7 Consistency of proposal Bayside Council PoM assessment of current and future permitted use at McCarthy Reserve/Ador Park Precinct

Category	Permitted Use	Assessment
Current Use	<ul style="list-style-type: none"> Active recreation - soccer Sports amenities building Lighting 	The proposed modifications would support the construction of the project. The project will ultimately be used for the purpose of sports and recreation, including organised soccer training and competitions. In addition, the project will provide adequate field lighting for night-time training and competition. The project and proposed modifications would be consistent with these uses.
Future Use	<ul style="list-style-type: none"> Active recreation Sports amenities building Lighting, sportsground levelling and resurfacing, irrigation and/or drainage Hire by the community, individuals, not for profit and/or community organisations for recreational, leisure or special event use Community leisure/recreation buildings, ancillary utility buildings Active recreation improvements, e.g. picnic furniture, bike track, play space and equipment, pedestrian lighting, event facilities 	The proposed modifications would support the construction of the project. The project will ultimately be used for the purpose of sports and recreation and would be available for use by the community, individuals, not for profit and/or community organisations for recreational, leisure or special event uses. The project will provide active recreation improvements including a bike track and pedestrian lighting. The proposed modifications would directly assist the construction of the bike path over Muddy Creek as well as the construction of the project, generally. The proposed modifications would be consistent with these uses.

Permitted Purposes	<p>Related to active recreation needs</p> <ul style="list-style-type: none"> • Sportsground amenities, park furniture, stormwater harvesting, flood amelioration and/or mitigation development, large cultural events/ activities e.g. festivals • Utilities if required, green links, endemic and/or sustainable planting, play equipment <p>In respect of the Muddy Creek canal:</p> <ul style="list-style-type: none"> • Active recreation, active transport links to and through open space, and climate change mitigation works – appropriate to site conditions but NOT where it will have an unacceptable negative impact on endangered ecological communities, threatened flora or fauna or significant negative impact on environmentally sensitive areas • Passive open space, aesthetic value and environmental value • Environmental restoration works 	<p>The proposed modifications would directly assist the construction of the bike path over Muddy Creek. The construction of the bridge will not result in any unacceptable negative impact on endangered ecological communities, threatened flora or fauna or significant negative impact on environmentally sensitive areas. The proposed modifications would be consistent with these uses.</p>
Scale and Intensity Use/ Development	<ul style="list-style-type: none"> • Low scale and medium intensity only • Appropriate scale and intensity developments to the size for the active open space area and the sites necessities for the level (local, regional, state) of active recreation facilities required 	<p>The proposed modifications would support the construction of the project. The project is consistent with these uses.</p>

Construction of the proposed modifications at McCarthy Reserve/Ador Park Precinct would result in temporary restrictions to access and use of public open space. However, this would not change the current or future land use for site. Once construction is complete, the site would continue to be used for recreational activities. Overall, there is no construction impact to the land use of the proposed modifications.

Construction

Brighton Memorial Fields

Table 6-8 outlines the relevant objectives and policies and permitted uses for community land and public open space as prescribed by the Bayside Council PoM for Brighton Memorial Fields. While Clause 65 of ISEPP permits the proposed modifications without consent, the proposed modifications would nonetheless comply with the 'permitted purposes' and 'permitted uses as prescribed by the Bayside PoM, as they would support the construction of the project. This is demonstrated in Table 6-8.

Table 6-8 Consistency of proposal Bayside Council PoM assessment of current and future permitted use ay Brighton Memorial Park

Category	Permitted Use	Assessment
Current Use	<ul style="list-style-type: none"> • Active recreation - soccer • Sports amenities building 	<p>The proposed modifications would support the construction of the project. The project will ultimately be used for</p>

	<ul style="list-style-type: none"> • Lighting, irrigation and/or drainage, car park 	the purpose of sports and recreation, including organised soccer training and competitions. In addition, the project will provide adequate field lighting for night-time training and competition and improved carpark facilities. The proposed modifications would be for the purpose of supplying drainage for the project. The project and proposed modifications would be consistent with these uses.
Future Use	<ul style="list-style-type: none"> • Active recreation • Sports amenities building • Lighting, sportsground levelling and resurfacing, irrigation and/or drainage 	As demonstrated above, the proposed modifications would be consistent with these uses.
Permitted Purposes	<ul style="list-style-type: none"> • Subject to Rockdale LEP 2011 - SP2 (M6 Corridor) 	The proposed modifications would support the construction of the M6 Stage 1 project and would therefore be consistent with these uses. Additionally, the site offices at O'Neill Street and the stormwater drainage line and outlet would be constructed on land zoned as SP2 Classified Road for the M6 corridor.
Scale and Intensity Use/ Development	<ul style="list-style-type: none"> • Subject to Rockdale LEP 2011 - SP2 (F6 Corridor) 	The proposed modifications would support the construction of the M6 Stage 1 project and would therefore be consistent with these uses.

Construction of the proposed modifications at Brighton Memorial Fields would result in temporary restrictions to access and use of public open space and local roads. Following the completion of works associated with the proposed modifications, all disturbed areas would be reinstated and 'made-good'. Local roads would be reinstated for use as soon as practicable. Once construction is complete, Brighton Memorial Fields would be used for recreational activities, consistent with the current land use of the site.

The proposed site offices on O'Neill Street are located on land zoned as SP2 Classified Road. While the former residential properties would be repurposed for use as offices for the construction of the project, the project is being carried out as part of the Conditions of Approval for the M6 Stage 1 project and would therefore be consistent with the current land use designation.

Operation

Following the completion of works associated with the proposed modifications, all disturbed areas would be reinstated and 'made-good'. No long term changes to property or land use are anticipated as a result of these works during operation.

Construction of the proposed modifications at McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields would not change the current or future land use for site. Once construction is complete, the sites would be used for recreational activities.

The site offices at O'Neill Street have been previously permanently acquired by TfNSW for the construction of M6 Stage 1 and are located on land zoned as SP2 Classified Road. Following the completion of the project, these premises may be removed for the construction

of the motorway. Any potential land use impacts as a result of the future use of these properties has been assessed as part of the M6 Stage 1 project EIS.

Overall, there is no construction impact to the land use of the proposed modifications.

6.5.2 Safeguards and management measures

As the potential landuse and property impacts of the proposed modifications would not exceed or significantly change those outlined in the project REF, the safeguards and management measures provided in the project REF would adequately address the management of these impacts. No additional mitigation measures related to landuse and property are proposed as a result of the proposed modifications.

DRAFT

6.6 Other impacts

The proposed modifications have the potential to result in negligible to minor impacts to Aboriginal heritage, non-Aboriginal heritage, landscape character and visual impacts, and utilities. A brief discussion and assessment regarding each of these environmental considerations has been provided in the table below.

Table 6-9 Other environmental considerations - existing environment and potential impacts

Environmental factor	Existing environment	Potential impacts
<p>Aboriginal heritage</p>	<p>A desktop study was carried out to establish the level of Aboriginal heritage significance within and around McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields. The review was undertaken in accordance with the assessment process outlined in the <i>Procedure for Aboriginal cultural heritage consultation and investigation (PACHCI)</i> (Roads and Maritime, 2011). The desktop study included a review of:</p> <ul style="list-style-type: none"> • Aboriginal Heritage Information Management System (AHIMS) database • Previous studies conducted for the M6 Stage 1 EIS and the project REF • Recorded local history • Historic and present day aerial mapping. <p>The AHIMS database search, conducted 19 June 2020, did not identify any Aboriginal sites within 200 metres of McCarthy Reserve/Ador Park Precinct or Brighton Memorial Fields.</p> <p>The presence or absence of Aboriginal heritage sites can be dependent on the levels of past ground disturbance, where the archaeological potential of an area can be linked to low levels of past disturbance. A review of 1943 historic aerial mapping indicates that the work associated with the proposed modifications would be undertaken in developed or previously disturbed areas. Brighton Memorial Fields appears</p>	<p>The works required for the proposed modifications would be typically minor in nature, would result in minimal ground disturbance, and would be located in an urbanized and developed environment, in previously disturbed areas.</p> <p>Where more substantial disturbance of the ground surface is required for the construction of the proposed stormwater headwall outlet and scour projection, a review of historic aerial photography has demonstrated that previous ground disturbance has occurred at this location as a result of vegetation removal, the construction of drainage lines, and grazing of livestock.</p> <p>As such, there is a low potential for ground disturbing activities to affect known or previously unidentified Aboriginal sites at McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields.</p> <p>As detailed in the project REF, <i>The Standard Management Procedure - Unexpected Heritage Items</i> (Roads and Maritime, 2015) will be followed in the event that any unexpected heritage items, archaeological remains or potential relics of Aboriginal origin are encountered. No additional safeguards or management measures are proposed.</p>

	<p>to have been previously used for agricultural purposes, with vegetation removal, sheep grazing pastures and man-made drainage channels evident in the historic aerial photography. McCarthy Reserve/Ador Park Precinct is located on land that was formerly part of a wetland that drained into Muddy Creek (formerly Black Creek). The wetland was progressively drained throughout the late-nineteenth and twentieth centuries. Since that time, the land has been developed for the purpose of the existing sporting facilities.</p> <p>Certain landscape features such as waterways, sand dune systems, ridge tops, ridge lines, headlands, cliff faces, and rock caves/shelters can indicate the likely presence of Aboriginal objects. The proposed stormwater headwall outlet and scour projection at Brighton Memorial Fields would be located nearby the former extent of the Scarborough Ponds Wetlands at Rockdale. While this would be the case, it is noted that historic aerial photography demonstrates past ground disturbance has occurred at this location as a result of vegetation removal, the construction of drainage lines, and grazing of livestock.</p>	
<p>Non-Aboriginal heritage</p>	<p>A desktop study was carried out on 19 June 2020 to identify any items of non-Aboriginal heritage significance within 200 metres of McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields. The desktop study included a review of:</p> <ul style="list-style-type: none"> • Rockdale LEP 2011 planning maps • Historic aerial imagery • NSW State Heritage Register (SHR) • Commonwealth EPBC Act heritage register. <p>No Commonwealth or State heritage items were identified within 200 metres of McCarthy Reserve/Ador Park Precinct or Brighton Memorial Fields.</p> <p>One heritage item listed in the Rockdale LEP 2011 occurs within 200 metres of McCarthy Reserve/Ador Park Precinct</p>	<p>Construction activities at both sites would result in disturbance of the ground surface. Construction works would generally be carried out in areas which have been previously disturbed as a result of previous clearance and agricultural landuse, excavation and/or reclamation/filling activities.</p> <p>The potential to cause harm to any items of non-Aboriginal heritage importance is considered low based on the following known information:</p> <p>The NSW Heritage inventory database search did not identify any state heritage listed items within 200 metres of the proposed modifications</p> <p>The proposed modifications would not directly impact on any known local heritage items</p> <p>The areas have undergone previous disturbance and modification.</p>

