

7 Revised environmental management measures

The EIS for the project identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts (see Chapter 9 of the EIS). After consideration of the issues raised in the public submissions and the impact assessment carried out for the amended project, the environmental management measures for the project have been revised.

Should the amended project be approved, the revised environmental management measures in **Table 7-1** would guide the subsequent phases of development. **Bold** text has been used to identify measures, or parts of measures, that were additional and/or modified from those provided in the EIS. Strikethrough text has been used to identify measures, or parts of measures, that are no longer required. Environmental management measures have been renumbered (when compared to those presented in Chapter 9 of the EIS) to reflect the revised environmental management measures provided below.

Where additional and/or modified environmental management measures have been included in response to the submissions report for the project, they are highlighted in orange. Where they have been included in response to the design changes and construction updates as part of the amended project that are described in **Chapter 3** and **Chapter 4**, they are highlighted in blue.

Table 7-1 Summary of revised environmental management measures (bold and strikethrough text shows change from EIS)

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
General				
Community consultation	G01	<p>A Community Communication Strategy will be prepared for the project to facilitate communication with the local community including relevant Government agencies, Councils, adjoining affected landowners and businesses, and other relevant stakeholders that may be affected by the project. The strategy will:</p> <p>Identify people or organisations to be consulted during the delivery of the project</p> <ul style="list-style-type: none"> • Set out procedures and mechanisms for the regular distribution of information about the project • Outline mechanisms to keep relevant stakeholders updated on site construction activities, schedules and milestones • Outline avenues for the community to provide feedback (including a 24-hour, toll free project information and complaints line) or to register complaints and through which TfNSW will respond to community feedback • Outline a process to resolve complaints and issues raised. <p>The Community Communication Strategy will include a Construction Fatigue Protocol to minimise impacts associated with construction fatigue. The Protocol will include consideration of noise attenuation and restriction of out-of-hours work or use of noise intensive equipment where reasonable and feasible.</p>	TfNSW/ Contractor	Prior to construction
General construction management	G02	<p>A CEMP will be prepared and implemented for the project in accordance with the Department of Infrastructure, Planning and Natural Resources Guideline for the Preparation of Environmental Management Plans (DIPNR 2004), for the ongoing management of environmental issues during construction of the project.</p>	Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Biodiversity				
All biodiversity impacts	B01	<p>A CFFMP will be prepared. The measures in the CFFMP will include:</p> <ul style="list-style-type: none"> • A site specific induction • Identification of clearing limits and exclusion fencing • Pre-clearance surveys • Vegetation clearing procedures • An unexpected finds procedure • Procedures for weed management and monitoring • A process for de-watering farm dams and the relocation of aquatic fauna • Provision of supplementary fauna habitat (eg nest boxes). 	Contractor	Prior to construction
	B02	<p>A Habitat Compensation Plan (HCP) will be prepared and implemented as part of the CFFMP for the project. The HCP will target those species that will be impacted by the loss of hollows. Measures will include: nest boxes, reuse of salvaged hollows and/or new technologies eg chainsaw hollows), as well as replacement of woody debris and bushrock with consideration to Guide 5 and Guide 8 of Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011).</p>	Contractor	Prior to construction
Removal of native vegetation, threatened species, and threatened species habitat	B03	<p>Native vegetation, threatened species and threatened species habitat removal will be minimised where practicable through detailed design. This will include avoiding the nest and surrounds of the White-bellied Sea-Eagle, where practicable.</p>	Contractor	Detailed design
	B04	<p>Biodiversity offsets for the project will be purchased and managed in accordance with the Biodiversity Offset Strategy prepared for the project.</p>	TfNSW	Prior to operation