	<p>modifications. This item is I211, House, and is located immediately west of McCarthy Reserve.</p> <p>Three heritage items listed in the Rockdale LEP 2011 occur within 200 metres of Brighton Memorial Fields modifications. These include:</p> <p>I167, School building - Brighton-Le- Sands Public School (1916), located directly north of Brighton Memorial Fields</p> <p>I169, Kings Wetland, located about 50 metres north-west of Brighton Memorial Fields</p> <p>I202, Patmore Swamp, located about 90 metres southwest of the proposed site offices on O'Neill Street. This item is listed as a State significant heritage item on the Rockdale LEP, however, it is not listed under the NSW Heritage Act on the State Heritage Register.</p> <p>Another notable item at Brighton Memorial Fields is the commemorative war memorial gates located at the entrance to the fields on Sybil Lane. Neither Brighton Memorial Fields nor the commemorative gates are listed in the Rockdale LEP heritage schedule or the State Heritage Register. The gates are listed on the NSW War Memorial Register, which is a database of war memorials in New South Wales. The Register is non-statutory and is hosted and maintained by the NSW Office for Veterans Affairs and the State Library of New South Wales.</p> <p>While the gates are not of heritage value in their own right, they are of some local significance from a social perspective.</p>	<p>The <i>Standard Management Procedure - Unexpected Heritage Items</i> (Roads and Maritime, 2015) will be followed in the event that any unexpected heritage items, archaeological remains or potential relics of non-Aboriginal origin are encountered.</p> <p>While the commemorative gates at Brighton Memorial Fields are not considered a heritage feature for protection, they do hold significance to portions of the community. As discussed in Chapter 5, consultation has been undertaken with the Brighton RSL Club Sub-Committee regarding the appropriate relocation of the memorial plaques on the entry gates to the playing fields.</p> <p>Operation of the proposal is not expected to result in any non-Aboriginal heritage impacts.</p> <p>No additional safeguards or management measures are proposed.</p>
<p>Air quality</p>	<p>The project REF included a qualitative air quality assessment which was reviewed to inform the air quality assessment for the proposed modifications.</p> <p>To support the information provided in the project REF, a desktop assessment was undertaken to update information and assessment related to:</p> <ul style="list-style-type: none"> Local meteorological data 	<p>Potential localised air quality impacts associated with construction of the proposed modifications include dust, odour and emissions from plant and machinery. Short-term dust emissions could potentially result from construction activities such as vehicle movements on unpaved/exposed surfaces and works that would involve ground disturbance or excavation.</p> <p>At McCarthy Reserve/Ador Park Precinct, the ground disturbance associated with the proposed modifications would be minor in nature.</p>

<ul style="list-style-type: none"> • Review of potential sensitive receivers. • Potential pollutants that may be generated as a result of the proposed modifications • Available background monitoring data. • Potential air quality sensitive receivers were identified within 200 metres the proposed modifications as follows: • McCarthy Reserve/Ador Park Precinct • Users of the public recreation facilities at McCarthy Reserve or Ador Park Precinct while works are occurring at the adjacent site • Users of the public recreation facilities at Ador Avenue Reserve about 20 metres to the north, Rockdale Park about 160 metres to the north and Rockdale Women's Sports Fields 150 metres to the north-east • St George PCYC directly north of McCarthy Reserve • Residential dwellings along Bay Street, Garnet Street, Aboukir Street, Farr Street, Gibbes Street, Cameron Street, Ador Avenue, West Botany Street, Bruce Street, Hinkler Street and Aero Street. • Brighton Memorial Fields • Students, staff and visitors at Brighton-Le-Sands Public School (directly north) and Little Sails Preschool (about 150 metres to the north-east) • Users of the public recreation facilities at Rockdale Bicentennial Park about 160 metres to the north-east, Rockdale Bicentennial Park East directly east, Rockdale Skate Park about 200 metres to the west, and Rockdale Ilinden Sports Centre 200 metres to the west. • Residential dwellings along President Avenue, O'Connell Street, O'Neill Street, President Lane, Colson Crescent, O'Connell Street, Crawford Road, O'Neill Lane, Sybil Lane, Wycombe Avenue, Teralba Road, and Kings Road. <p>The existing environment related to climate and meteorological conditions at McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields was described in</p>	<p>At Brighton Memorial Fields, excavation for the new Sydney Water watermain connection and the stormwater drainage line and outlet would take place progressively along the alignment, and disturbed areas would be reinstated progressively as works in any one location are completed. This construction approach would limit the extent of exposed soils at any given time. Stockpiles would be managed in accordance with the Roads and Maritime Services Stockpile Site Management Guideline (EMS-TG-10). For these reasons, the potential for airborne dust emitted during soil-disturbing works would be minor.</p> <p>There is a potential for acid sulfate soils to be present at a depth of one metre below the ground surface at Brighton Memorial Fields as discussed in section 6.6. Ground disturbance in this area would be generally limited to areas that have already been excavated for the installation of the existing fence and private power pole. For this reason, the likelihood for the proposed modifications to encounter acid sulfate soils would be low, as it is assumed any previously encountered acid sulfate soils would have been treated or removed.</p> <p>There is a minor potential for the establishment of the new footings for the relocated private power pole to encounter acid sulfate soils. However, given the minor nature of ground disturbance associated with this work, the likelihood of resulting offensive odours impacting sensitive receivers is low.</p> <p>Exhaust emissions generated by the operation of vehicles, plant and equipment would also have the potential to impact local air quality. As a result of the limited duration and intensity of the proposed modifications, it is anticipated exhaust fumes would result in negligible impacts to air quality.</p> <p>With the implementation of standard construction safeguards and management measures as described in the project REF, the proposed modifications are not anticipated to result in any significant air quality impacts.</p> <p>The proposed modifications are being carried out to support the development of recreation facilities at McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields, as described in the project REF. McCarthy Reserve/Ador Park Precinct and Brighton Memorial</p>
--	--

	<p>Section 6.7 of the project REF and is still relevant to the proposed modification.</p> <p>The existing air quality in the area surrounding the proposed modifications is influenced by vehicle emissions, domestic activities, bushfire and hazard reduction burns. Typically, air in the Sydney region meets national air quality standards, whereby the measured air quality is 'very good', 'good' or 'fair' category for at least 87% of the time (OEH 2019). In 2018, the majority of annual hazardous particle days (92%) in the Sydney region were due to smoke from large hazard reduction burns and from bushfires. The air quality levels for 2019 have been heavily skewed by unprecedented extensive bushfires that occurred in NSW that saw around four million hectares burnt in NSW from July to December 2019. For this reason, the Air Quality Index reached the hazardous category (index greater than 200) on a total of 115 days in 2019, compared with 59 days in 2018 (NSW Government, 2019). This trend is anticipated to continue to be reflected in the NSW Annual Air Quality Statement for 2020 as the fires continued through to March.</p> <p>At a local scale, air quality in the area surrounding the proposed modifications is expected to be characteristic of a suburban context. The air quality at McCarthy Reserve/Ador Park Precinct is likely to be influenced by the industrial landuses located south of Bay Street.</p> <p>A search of the National Pollutant Inventory (NPI) identified two existing air pollution sources within one kilometre of the proposed modifications as follows:</p> <ul style="list-style-type: none"> • Rockdale Resource Recovery Centre, Lindsay Street, Rockdale, located about 350 metres south of McCarthy Reserve/Ador Park Precinct • St George Private Hospital, South St, Kogarah, located about one kilometre south-west of Brighton Memorial Fields. 	<p>Fields would be used for ongoing recreation activities. The proposed modifications would not contribute to any operational activities beyond those stated in the project REF.</p> <p>Following construction, all disturbed areas would be reinstated, and no heavy plant or machinery is anticipated to continue operating at either location following the conclusion of construction activities. Additionally, as described below, no significant increases in traffic are anticipated during operation that would lead to a decrease in local or regional air quality.</p> <p>As such, no discernible long-term changes to air quality are anticipated as a result of the proposed modifications.</p> <p>No additional safeguards or management measures are proposed.</p>
--	--	--

<p>Landscape character and visual impacts</p>	<p>The project REF assessed landscape character and visual impacts in accordance with the Environment impact assessment practice note EIA-N04 – Guideline for landscape character and visual impact assessment (Roads and Maritime, 2018). In accordance with these guidelines, the following were carried out:</p> <ul style="list-style-type: none"> • Assessment of existing visual environment • Assessment of visual impacts • Recommendation of safeguards and management measures. <p>The results of the landscape character and visual impacts undertaken for the project REF have been reviewed to inform this addendum REF.</p> <p>Both McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields are characterised by outdoor recreation areas comprising grassed fields, associated sporting facility infrastructure (lighting, amenities buildings etc) and car parking areas. The area immediately surrounding both sites is generally characterised as medium density residential.</p>	<p>A large portion of the works associated with the proposed modifications would be located in previously disturbed open space areas associated with McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields, or within the road reserve of surrounding local roads including Bay Street and Sybil Lane.</p> <p>The proposed relocation of the private power pole and the removal and reestablishment of the fencing in McCarthy Reserve/Ador Park Precinct would comprise works that are minor in nature, would typically not be visible from surrounding areas and would result in minimal ground disturbance. These works would also not result in any significant permanent change in the existing conditions at the site. The proposed trimming of vegetation and installation of root zone protection devices on Bay Street on Bay Street would result in a short term, temporary and minor change in visual amenity in this location. However, the implementation of these works would limit the need for vegetation removal, and the retention of these mature trees would reduce the potential for long term visual impacts. Following the completion of the construction period of the project, root zone protection devices would be removed, and it is expected that any trimmed vegetation would recover over time.</p> <p>The construction of the stormwater pipe and headwall outlet would occur on the north western side of Brighton Memorial Fields and is not expected to be in the direct line of sight of nearby residential receivers due to the presence of screening vegetation along the western boundary of the fields. Based on a review of Google Street View, these trees offer a visual buffer between the residences on Sybil Lane and the proposed location of the stormwater drainage line and outlet. While these works would include ground disturbance, disturbed areas associated with the stormwater pipe would be restored to pre-construction conditions upon completion of construction. The construction of the headwall would require vegetation removal within the immediate area, and following the completion of construction, the structure would be visible above ground. The scour protection zone of the headwall would be vegetated with planted sedges and rushes. The establishment of this vegetation over time would limit the visual change in this location. As such, visual impacts of the headwall would be minor in nature.</p>
--	---	--

		<p>The establishment of site offices within existing houses in O'Neill Street would include a number of external improvements including the establishment of paved areas for parking, removal of small brick fences, removal of vegetation and landscaping activities. These external improvements would take into consideration the R2 low density residential character of the surrounding area, and external improvements would be designed such that they are sensitive to the surrounding visual environment and complementary to the existing buildings onsite. The operation of the site offices at O'Neill Street may require office workers to be present out of hours. To minimise light spill from the site offices, curtains would be installed. Any light from the site offices at night would therefore be consistent with that of a typical residential property and would not represent a significant night-time light nuisance.</p> <p>Task lighting would be required during nightworks, however temporary lighting for construction of the proposed modifications would be short term and temporary. Portable lighting would be positioned and directed in a manner which minimises light spill onto surrounding roadways and individual private property, to minimise impacts to traffic and adjacent residential receivers.</p> <p>Overall, during construction of the proposed modifications, a temporary reduction in visual amenity is likely to be experienced by nearby receivers and users of the parks at McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields as a result of construction activities such as earthworks, use of construction machinery and storage of construction materials. These visual impacts would be short term in duration and temporary in nature and would be consistent with impacts described in the project REF.</p> <p>Visual impacts will be further minimised by maintaining all work sites in a clean and tidy state. Stockpiles, waste, storage of plant, equipment and machinery, and construction vehicle parking would occur within the construction compounds as described in the project REF, and the site offices as outlined in this report.</p> <p>As such visual impacts are anticipated to be short term and temporary in nature and would not represent a significant increase in impacts beyond those assessed in the project REF.</p>
--	--	---

<p>Socioeconomics</p>	<p>The project REF identified the sensitive landuses, receivers and businesses present within and around McCarthy Reserve/Ador Park Precinct and Brighton Memorial Fields.</p> <p>The existing landuse at McCarthy Reserve/Ador Park Precinct is public open space (zoned 'RE1 Public Recreation' under the Rockdale LEP). Muddy Creek, which traverses the site is zoned as SP2 Infrastructure (drainage). McCarthy Reserve has an established playing field with an amenities building and is currently used for organised sporting activities (soccer training and recreational soccer games). Ador Park Precinct is un-marked with no notable recreational infrastructure (besides fencing and the carpark area) and is predominantly used for passive recreational activities and informal sporting activities. The area immediately surrounding the McCarthy Reserve/Ador Park Precinct, to the east and west of the site, is generally characterised by low to medium density residential land uses. In addition to the nearby residences, key nearby sensitive receivers and businesses to the McCarthy Reserve/Ador Park Precinct include:</p> <ul style="list-style-type: none"> • PCYC St George, located at 9 Ador Avenue, Rockdale, directly north of the existing sports field at McCarthy Reserve • Vintage Vouge clothing store and Density supplements store, 64A Bay St, Rockdale, about 30 metres west of McCarthy Reserve • The Burek Brothers and Co, 162 Bay Street Rockdale, about 70 metres west of McCarthy Reserve • Rockdale Park, 321 West Botany Street, Rockdale, about 150 metres north of the McCarthy Reserve/Ador Park Precinct site. <p>The existing land use of Brighton Memorial Fields is public open space (zoned 'RE1 Public Recreation' under the Rockdale LEP). There is an existing grass playing field with an amenities building, predominantly used for organised sports activities (soccer training and recreational games). There is also an existing playground area next to the carpark,</p>	<p>There is potential for some localised amenity impacts to nearby sensitive receivers during construction of the proposed modifications due to potential noise and dust impacts, temporary loss of access to local road thoroughfares, and impacts to public open space.</p> <p>Parking for construction activities would occur within the construction compounds as described in the project REF and shown on Figure 1-3. Some on-street parking for office workers may occur outside the proposed site offices on O'Neill Street. However, as several on-property parking spaces are proposed to be constructed for workers, on-street parking outside the proposed site offices is expected to be limited. As a result, only minor impacts to parking for residents or businesses beyond that described in the project REF are anticipated.</p> <p>The proposed modifications nearby Vintage Vouge clothing store, Density supplements, and The Burek Brothers on Bay Street would be limited to vegetation trimming and the installation of root zone protection measures. The proposed modifications nearby Sammys Restaurant and Gourmet Butchers on Presidents Avenue is limited to the establishment of the proposed site offices. This work is not expected to result in any short term or long term noise, dust, parking or access impacts that would in turn affect the operation of these businesses during construction.</p> <p>In accordance with the management measures described in the project REF, appropriate communication of the construction programme and duration of loss of access will be provided to the local community prior to the commencement of works. Other relevant mitigation measures to minimise construction impacts, as provided in the project REF are outlined in the various technical chapters above and summarised in Chapter 7.</p> <p>No socio economic impacts as a result of the operation of the proposed modifications are anticipated to occur.</p> <p>No additional safeguards or management measures are proposed.</p>
------------------------------	--	--

and two tennis courts. The public open space land use continues to the west of Brighton Memorial Fields with neighbouring Rockdale Bicentennial Park. The area immediately to the east of Brighton Memorial Fields is generally characterised by low to medium density residential land uses. In addition to the nearby residences, key nearby sensitive receivers to Brighton Memorial Fields include:

- Brighton-Le-Sands Public School, 35 Crawford Road, Brighton-Le-Sands, directly north of Brighton Memorial Fields
- Little Sails Preschool, 35 Crawford Road, Brighton-Le-Sands, about 150 metres north of Brighton Memorial Fields
- Crawford Road Corner Shop, Corner of Crawford Road and President Ave, about 200 metres south-east of Brighton Memorial Fields
- Sammys Restaurant, 168 President Avenue, about 170 metres east of the proposed site offices at O'Neill Street
- Gourmet Butchers of Monterey, 172 President Avenue, about 200 metres east of the proposed site offices at O'Neill Street.

The key local centres around the sites include Rockdale town centre to the west, Brighton-Le-Sands town centre to the east and Kogarah town centre to the south-west. These key local centres provide local services and amenities, key public transport connections (including Rockdale Train Station and Kogarah Train Station) and local employment.

Another important employment centre in the area is Kirby Industrial Estate and adjacent retail precinct, which is located around 100 metres south of McCarthy Reserve/Ador Park Precinct and 300 metres north of Brighton Memorial Fields. Kirby Industrial Estate is over 30 hectares of predominately light industrial landuses. A number of well-known retail and fast food premises with typically strong customer patronage are also present in this location including Bunnings

	Warehouse, ALDI, Big W, Fitness First, PetO pet store warehouse and McDonalds.	
Traffic and access	<p>To assess the potential for the proposed modifications to impact on traffic, transport and access, the scope of works has included a review of the following publicly available reports and data sources:</p> <ul style="list-style-type: none"> • The transport and access assessment completed for the project REF • M6 Stage 1 - New M5, Arncliffe to President Avenue, Kogarah Environmental Impact Statement • Current aerial mapping. <p>The traffic, transport and access assessment undertaken for the project REF considered existing and proposed land uses, potential changes in traffic generation, car parking demand and supply, and site access points during construction and operation of the project.</p> <p>Traffic</p> <p><u>McCarthy Reserve/Ador Park Precinct</u></p> <p>McCarthy Reserve/Ador Park Precinct is situated along the western side of West Botany Street with frontage along Bay Street. Currently, McCarthy Reserve is an open field used as a soccer field. The Ador Park Precinct is an open space area and is not currently used for formal sporting competitions or practice.</p> <p>The McCarthy Reserve/Ador Park Precinct is located close to several other playing fields and active recreation areas, including a soccer field at Ador Avenue Reserve, north of the proposed site, the St George PCYC, and netball courts on the eastern side of West Botany Street, opposite Ador Avenue. Due to the sporting and recreation land uses currently present within and surrounding the McCarthy Reserve/Ador Park Precinct, the area is characterised by heavy traffic and parking demands on weekends. This is</p>	<p>Traffic</p> <p><u>McCarthy Reserve/Ador Park Precinct</u></p> <p>The proposed modifications would not result in any discernible increase in the maximum estimated numbers of construction vehicle movements that were described in the project REF, which consisted of about 10 light vehicles and 20 heavy vehicles per day. Construction vehicles would access McCarthy Reserve using the existing Bay Street maintenance access driveway. Access for the Ador Park Precinct would be on West Botany Street, at an existing driveway that will become the new entry/exit for the carpark for the project, as described in the project REF.</p> <p>It is likely that the proposed tree trimming and installation of root zone protection at Bay Street would require temporary lane closures on Bay Street. In this instance, works would be undertaken out of hours, and would not coincide with peak traffic times. Additionally, this work is anticipated to be short term and temporary in nature. For these reasons, the works at Bay Street would have the potential to cause minor traffic delays and disruptions.</p> <p>Following the completion of construction of the proposed modifications, all disturbed areas would be reinstated all temporarily closed roads would be reopened as soon as practicable. As such, no operation impacts would occur as a result of the proposed modifications. Any operational traffic impacts would be consistent with those described in the project REF whereby the operation of the project is unlikely to cause significant change in traffic impacts.</p> <p><u>Brighton Memorial Fields</u></p> <p>The proposed modifications at Brighton Memorial Fields would not result in any discernible increase in the maximum estimated numbers of construction vehicle movements that were described in the project REF, which consisted of about 10 light vehicles and 15 heavy vehicles per day. Construction vehicles would access Brighton Memorial Fields using the existing Sybil Lane access from O'Neill Street and exit back out onto O'Neill Street. Construction traffic would not enter using</p>