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Removal of native vegetation, threatened species, and threatened species habitat	B05	<p>Pre-clearing surveys will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 1: Pre-clearing process). The following species identified on or near the study area will require particular attention:</p> <ul style="list-style-type: none"> • White-bellied Sea-Eagle <p>If design cannot avoid the White-bellied Sea-Eagle nest, then pre-clearing measures to avoid impact on the nest will be implemented. This will include pre-clearing survey to establish if it is currently being used and removal of the nest by an ecologist experienced in similar procedures. The potential impacts of habitat removal will be minimised by removing the nest outside of the nesting period (typically lays between June and September, with young remaining in the nest for 70 days). Time will be allowed on either side of the nesting period to allow individuals to select and construct a new nest site before clearing.</p> <p>An initial pre-clearing inspection will be carried out at least 21 days prior to commencement of clearing, to give the ecologist time to check the nest and then relocate if needed.</p> <ul style="list-style-type: none"> • Cumberland Plain Land Snail <p>Pre-clearance surveys will be carried out immediately before clearing works by a qualified ecologist in all vegetated areas to be disturbed that were identified as known or potential habitat for Cumberland Plain Land Snail (see Figure 6-6). As identified in the CFFMP, all individual Cumberland Plain Land Snails found during pre-clearance surveys will be translocated to adjacent areas of suitable habitat.</p>	Contractor	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Removal of native vegetation and threatened species habitat	B06	<p>An unexpected threatened species finds procedure will be developed as part of the CFFMP and based on Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 1: Pre-clearing process).</p> <p>The procedure will include requirements for workers to be made aware of the potential flora and fauna species that may be encountered during construction (including training staff on species identification) and outline the process for the identification and management of unexpected flora and fauna.</p> <p>In the event that any threatened species are identified during construction, the following steps would be carried out:</p> <ol style="list-style-type: none"> 1. Stop work immediately in the location of the unexpected find to avoid any potential impacts. 2. Notify the environmental manager. 3. Environmental manager will arrange for an ecologist to conduct an assessment of significance of the likely impact, develop management options, and notify DPIE, EESG, and DoEE DAWE as appropriate. 4. If a significant impact is unlikely to occur, re-begin work and maintain regular site inspections. 5. If a significant impact is likely to occur: <ol style="list-style-type: none"> a. Consult with DPIE, EESG and DoEE DAWE as appropriate. b. Obtain approvals, licenses or permits as required. c. Re-begin work once advice is sought and necessary approvals, licenses and permits are obtained. 6. Include species in subsequent inductions, toolbox talks and update the CEMP. 	Contractor	During construction
	B07	Vegetation and habitat removal will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 4: Clearing of vegetation and removal of bushrock).	Contractor	During construction
	B08	Revegetation will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 3: Re-establishment of native vegetation) and the Landscape Plan prepared for the project.	TfNSW / Contractor	During construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	B09	Habitat will be replaced or re-instated in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 5: Re-use of woody debris and bushrock and Guide 8: Nest boxes). A Habitat Compensation Plan, as described in B02 will include this measure.	Contractor	During construction
Riparian vegetation and aquatic impacts	B10	Removal of riparian vegetation at creek crossings will be minimised and vegetation connectivity across the riparian zone will be maintained where possible.	Contractor	During construction
	B11	Measures to protect aquatic and riparian habitat will be outlined in the CFFMP and protected in accordance with <i>Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects</i> (RTA, 2011) (<i>Guide 10: Aquatic habitats and riparian zones</i>) and Section 3.3.2 <i>Standard precautions and mitigation measures</i> of the Policy and guidelines for fish habitat conservation and management (DPI, 2013).	Contractor	Prior to construction
Aquatic impacts	B12	<p>A snag management plan would be prepared as part of the CFFMP for the project for snag removal and relocation at Badgerys Creek, Kemps Creek and South Creek in accordance with the Policy and guidelines for fish habitat conservation and management (DPIE, 2013). The management plan will be informed by additional field work which will provide details of the snags to be relocated (such as numbers and locations) and relocation methods.</p> <p>In accordance with Section 3.2.5.2 of the Policy and guidelines for fish habitat conservation and management (DPI 2013), the snag management plan will:</p> <ul style="list-style-type: none"> • Clearly outline the objectives to be achieved • Document the actions to be taken for each individual snag • Detail the methods and machinery to be use • Specify the season or time period over which the works will be carried out. 	Contractor	Prior to construction