<p>particularly the case during the peak of the sporting season for soccer and netball (typically throughout autumn and winter).</p> <p>A retail and industrial precinct is located between about 200 to 250 metres south of McCarthy Reserve, and comprises highly frequented tenancies including ALDI, Big W, Bunnings, Fitness First, and McDonalds. This retail and industrial precinct generates an increase in local traffic. Other nearby traffic generating land uses include Cairnsfoot School, St George Girls High School and Brighton-Le-Sands Public School. During term, traffic around schools is typically heavier during the school zone hours of 8:00 am to 9:30 am and 2:30pm to 4:00pm.</p> <p>Bay Street is a State road that connects to the A36 Princes Highway about one kilometre to the west of McCarthy Reserve, and Brighton-Le-Sands foreshore, about one kilometre to the east. West Botany Street, on the eastern border of Ador Park Precinct, is designated as a regional road. West Botany Street operates as a local road, connecting to the A1 President Avenue to the south and the A36 Princes Highway to the north. West Botany Street also forms one of several local routes to Sydney Airport.</p> <p><u>Brighton Memorial Fields</u></p> <p>Brighton Memorial Fields is situated on Sybil Lane, within the vicinity of several other playing fields and active recreation areas including Bicentennial Park and Ilinden Sports Centre. Due to the sporting and recreation land uses currently present within and surrounding Brighton Memorial Fields, the area is subject to heavy traffic and parking demands on weekends. This is particularly the case during the peak of the sporting season for soccer (typically throughout autumn and winter).</p> <p>Brighton-Le-Sands Public School and Little Sails Preschool are located immediately north of Brighton Memorial Fields. During term, traffic around schools is typically heavier during</p>	<p>Crawford Road. This arrangement would reduce potential conflicts between school access and construction access.</p> <p>It is proposed that Sybil Lane would be fully closed during the construction of the new -Sydney Water watermain connection and for the re-painting of piano key markings on the existing speed humps in Sybil Lane. These road closures would be short term and temporary. Access to private properties would be maintained in consultation with residents.</p> <p>The project REF undertook traffic studies for Sybil Lane, at its intersection with Crawford Road and O'Neill Street. The results of this study demonstrated the anticipated increase in traffic in Sybil Lane during construction of the project (up to 10 light vehicles and 15 heavy vehicles per day) would not result in any discernible traffic delays. These results suggest that Sybil Lane and its intersections at Crawford Road and O'Neill Street are not currently operating at capacity. The establishment of the site offices on O'Neill Street are not anticipated to result in an increase in light vehicles travelling on O'Neill Street beyond that described in the project REF. In addition, office workers would typically access the site offices on O'Neill Street from President Avenue, to reduce any potential for traffic impacts on Sybil Lane. For these reasons the establishment of the site offices is not anticipated to generate any significant increase in vehicle traffic and all light vehicle movements are expected to be accommodated by the surrounding road network capacity.</p> <p>Following the completion of construction of the proposed modifications, all disturbed areas would be reinstated, and all temporarily closed roads would be reopened as soon as practicable. As such, no operation impacts would occur as a result of the proposed modifications. Any operational traffic impacts would be consistent with those described in the project REF whereby overall, traffic volumes at Brighton Memorial Fields would remain unchanged compared to current conditions during the operation of the project.</p> <p>Parking</p> <p>The establishment of the site offices would provide:</p> <ul style="list-style-type: none"> • Six car parking spaces at 65 O'Neill Street
---	---

the school zone hours of 8:00 am to 9:30 am and 2:30pm to 4:00pm.

Sybil Lane will be the primary access road to this site during construction and operation. Sybil Lane is a narrow two-way local laneway connecting O'Neill Street and Crawford Road. No property frontages occur along Sybil Lane, instead, the road provides rear-of-property access to residents whose front entrance is located on Crawford Road.

O'Neill Street and Crawford Road to the south and east of the site respectively, both terminate at A1 President Avenue, an arterial road located less than 200 metres to the south of Brighton Memorial Fields. A1 President Avenue travels around one kilometre west to the busy A36 Princes Highway and around one kilometre east to The Grand Parade at Brighton-Le-Sands beach.

- Three car parking spaces at 65 O'Neill Street
- Six car parking spaces at 69 O'Neill Street.

These 15 parking spaces would be available for office and administrative workers. No equipment, machinery or heavy vehicles would be stored or parked at the proposed site offices. All workers would park within the established parking spaces where available. It is possible that during construction, there may be instances where all off-street parking spaces are utilised, and overflow vehicles may be required to utilise on-street parking along O'Neill Street. Any on-street parking would occur as a last resort, and as such, the potential for the site offices on O'Neill Street to impact the availability of street parking in the area would be minimal.

While Sybil Lane would require temporary full and partial closures during the construction of the proposed modifications, no on-street parking is provided on Sybil Lane, and therefore no parking impacts would result due to these closures.

Following the completion of construction of the proposed modifications, all disturbed areas would be reinstated all temporarily closed roads would be reopened as soon as practicable and the site office on O'Neill Street would be vacated. As such, no operation impacts to parking would occur as a result of the proposed modifications.

Pedestrian and cycling access

The construction of the proposed modifications would result in some impacts to pedestrian and cyclist access. This is particularly likely where works would occur at Sybil Lane and Bay Street. These works would require temporary full and partial closure of Sybil Lane and temporary, short-term closure of the formal footpath on Bay Street, adjacent to McCarthy Park.

For the duration of any footpath or road closures, appropriate signage and detours would be provided for pedestrians and cyclists. With the implementation of these measures, impacts to pedestrian and cyclist access are anticipated to be minimal.

Following the completion of construction of the proposed modifications, all disturbed areas would be reinstated and all

		<p>temporarily closed roads and footpaths would be reopened as soon as practicable. As such, no operation impacts to pedestrian and cycling access would occur as a result of the proposed modifications.</p> <p>The project REF did not identify any adverse impacts to pedestrian and cyclist as a result of the operation of the project. The project will provide a new cycle bridge and shared footpath and cycleway over Muddy Creek, and improve pedestrian and cyclist access to, and within the sites.</p> <p>Relevant mitigation measures to minimise construction impacts, as provided in the project REF are summarised in Chapter 7. No additional safeguards or management measures would be required.</p>
<p>Utilities</p>	<p>A desktop assessment was undertaken of relevant available reports and online mapping resources, including:</p> <ul style="list-style-type: none"> • Utilities assessment completed for the project REF • M6 Stage 1 - New M5, Arncliffe to President Avenue, Kogarah Environmental Impact Statement • Google Street View • Six Maps. <p>Sydney Water owns and operates several pipelines which pass beneath both sites. The pipelines within each site are as follows:</p> <p><u>McCarthy Reserve/Ador Precinct Park</u></p> <ul style="list-style-type: none"> • 225 millimetre diameter sewer line running north-south along the boundary of the site with West Botany Street • 300 millimetre diameter potable water line running east-west along the boundary of the site with Bay Street. <p><u>Brighton Memorial Fields</u></p> <ul style="list-style-type: none"> • 300 millimetre diameter sewer line running north-south west of the playing field • 250 millimetre diameter sewer line running east-west along the northern edge of the playing field 	<p>There are numerous utilities in and around the two sites which while not providing significant site constraints, have required consideration within the design and construction methodology. Disruption to these utilities could have potential impacts at a local and regional scale depending on circumstances.</p> <p>To avoid potential impacts, all underground and above ground services in the vicinity of the sites would be identified prior to construction using the following mechanisms:</p> <ul style="list-style-type: none"> • Dial Before You Dig request and plans • Consulting with utility companies that have services in close proximity to the proposed works area, and if necessary, requesting a building plan approval from the respective company • Identification of service locations using a specialised contractor • Pot holing and visual identification of services. <p>The aboveground powerlines and associated power poles along Bay Street are located near to where tree trimming would be carried out. While these works would be unlikely to make contact with the overhead power lines (due to trimming being restricted to lower branches) appropriate management measures would be implemented for the purpose of worker and public safety. While these works are likely to be carried out as night works and pedestrian traffic would be low, management measures would nonetheless include establishing</p>

	<ul style="list-style-type: none"> • 225 millimetre diameter sewer line running north-south along Sybil Lane. • An Ausgrid 132kV transmission cable easement runs north-south near the western edge of Brighton Memorial Fields and above ground powerlines and associated power poles run along Bay Street, West Botany Street, Sybil Lane and O'Neill Street. <p>In addition, a private power pole and associated overhead wiring is located near to the construction of the cyclist bridge over Muddy Creek would be constructed.</p>	<p>an exclusion area and appropriate detours for pedestrians in the immediate area of the proposed works.</p> <p>To allow for the construction of the cyclist bridge over Muddy Creek, the minor relocation of a private power pole is proposed. To facilitate this relocation, the wires would be deenergised prior to works commencing to avoid safety impacts to workers and the public. Once the pole has been relocated, it would be reenergised and would resume operation as per usual. The relocation of the private power pole may result in a temporary loss of power. This would be short term and temporary, and energy supply would be restabled immediately following the relocation works (about two days).</p> <p>The proposed modifications would include the establishment of a new water connection to the Sydney Water watermain, located in Sybil Lane. This connection would supply water to the service the project. This new water connection will not require the relocation of existing services. The implementation of these works may require that water supply to nearby residents may be temporarily disconnected to allow of the commissioning of the new water connection. Any disruptions in water service would be short term and temporary in nature. Reasonable advance notification of any disruptions to water supply services would be carried out.</p> <p>No long term operational impacts on utilities are anticipated as a result of the proposed modifications.</p>
--	--	--

6.6.1 Safeguards and management measures

Table 6-10 Other impacts - safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing
Visual amenity	Consideration will be given to reducing temporary visual amenity impacts associated with the establishment of the site offices on O'Neill Street, for example in the choice of materials and finishes that are complementary to the surrounding visual landscape and existing structures. Any landscaping provided will	Contractor	Pre-construction and construction

	complement the existing local character and streetscape and will be delivered in accordance with the Landscape Guideline (RTA, 2008).		
Light spill	Window furnishings (curtains) will be provided at the proposed site offices at O'Neill Street to minimise potential for light spill to impact neighbouring properties	Contractor and TfNSW	Construction
Light spill	Any portable lighting will be positioned in a manner to have light directed away from adjoining receivers, including road users, and will avoid adverse impacts to individual private property.	Contractor	Construction

DRAFT

6.7 Cumulative impacts

6.7.1 Potential impacts

Construction

Cumulative effects could result from other industrial, commercial or residential development in the vicinity operating during the construction period of a proposal.

The M6 Stage 1 project is the most significant future construction project identified in the area. There are no other known developments occurring in the area at the same time as the proposed modifications that would be considered likely to contribute to cumulative impacts.

The objective of the proposed modifications is to support the project in providing offset recreation facilities prior to the construction of the M6 Stage 1 project commencing. Accordingly, there is limited risk of cumulative effects between the proposal and the M6 Stage 1 project.

In addition, the impacts associated with the proposed modifications would not significantly contribute to or change the potential environmental impacts that are described in the project REF. For this reason, the proposed modifications are unlikely to contribute to cumulative impacts.

Operation

There are no long-term cumulative impacts anticipated from the proposed modifications.

7 Environmental management

7.1 Environmental management plans

A number of safeguards and management measures have been identified to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposed modifications. Should the proposed modifications proceed, these management measures would be addressed if required during detailed design and incorporated into the CEMP and applied during the construction of the proposed modifications.

7.2 Summary of safeguards and management measures

Environmental safeguards and management measures for the Recreation facilities at Rockdale and Brighton Le Sands project are summarised in Table 7.1. Additional safeguards and management measures identified in this addendum REF are included in bold and italicised font. The safeguards and management measures will be incorporated into the CEMP and implemented during construction and operation of the proposed modification, should it proceed. These safeguards and management measures will minimise any potential adverse impacts arising from the proposed works on the surrounding environment.

Table 7-1 Summary of safeguards and management measures

No	Impact	Environmental safeguards	Responsibility	Timing
GEN1	General - minimise environmental impacts during construction	<p>A CEMP would be prepared and submitted for review and endorsement of the Transport for NSW Environment Manager prior to commencement of the activity.</p> <p>As a minimum, the CEMP would address the following:</p> <ul style="list-style-type: none"> • Any requirements associated with statutory approvals • Details of how the project would implement the identified safeguards outlined in the REF • Issue-specific environmental management plans, including flood management • Roles and responsibilities • Communication requirements • Induction and training requirements • Procedures for monitoring and evaluating environmental performance, and for corrective action • Reporting requirements and record-keeping • Procedures for emergency and incident management • Procedures for audit and review. <p>The endorsed CEMP would be implemented during the undertaking of the activity.</p>	Contractor	Pre-construction
GEN2	General - notification	All businesses, residential properties and other key stakeholders (eg schools, local councils) affected by the activity would be notified at least five business days prior to commencement of the activity.	Contractor and TfNSW	Pre-construction

GEN3	General – environmental awareness	<p>All personnel working on site would receive training to ensure awareness of environment protection requirements to be implemented during the project. This would include up-front site induction and regular "toolbox" style briefings. Site-specific training would be provided to personnel engaged in activities or areas of higher risk. These include:</p> <p>adjoining residential areas requiring particular noise management measures.</p>	Contractor	Construction
TRA1	Traffic and transport	<p>The CTMP would be prepared in accordance with the Roads and Maritime <i>Traffic Control at Work Sites Manual</i> (RTA, 2010) and <i>QA Specification G10 Control of Traffic</i> (Roads and Maritime, 2008). The CTMP would include:</p> <ul style="list-style-type: none"> • Confirmation of haulage routes • Construction vehicle parking controls and provision for worker parking off- street and on-site • Measures to maintain access to local roads and properties • Site specific traffic control measures (including signage) to manage and regulate traffic movement • Measures to maintain pedestrian and cyclist access • Requirements and methods to consult and inform the local community of impacts on the local road network • A requirement to consult with those affected by changes to private driveway access • Description of the access routes to construction sites including the entry and exit locations and measures to prevent construction vehicles queuing on public roads • A response plan for any construction traffic incident • Consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic 	Contractor	Pre-construction

		<ul style="list-style-type: none"> Monitoring, review and amendment mechanisms. 		
TRA2	Traffic and transport	Notification of the local community and recreational facility users on construction progress including scheduling of works.	Contractor and Transport	Construction
TRA3	Traffic and transport	<p>The completion of the new car park within the Brighton Memorial Playing Fields site would be completed as soon as practicable within the wider program of works, and made available for school drop-off and pick-up, prior to the completion of the rest of the works if possible.</p> <p>Consultation would occur with Brighton-Le-Sands Public School to communicate changes in access to the car park and potential temporary alternative parking options.</p>	Contractor and TfNSW	Construction
TRA4	Traffic and transport	<p>The appropriate road opening and occupation permits would be sought from Bayside Council, accompanied by detailed traffic management plans prior to the works commencing.</p> <p>Any Road Occupancy Licences from the Transport Management Centre for work on State roads would also be obtained, where required.</p>	Contractor	Pre-construction
TRA5	Traffic and transport	Cycle parking would be provided within the proposed car parks.	TfNSW	Detailed design
TRA6	Traffic and transport	Green travel would be promoted through the club membership to encourage non-car based travel to the sites.	Bayside Council	Operation
TRA7	Traffic and transport	A road safety audit would be undertaken to consider the new access arrangements and the interactions with the surrounding transport network. This audit is to extend to all intersections immediately beyond the area of works eg at Crawford Road, Brighton Le Sands, Bay Street, Rockdale etc. Recommendations identified within the audit are to be implemented within 12 months of construction completion commencing.	Bayside Council	Operation

TRA8	Traffic and transport	Upon completion and within one month of soccer season starting, a review of parking demand would be undertaken. This review would consider whether temporary transport and access measures are required, and where necessary, implement those measures.	TfNSW and Bayside Council	Operation
TRA9	Traffic and transport	An audit of pedestrian and cyclist movements through both proposal sites would be undertaken during peak events. Recommendations identified within the audit are to be implemented within 12 months of opening of the facilities.	Bayside Council	Operation
NOI1	Construction noise and vibration	<p>A Construction Noise and Vibration Management Plan (CNVMP) would be prepared and implemented as part of the CEMP. The CNVMP would generally follow the approach in the ICNG and identify: all potential significant noise and vibration generating activities associated with the activity; and feasible and reasonable mitigation measures to be implemented. The measures would be consistent with the Roads and Maritime <i>Construction Noise and Vibration Guideline</i>.</p> <p>The CNVMP would include a monitoring program to assess performance against relevant noise and vibration criteria. Arrangements for consultation with key stakeholders and sensitive receivers, including notification and complaint handling procedures and construction noise mitigation measures would be implemented in the event of non-compliance with noise and vibration criteria.</p>	Contractor	Pre-construction
NOI2	Construction noise and vibration	Advanced notification of work and potential disruptions would be provided where receivers are likely to experience annoyance from noisy work. The notification may consist of a letterbox drop (or equivalent) detailing work activities, time periods over which these would occur, impacts and mitigation measures. Notification distribution would be a minimum of five business days prior to the start of work.	Contractor	Construction
NOI3	Construction noise and vibration	Respite offers would be considered where there are high noise and vibration generating activities near residential receivers. The respite would be a minimum period of one hour between blocks of continuous work which would be limited to three hours in duration.	Contractor	Construction

		The actual duration of each block of work and respite should be flexible to accommodate the requirements of impacted receivers.		
NOI4	Construction noise and vibration	Out of hours works would be undertaken over no more than two consecutive nights.	Contractor	Construction
NOI5	Construction noise and vibration	Where feasible and reasonable, construction would be carried out during standard daytime construction working hours. Works generating high noise and/or vibration levels would be scheduled during less sensitive time periods.	Contractor	Construction
VIS1	Visual amenity	Consideration would be given to reducing visual amenity impacts associated with new structures during detailed design, for example in the choice of materials and finishes that are complementary to the surrounding visual landscape.	TfNSW	Detailed design
VIS2	Visual amenity	Measures to further minimise the construction footprint and to increase vegetation retention areas would be investigated during detailed design.	TfNSW	Detailed design
VIS3	Visual amenity	Landscaping would be provided around the proposed playing fields which would complement the existing vegetation present in the park lands	Contractor	Construction
VIS4	Visual amenity	A site inspection by a qualified arborist would be undertaken prior to commencing construction to confirm tree removal, tree retention and tree protection measures. The implementation of site-specific safeguard measures would be checked before construction starts.	Contractors	Pre-Construction
VIS6	<i>Visual amenity</i>	<i>Consideration will be given to reducing temporary visual amenity impacts associated with the establishment of the site offices on O'Neill Street, for example in the choice of materials and finishes that are complementary to the surrounding visual landscape and existing structures. Any landscaping provided will complement the existing local character and streetscape and will be delivered in accordance with the Landscape Guideline (RTA, 2008).</i>	Contractor	Pre-construction and construction

LIG1	Light spill	Lighting provided for the proposal would be designed to comply with Australian Standard (AS) 4282 – Control of the obtrusive effects of outdoor lighting and AS 2560:2007 Sports Lighting.	TfNSW	Detailed design
LIG2	Light spill	Full cut-off fixtures would be used for lighting where feasible.	TfNSW	Detailed Design
LIG3	Light spill	Lighting would be operated at no more than 200 Lux	Bayside Council	Operation
LIG4	Light spill	Residents potentially affected by increased light spill would be consulted prior to construction	TfNSW	Pre-construction
LIG5	Light spill	<i>Any portable lighting will be positioned in a manner to have light directed away from adjoining receivers, including road users, and will avoid adverse impacts to individual private property.</i>	Contractor	Construction
LIG6	Light spill	<i>Window furnishings (curtains) will be provided at the proposed site offices at O'Neill Street to minimise potential for light spill to impact neighbouring properties</i>	Contractor and TfNSW	Construction
BIO1	Biodiversity	<p>A Flora and Fauna Management Plan would be prepared in accordance with Roads and Maritime's Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects (RTA, 2011) and implemented as part of the CEMP. It would include, but not be limited to:</p> <ul style="list-style-type: none"> • Plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features and revegetation areas • Requirements set out in the Landscape Guideline (RTA, 2008) • Pre-clearing survey requirements • Procedures for unexpected threatened species finds and fauna handling 	Contractor	Pre-construction

		<ul style="list-style-type: none"> Requirement for a suitably qualified arborist to be present for on-site for activities such as tree health assessments, when tree roots are encountered and during vegetation clearing Procedures addressing relevant matters specified in the Policy and guidelines for fish habitat conservation and management (DPI Fisheries, 2013) protocols to manage weeds and pathogens, to manage the unlikely risk of sediment flowing into waterways Protocols for manage weeds and pathogens. 		
BIO2	Biodiversity	A pre-construction survey would be undertaken of the existing West Botany Street bridge over Muddy Creek to confirm presence of Eastern Bentwing Bats. The Flora and Fauna Management Plan for the proposal would include procedures for unexpected threatened species finds and fauna handling.	Contractor	Pre-construction
BIO3	Biodiversity	Measures to further minimise the construction footprint and increase vegetation areas would be investigated during detailed design and implemented where practicable and feasible. Habitat trees for threatened species would be considered for retention.	TfNSW	Detailed design
BIO4	Biodiversity	Vegetation planted as part of the landscaping work would consider compatibility as a foraging resource for Grey-headed Flying-fox. Species such as eucalypts and figs would be consistent with a preferred resource, however species that produce nectar such as Banksia species would also be suitable.	TfNSW	Detailed design
FLO1	Soil and water	A Construction Soil and Water Management Plan (CSWMP) would be prepared and implemented as part of the CEMP. The CSWMP would identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks would be addressed during construction. Measures that would be implemented as part of the CSWMP would include:	Contractor	Pre-construction

		<ul style="list-style-type: none"> • Erosion and sedimentation controls would be checked and maintained on a regular basis (including clearing of sediment from behind barrier) and records kept and provided on request • Erosion and sediment control measures would not be removed until the works are completed and areas are stabilised • Work areas would be stabilised progressively during the works. 		
FLO2	Soil and water	<p>A site specific Erosion and Sediment Control Plan (ESCP) would be prepared and implemented as part of the CSWMP.</p> <p>The ESCP would include arrangements for managing wet weather events, including monitoring of potential high risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.</p> <p>Erosion and sediment control measures would be implemented and maintained and would include:</p> <ul style="list-style-type: none"> • The maintenance of established stockpile sites would be in accordance with the Roads and Maritime Services Stockpile Site Management Guideline (EMS-TG-10) • Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets • Reduce water velocity and capture sediment on site • Minimise the amount of material transported from site to surrounding pavement surfaces • Divert clean water around the site. 	Contractor	Pre-construction Construction
FLO3	Stormwater Detention	<p>On-site retention or detention strategies would be implemented to manage permissible site discharge and reduce flood risk where the impervious playing fields construction constitutes an impermeable surface and triggers the need for detention.</p> <p>Assessment of the permissible site discharge and minimum on-site detention volume would be undertaken during the detailed design of the sites as per the respective catchments (Rockdale Technical</p>	TfNSW	Detailed design

		Specifications – Stormwater Management Section 6.2 and Sydney Water requirements for Muddy Creek, whichever is more stringent).		
FLO4	Stormwater Quality	<p>Stormwater quality management measures would be implemented to achieve stormwater pollution reduction targets in Botany Bay. These measures would include:</p> <p>Prohibition of release of dirty water into drainage lines and/or waterways</p> <p>Visual monitoring of local water quality (i.e. turbidity, hydrocarbon spills/slicks) would be undertaken on a regular basis to identify any potential spills or deficient silt curtains or erosion and sediment controls.</p> <p>Water quality control measures would be implemented to prevent any construction materials (e.g. concrete, grout, sediment etc) entering drain inlets or waterways.</p>	Contractor	Construction
FLO5	Surface Water Contamination	Measures to manage accidental spills and leaks would be detailed in the site-specific emergency spill plan, included in the CEMP and implemented on site.	Contractor	Pre- construction and Construction
FLO6	Flooding	Weather conditions would be monitored to identify potential flood conditions and manage potential flooding impacts in accordance with the CEMP.	Contractor	Construction
FLO7	Flooding	<p>Design of the fields would demonstrate no impact to flooding through numerical flood modelling using Bayside Council’s approved flood model.</p> <p>Construction of final surface levels would match the proposed design surface levels within 10 mm in areas of flood affectation. Proposal elements requiring cut or fill, such as the playing fields and skate parks, would be designed for a net balance of cut/fill, to the extent feasible dependent on the suitability of the material present at site for its intended use.</p>	TfNSW and Contractor	Detailed Design and Construction

FLO8	Flooding	Construction site facilities, stockpiles, materials and equipment would be located outside the 1% AEP flood extents, where practicable. Where this is not feasible, further consultation with Bayside Council would be undertaken on suitable site-specific measures. The contractor would prepare a Flood Management Plan, including appropriate siting of plant, equipment and materials and a flood contingency plan, in order to mitigate flood risks during construction.	Contractor	Pre-construction and Construction
FLO9	Flooding	Design and construction of the pedestrian bridge over Muddy Creek at McCarthy Reserve would minimise any afflux effects on the existing channel and flood conditions.	TfNSW and Contractor	Detailed Design and Construction
FLO10	Flooding	Signage would be provided around the McCarthy Reserve/Ador Park Precinct to alert personnel that there is the risk of flooding in the area. Installation of bollards or similar barriers would be considered around the perimeter of the car park at Ador Park Precinct to prevent vehicles from being carried away in the event of a flood. A risk benefit analysis would be undertaken on the final design and flood model, in consultation with Bayside Council, to determine need to install any barriers.	Transport	Detailed Design
CON1	Contamination Investigation	Further preliminary and detailed site contamination investigations would be undertaken to: <ul style="list-style-type: none"> • Determine the extent of contamination present • Identify potential impacts on workers during construction • Assess the suitability of the fill to be reused on the site • Identify if capping layers are required • Develop management strategies for the identified contamination including methods for classification and disposal. Investigations would be completed by an appropriately qualified and experienced environmental consultant and be completed in accordance with the State Environmental Planning Policy 55 (SEPP 55), relevant NSW EPA Guidelines, and the National Environment	TfNSW	Detailed design/Pre-construction

		Protection Measure (Assessment of Site Contamination) 1999 (revised 2013).		
CON2	Exposure of acid sulfate soils	The CEMP would include an Acid Sulfate Soils Management Plan (ASSMP), prepared in accordance with the Roads and Maritime Services Guidelines for the Management of Acid Sulfate Materials, 2005. The ASSMP would be prepared by an appropriately qualified and experienced consultant, prior to the works commencing, and would be informed by further contamination investigations undertaken for detailed design.	Contractor	Pre-construction
CON3	Erosion and sedimentation	Erosion and sedimentation control measures would be outlined in an ESCP and implemented for the proposed works.	Contractor	Pre-construction and Construction
CON4	Contaminated land	A Soil Contamination Management sub-plan would be prepared as part of the CEMP, prior to the commencement of works, which documents specific soil contamination mitigation and management measures to be employed during the construction of the proposed works.	Contractor	Pre-construction and Construction /detailed design
CON5	Contaminated land	If contaminated areas are encountered during construction, appropriate control measures would be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area would cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Transport for NSW Environment Manager and/or EPA.	Contractor	Construction
CON6	Human health related impacts	Where excavation works at McCarthy Reserve/Ador Park Precinct uncovers previous landfill material, and that material is to be reused on site, an assessment of the material against the Health-based investigation levels (mg/kg) for Recreational C sites as defined in Schedule B 1 of the Guideline on Investigation Levels for Soil and Groundwater (NEPC, 2011) would be undertaken to determine the suitability of the material for recreational land use purposes. This assessment would be undertaken prior to the reuse of this material on site.	Contractor	Construction

CON7	Exposure of contaminated soils	Reinstatement of an appropriate capping layer on any exposed land fill material would be required on a progressive basis and as soon as practicable as part of the proposed works.	Contractor	Construction
CON8	Disturbance of asbestos containing material	If asbestos is identified during excavation, the contaminated material would be managed as Special Waste (containing asbestos) and disposed of an appropriately licenced waste facility.	Contractor	Construction
CON9	Accidental spill	A site-specific emergency spill plan would be developed, which would include spill management measures in accordance with the Roads and Maritime Code of Practice for Water Management (RTA, 1999) and relevant EPA guidelines. The plan would address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Transport for NSW and EPA officers).	Contractor	Pre-construction
CON10	Contaminated land	If a Remediation Action Plan is required (to be determined through the contamination assessment report), it would be provided to Bayside Council to review and provide input.	TfNSW and Contractor	Detailed design/Pre-Construction and Construction
AIR1	Dust emissions	Measures (including watering or covering exposed areas) are to be used to minimise or prevent air pollution and dust.	Contractor	Construction
AIR 2	Dust emissions	Stockpiles or areas that may generate dust are to be managed to suppress dust emissions in accordance with the Roads and Maritime Services Stockpile Site Management Guideline (EMS-TG-10).	Contractor	Construction
AIR3	Dust emissions	Loads containing loose materials are required to be covered.	Contractor	Construction
AIR4	Dust emissions	On-site vehicle speed limits are to be established and enforced.	Contractor	Construction
AIR5	Dust emissions	Dust minimisation measures for exposed stockpiles (such as top soil stockpiles) and unsealed construction areas are to be implemented as required (such as water spraying).	Contractor	Construction

AIR6	Dust emissions	Vehicles and machinery are to be regularly serviced and maintained in an efficient condition to minimise potential emissions.	Contractor	Construction
AIR7	Dust emissions	During extreme weather events where dust generation cannot be effectively minimised (such as high winds), dust generating works would cease until adequate controls can be implemented or until adverse weather conditions subside.	Contractor	Construction
AIR8	Dust emissions	Exposed areas are to be stabilised with planting as soon as reasonable and feasible where planting is specified or other landscaping design is proposed.	Contractor	Construction
AIR9	Dust emissions	Stockpiled material is to be appropriately shaped to reduce wind erosion and covered/seeded/sealed if they are to remain in-situ onsite for more than 48hrs.	Contractor	Construction
AIR10	Dust emissions	Vehicles and activities are to be confined to the designated work areas to prevent any inadvertent encroachment into exposed areas.	Contractor	Construction
AIR11	Dust emissions	All emission controls used on vehicles and construction equipment would comply with standards listed in Schedule 4 of the Protection of the Environment Operations (Clean Air) Regulation 2010.	Contractor	Construction
AIR12	Other emissions	Vegetation or other materials are not to be burnt on site.	Contractor	Construction
AB1	Aboriginal heritage	<p>The Standard Management Procedure - Unexpected Heritage Items (Roads and Maritime, 2015) would be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where Transport for NSW does not have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the Procedure) is not in place.</p> <p>Work would only re-commence once the requirements of that Procedure have been satisfied.</p>	Contractor	Construction

HER1	Unexpected Discovery of Non-Aboriginal heritage	<p>The Standard Management Procedure - Unexpected Heritage Items (Roads and Maritime, 2015) would be followed in the event that any unexpected heritage items, archaeological remains or potential relics of Non-Aboriginal origin are encountered.</p> <p>Work would only re-commence once the requirements of that Procedure have been satisfied.</p>	Contractor	Construction
HER2	Brighton Memorial Fields commemorative gate with plaques	<p>The detailed design would be informed through consultation with the Brighton RSL Club Sub-Committee regarding the relocation of the memorial plaques and a new form of commemoration.</p> <p>Should any change to the gate and/or associated memorial plaques occur then the NSW War Memorial Register would require updating.</p>	TfNSW	Detailed design
LAN1	Land use and social and economic	<p>A Communication Plan (CP) would be prepared and implemented as part of the CEMP to help provide timely and accurate information to the community during construction. The CP would include (as a minimum):</p> <ul style="list-style-type: none"> • Mechanisms to provide details and timing of proposed activities to affected residents, including changed traffic and access conditions • Contact name and number for complaints. <p>The CP would be prepared in accordance with the Transport for NSW communications guidelines, standards and e-tool kit.</p>	Contractor	Pre-construction and Construction
COW1	Construction Waste	<p>A Waste Management Plan (WMP) would be prepared as part of the CEMP in accordance with the Roads and Maritime Services Technical Guide: Management of road construction and maintenance waste.</p>	Contractor	Construction
COW2	Construction waste	<p>The following resource management hierarchy principles would be followed:</p> <ul style="list-style-type: none"> • Avoid unnecessary resource consumption as a priority • Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery where possible) 	Contractor	Construction

		<ul style="list-style-type: none"> Disposal is undertaken as a last resort. 		
COW3	Green waste	If vegetation is to be mulched and transported off site for beneficial reuse, a Mulch Management Plan would be prepared, and mulch would be assessed for the presence of weeds, pests, and other diseases.	Contractor	Construction
COW4	Construction Waste	Excavated material, soil, fill and other erodible matter that are transported to or from the sites would be kept covered at all times during transportation.	Contractor	Construction
COW5	Construction Waste	All excess spoil generated from excavations classified as General Solid Waste (putrescible) would be disposed of at a licensed facility.	Contractor	Construction
COW6	Construction Waste	All waste would be classified in accordance with the Waste Classification Guidelines (EPA, 2014) so that different waste streams would be kept separate.	Contractor	Construction
COW7	Construction Waste	All general inert and solid waste material would be stored at designated points, isolated from surface water and stormwater drains.	Contractor	Construction
COW8	Construction Waste	Wastes disposed offsite would be sent to a facility appropriately licenced to receive that waste.	Contractor	Construction
COW9	Construction Waste	Compilation of a waste data form for recording waste movement including; solid and inert waste materials, provision of a description of the waste types, physical nature of wastes, proposed treatment, dates of movement, transporters and waste destination details.	Contractor	Construction
UTI1	Utilities	Identify all underground and above ground services in the vicinity of the proposal by undertaking a dial before you dig request, consulting with utility companies that have services within close proximity to the proposal; identifying services locations using a specialised contractor and potholing prior to undertaking ground disturbance.	Contractor	Pre-construction

7.3 Licensing and approvals

All relevant licenses, permits, notifications and approvals needed for the Recreation facilities at Rockdale and Brighton Le Sands project and when they need to be obtained are listed in Table 7-2. Additional or changed licenses and approval requirements identified in this addendum REF are indicated by underlined and/or struck out font.

Table 7-2 Summary of licensing and approval required

Instrument	Requirement	Timing
SEPP 55 (s16)	Notification about Category 2 works to council or the Commissioner.	At least 30 days before start of the activity.
Protection of the Environment Operations Act 1997 (s143)	A notice under section 143(3A) must be received prior to transporting project waste to a place that is not owned by Transport and is not a licensed landfill or resource recovery facility. Waste must be appropriately classified and correctly described on the s.143 Notice.	Prior to start of the activity if necessary.

8 Conclusion

This addendum REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity.

This has included consideration where relevant, of conservation agreements and plans of management under the NPW Act, biodiversity stewardship sites under the BC Act, wilderness areas, areas of outstanding value, impacts on threatened species, populations and ecological communities and their habitats and other protected fauna and native plants. It has also considered potential impacts to matters of national environmental significance listed under the Federal EPBC Act.

A number of potential environmental impacts from the proposed modifications have been avoided or reduced during the design development. The proposed modifications as described in the addendum REF best meets the project objectives but would still result in some impacts on traffic and access, noise, biodiversity and surface water quality. Safeguards and management measures as detailed in this addendum REF would ameliorate or minimise these expected impacts. On balance the proposed modifications are considered justified and would not result in any new environmental impacts, or a change in the nature or significance of impacts, as described in the project REF.

Significance of impact under NSW legislation

The proposed modifications would not result in a change to the findings of the project REF or Response to Submissions Report and would be unlikely to cause a significant impact on the environment. Therefore, it is not necessary for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning and Public Spaces under Division 5.2 of the EP&A Act. A Biodiversity Development Assessment Report or Species Impact Statement is not required. The proposed modification is subject to assessment under Division 5.1 of the EP&A Act. Consent from Council is not required.

9 Certification

This addendum review of environmental factors provides a true and fair review of the proposed modification in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposed modification.

Kelly Pearsall
Associate Environmental Scientist
AECOM Australia Pty Ltd
Date: 02 July 2020

I have examined this review of environmental factors and accept it on behalf of Transport for NSW.

M6 Environmental Approvals Manager – Transport for NSW
Date: 03 July 2020

10 References

- AECOM (2015) WestConnex Stage 2: M5 Factual Contamination Assessment
- AECOM (2018) M6 Stage 1 New M5 Motorway at Arncliffe to President Avenue at Kogarah Contamination Technical Report
- AECOM (2018) M6 Stage 1 New M5 Motorway at Arncliffe to President Avenue at Kogarah Contamination Technical Report
- AECOM (2019) Recreation facilities at Rockdale and Brighton-Le-Sands Review of Environmental Factors
- AECOM (2020) Recreation facilities at Rockdale and Brighton-Le-Sands Response to Submissions Report
- BoM (2020) Climate averages for Station: 066037; Commenced: 1929 – last record 18 June 2020; Latitude: 33.99°S; Longitude: 151.17 °E
- Cardno (2020) Design Report 100% (IFT) M6 Stage 1 - Community Recreational Facilities
- Chapman GA, Murphy CL, Tille PJ, Atkinson G and Morse RJ (2009). Ed. 4, Soil Landscapes of the Sydney 1:100,000 Sheet map, Department of Environment, Climate Change and Water, Sydney
- Department of Environment and Climate Change (2009). Interim Construction Noise Guideline, Sydney
- Department of Environment and Conservation (2006). Assessing Vibration: A Technical Guideline, Sydney
- Department of Environment, Climate Change and Water (2011). NSW Road Noise Policy, Sydney
- ELA (2018) F6 Extension Stage 1 Biodiversity Development Assessment Report
- Equatica (2011) Bicentennial Park Wetland Concept Report, prepared for Rockdale City Council
- Herbert C (1983). Sydney 1:100 000 Geological Sheet 9130, 1st edition. Geological Survey of New South Wales, Sydney
- Landcom (2004). *Managing Urban Stormwater: Soils and Construction, Volume - 4th Edition*, Sydney
- NSW Government, 2019, *NSW Annual Air Quality Statement 2019*. Available at: <https://www.environment.nsw.gov.au/topics/air/air-quality-statement>
- OEH 2019. NSW Annual Air Quality Statement 2018. State of NSW and Office of Environment and Heritage
- Roads and Maritime Services (2018). F6 Extension Stage 1 New M5 Motorway at Arncliffe to President Avenue at Kogarah Environmental Impact Statement
- Rockdale Development Control Plan 2011, Rockdale Council
- Rockdale Local Environmental Plan 2011, Rockdale Council

Terms and acronyms used in this addendum REF

Term/ Acronym	Description
ADH	Australian height datum
AHIMS	Aboriginal Heritage Information Management System - A register of NSW Aboriginal heritage information maintained by the NSW Office of Environment and Heritage A register of NSW Aboriginal heritage information maintained by the NSW Office of Environment and Heritage
ARI	Average Recurrence Interval
ASSMP	Acid sulfate soils management plan
BBWQIP	Botany Bay & Catchment Water Quality Improvement Plan
BC Act	Biodiversity Conservation Act 2016 (NSW).
BDAR	Biodiversity Development Assessment Report
CEMP	Construction environmental management plan
CNVG	Construction noise and vibration guidance
CNVMP	Construction noise and vibration management plan
CSWMP	Construction soil and water management plan
EIS	Environmental impact statement
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW). Provides the legislative framework for land use planning and development assessment in NSW
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth). Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process.
FM Act	Fisheries Management Act 1994 (NSW)
Heritage Act	Heritage Act 1977 (NSW)
ISEPP	State Environmental Planning Policy (Infrastructure) 2007
KTP	Key threatening process
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan. A type of planning instrument made under Part 3 of the EP&A Act.
LGA	Local government area
MNES	Matters of national environmental significance under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> .
NPW Act	National Parks and Wildlife Act 1974 (NSW)
OEH	NSW Office of Environment and Heritage
OOHW	Out of hours work

PMST	Protected matters search tool
PoM	Plan of Management
Roads and Maritime	NSW Roads and Maritime was dissolved by the Transport Administration Amendment Bill in August 2019, all function are now managed by Transport for NSW
REF	Review of environmental factors
ROTAP	Rare or Threatened Australian Plants
SEPP	State Environmental Planning Policy. A type of planning instrument made under Part 3 of the EP&A Act.
SHR	State Heritage Register
TfNSW	Transport for NSW. NSW transport agency. Formally NSW Roads and Maritime Services
TSC Act	<i>Threatened Species Conservation Act 1995 (NSW)</i>
TN	Total nitrogen
TP	Total phosphorus
TSS	Total suspended solids
WMP	Waste management plan

Appendix A

Consideration of clause 228(2) factors and matters of National Environmental Significance and Commonwealth land

DRAFT

Clause 228(2) Checklist

In addition to the requirements of the Is an EIS required? (1995/1996) guideline and the Roads and Related Facilities EIS Guideline (DUAP, 1996) as detailed in the addendum REF, the following factors, listed in clause 228(2) of the Environmental Planning and Assessment Regulation 2000, have also been considered to assess the likely impacts of the proposed modification on the natural and built environment.

Factor	Impact
Any environmental impact on a community?	N/A
Any transformation of a locality?	<p>The proposed modifications alone would not transform a locality.</p> <p>The proposed modifications would support the delivery of the project which will improve existing recreational facilities. However, as these are existing recreational areas, this is not considered to be a <i>transformational</i> change.</p>
Any environmental impact on the ecosystems of the locality?	The proposed modifications would require some isolated vegetation removal and trimming and has the potential to generate environmental impacts associated with construction activities. However, these potential impacts can be appropriately managed through standard construction management practices. Therefore, any impacts on the ecosystem of the localities will be minor.
Any reduction of the aesthetic, recreation, scientific or other environmental quality or value of a locality?	There would be temporary impacts associated with dust, noise and visual amenity duration construction. The proposed modifications will also require minimal vegetation removal and trimming. However, these potential impacts can be appropriately managed through the implementation of management measures. Additionally, following the completion of works all disturbed areas would be reinstated to a pre-construction conditions as far as practicable.
Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?	N/A
Any impact on the habitat of protected fauna (within the meaning of the <i>National Parks and Wildlife Act 1974</i>)?	N/A
Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?	The proposed modifications will require minimal vegetation removal and trimmings. As described in the biodiversity assessment in section 6.2, the vegetation is of low ecological value and is not habitat to any endangered species.
Any long-term effects on the environment?	The proposed modifications will not have any long term effects on the environment.

Factor	Impact
Any degradation of the quality of the environment?	The proposed modifications will not result in degradation of the quality of the environment.
Any risk to the safety of the environment?	The proposed modifications will not pose a risk to the safety of the environment.
Any reduction in the range of beneficial uses of the environment?	The proposed modifications will not result in a reduction in the range of beneficial uses of the environment.
Any pollution of the environment?	Construction of the proposed modifications has the potential to generate environmental pollutants and sedimentation. However, this will be managed through the proposed construction management measures and standard work procedures.
Any environmental problems associated with the disposal of waste?	N/A
Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?	N/A
Any cumulative environmental effect with other existing or likely future activities?	N/A
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?	N/A

Matters of National Environmental Significance and Commonwealth land

Under the environmental assessment provisions of the EPBC Act, the following matters of national environmental significance and impacts on Commonwealth land are required to be considered to assist in determining whether the proposed modification should be referred to the Australian Government Department of Agriculture, Water, and the Environment.

Under the EPBC Act strategic assessment approval a referral is not required for proposed road actions that may affect nationally listed threatened species, populations, endangered ecological communities and migratory species. Impacts on these matters are assessed in detail as part of this addendum REF in accordance with Australian Government significant impact criteria and taking into account relevant guidelines and policies.

Factor	Impact
Any impact on a World Heritage property?	Nil
Any impact on a National Heritage place?	Nil
Any impact on a wetland of international importance?	Nil
Any impact on a listed threatened species or communities?	Nil
Any impacts on listed migratory species?	Nil
Any impact on a Commonwealth marine area?	Nil
Does the proposal involve a nuclear action (including uranium mining)?	Nil
Additionally, any impact (direct or indirect) on the environment of Commonwealth land?	Nil

Appendix B

Statutory consultation checklists

DRAFT

Infrastructure SEPP

Certain development types

Development type	Description	Yes/No	If 'yes' consult with	ISEPP clause
Car Park	Does the project include a car park intended for the use by commuters using regular bus services?	No	N/A	ISEPP cl. 95A
Bus Depots	Does the project propose a bus depot?	No	N/A	ISEPP cl. 95A
Permanent road maintenance depot and associated infrastructure	Does the project propose a permanent road maintenance depot or associated infrastructure such as garages, sheds, tool houses, storage yards, training facilities and workers' amenities?	No	N/A	ISEPP cl. 95A

Development within the Coastal Zone

Issue	Description	Yes/No/NA	If 'yes' consult with	ISEPP clause
Development with impacts on certain land within the coastal zone	Is the proposal within a coastal vulnerability area and is inconsistent with a certified coastal management program applying to that land?	No	N/A	ISEPP cl. 15A

Note: See interactive map here: <https://www.planning.nsw.gov.au/policy-and-legislation/coastal-management>. Note the coastal vulnerability area has not yet been mapped.

Note: a certified coastal zone management plan is taken to be a certified coastal management program

Council related infrastructure or services

Issue	Potential impact	Yes/No	If 'yes' consult with the relevant local council(s).	ISEPP clause
Stormwater	Are the works likely to have a substantial impact on the stormwater management services which are provided by council?	No	N/A	ISEPP cl.13(1)(a)

Issue	Potential impact	Yes/No	If 'yes' consult with the relevant local council(s).	ISEPP clause
Traffic	Are the works likely to generate traffic to an extent that will strain the capacity of the existing road system in a local government area?	No	N/A	ISEPP cl.13(1)(b)
Sewerage system	Will the works involve connection to a council owned sewerage system? If so, will this connection have a substantial impact on the capacity of any part of the system?	No	N/A	ISEPP cl.13(1)(c)
Water usage	Will the works involve connection to a council owned water supply system? If so, will this require the use of a substantial volume of water?	No	N/A	ISEPP cl.13(1)(d)
Temporary structures	Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a minor or inconsequential disruption to pedestrian or vehicular flow?	No	N/A	ISEPP cl.13(1)(e)
Road & footpath excavation	Will the works involve more than minor or inconsequential excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?	No	N/A	ISEPP cl.13(1)(f)

Local heritage items

Issue	Potential impact	Yes/No	If 'yes' consult with the relevant local council(s)	ISEPP clause
Local heritage	Is there is a local heritage item (that is not also a State heritage item) or a heritage conservation area in the study area for the works? If yes, does a heritage assessment indicate that the potential impacts to the heritage significance of the item/area are more than minor or inconsequential?	No	N/A	ISEPP cl.14

Flood liable land

Issue	Potential impact	Yes/No	If 'yes' consult with	ISEPP clause
Flood liable land	Are the works located on flood liable land? If so, will the works change flood patterns to more than a minor extent?	Yes	Bayside Council	ISEPP cl.15
Flood liable land	Are the works located on flood liable land? (to any extent). If so, do the works comprise more than minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance	Yes	State Emergency Services Email: erm@ses.nsw.gov.au	ISEPP cl.15AA

Note: Flood liable land means land that is susceptible to flooding by the probable maximum flood event, identified in accordance with the principles set out in the manual entitled Floodplain Development Manual: the management of flood liable land published by the New South Wales Government.

Public authorities other than councils

Issue	Potential impact	Yes/No	If 'yes' consult with	ISEPP clause
National parks and reserves	Are the works adjacent to a national park or nature reserve, or other area reserved under the <i>National Parks and Wildlife Act 1974</i> , or on land acquired under that Act?	No	Not applicable	ISEPP cl.16(2)(a)
National parks and reserves	Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	No	Not applicable	ISEPP cl. 16(2)(b)
Aquatic reserves and marine parks	Are the works adjacent to an aquatic reserve or a marine park declared under the <i>Marine Estate Management Act 2014</i> ?	No	Not applicable	ISEPP cl.16(2)(c)
Sydney Harbour foreshore	Are the works in the Sydney Harbour Foreshore Area as defined by the <i>Sydney Harbour Foreshore Authority Act 1998</i> ?	No	Not applicable	ISEPP cl.16(2)(d)
Bush fire prone land	Are the works for the purpose of residential development, an educational establishment, a health services facility, a correctional centre or group home in bush fire prone land?	No	Not applicable	ISEPP cl.16(2)(f)
Artificial light	Would the works increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map? (Note: the dark sky region is within 200 kilometres of the Siding Spring Observatory)	No	Not applicable	ISEPP cl. 16(2)(g)
Defence communications buffer land	Are the works on buffer land around the defence communications facility near Morundah? (Note: refer to Defence Communications Facility Buffer Map referred to in clause 5.15 of Lockhardt LEP 2012, Narrandera LEP 2013 and Urana LEP 2011).	No	Not applicable	ISEPP cl. 16(2)(h)

Issue	Potential impact	Yes/No	If 'yes' consult with	ISEPP clause
Mine subsidence land	Are the works on land in a mine subsidence district within the meaning of the <i>Mine Subsidence Compensation Act 1961</i> ?	No	Not applicable	ISEPP cl. 16(2)(i)

Growth Centres SEPP

Issue	Potential impact	Yes/No	If 'yes' consult with	SEPP clause
Clearing native vegetation	Do the works involve clearing native vegetation (as defined in the Local Land Services Act 2013) on land that is not subject land (as defined in cl 17 of schedule 7 of the <i>Threatened Species Conservation Act 1995</i>)?	No	Department of Planning, Industry and Environment	SEPP 18A

DRAFT

About this release

Reference number	EIA-P05-02-T19
Title	Addendum Review of Environmental Factors template (roads)
Parent procedure	EIA-P05-02
Prepared by	Environmental Planning and Assessment team
Approved by	Director Environmental Policy, Planning and Assessment
Document location	Objective: Global Folder \ RMS Global Folder \ ENVIRONMENT \ Procedures \ Environment Planning and Assessment Procedures \ EIA-P05-2 Project REF
Document status	Version 1.4, 20 February 2020

Version	Date	Revision description
1.0	03/18	First issue
1.1	14/03/18	Update to include legislative changes (EP&A Act, BC Acct and ISEPP)
1.2	21/09/18	Updated to reflect legislative changes to ISEPP, including new statutory consultation requirements for certain development types, certain development within the coastal vulnerability area and certain works on flood liable land.
1.3	05/02/19	Updated executive summary guidance
1,4	20/02/2020	Rebranded, removed references to Roads and Maritime and replaces with Transport for NSW

Your comments and suggestions to improve this or any of the EIA guidelines may be sent to:

Environmental Policy, Planning and Assessment
Environment and Sustainability Branch, Transport for NSW
Email: EIAProcedures@rms.nsw.gov.au

Or contact Senior Environmental Specialist (Planning and Assessment)
T: 8588 5726

August 2020
Publication number: 20.291
ISBN: 978-1-922463-11-1