	B13	Creek adjustments will be investigated and removed or minimised during detailed design where feasible. Proposed creek adjustments will be designed such that they result in minimal changes to flow velocities.	Contractor	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	B14	Creek corridors will be revegetated with locally native riparian vegetation, in accordance with the requirements of the Policy and guidelines for fish habitat conservation and management (DPI, 2013) and in consideration of the Guidelines for instream works on waterfront land (DPI, 2012). The creek channels will be rehabilitated to preconstruction conditions or better.	TfNSW/ Contractor	During construction
	B15	Bridge pier locations within instream (main waterway channel) or on creek banks will be avoided during detailed design at the South Creek, Cosgroves Creek, Badgerys Creek and Kemps Creek crossings. Where avoidance is not possible, further biodiversity assessment will be required.	Contractor	Detailed design
	B16	Large woody debris will be retained for creek crossing works where practicable. Any large woody debris placed in the realigned waterways will be relocated in consultation with an ecologist.	Contractor	During construction
	B17	Permanent and temporary waterway crossings will be designed and constructed to maintain fish passage in accordance with Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (Fairfull and Witheridge, 2003). Crossing types should be matched to waterway type as per Table 1 in Fairfull and Witheridge (2003).	Contractor	During construction
	B18	The temporary application of mulch during construction will be managed to avoid the potential for material and tannin run-off into waterways. This will include limiting the application of mulch near waterways where practicable. The application of mulch for permanent landscaping must be designed and planned to avoid material and tannin runoff.	TfNSW/ Contractor	During construction
	B19	Emergency response protocols and procedures will be included in the Project CEMP and implemented in the event of a contaminant spill or leak.	Contractor	During construction
	B20	Spill kits will be located to allow for timely response to uncontained spills. Site inductions will include a briefing on the use of spill kits.	Contractor	During construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Groundwater Dependent Ecosystems	B21	Interruptions to water flows associated with groundwater dependent ecosystems will be minimised through detailed design.	Contractor	Detailed design
Changes to hydrology	B22	Changes to existing surface water flows will be minimised through detailed design.	Contractor	Detailed design
Fragmentation of identified biodiversity links and habitat corridors	B23	Connectivity measures will be implemented in accordance with Wildlife Connectivity Guidelines for Road Projects (TfNSW, under preparation). Fencing will be located to reduce roadkill of fauna species and funnel animals to creek crossings where safe passage will be available. Detailed design is to retain fauna passage at all four main creek lines (Cosgroves, South, Kempes and Badgerys Creeks).	Contractor	Detailed design and during construction
Edge effects on adjacent native vegetation and habitat	B24	Exclusion zones will be set up at the limit of clearing in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 2: Exclusion zones). Exclusion zones will be set up to protect potential indirect impacts to threatened flora in accordance with the areas identified in the EIS and this amendment report (including Figure 1-2 of Appendix A of this amendment report).	Contractor	During construction
Injury and mortality of fauna	B25	Fauna will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 9: Fauna handling).	Contractor	During construction
Invasion and spread of pest species	B26	Weed species will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 6: Weed management).	Contractor	During construction
Invasion and spread of pathogens and disease	B27	Pathogens will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 2: Exclusion zones).	Contractor	During construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Noise, light and vibration	B28	Shading impacts will be minimised through detailed design of bridge and culvert structures. The need for artificial lighting during construction and operation will be minimised through detailed design where feasible, including directing lighting away from vegetated areas where practicable.	Contractor	Detailed design, during construction
Transport and traffic				
Construction transport and traffic	TT01	<p>A construction transport and traffic management plan (CTTMP) will be prepared as part of the CEMP in consultation with relevant local Councils, and in accordance with relevant guidelines. The CTTMP will outline:</p> <ul style="list-style-type: none"> • Staging and planning of works to minimise the need to occupy roads where practicable, including identification of haulage routes • Safe alternative routes for pedestrians and cyclists in accordance with relevant safety and accessibility standards • The requirements for traffic control plans to be prepared for each work area which will include details of site access and specific traffic control measures (including signage) to manage traffic movements • Road safety audit requirements • Parking arrangements for construction staff • Identification of access arrangements at construction sites detailing vehicle access movements • Measures to minimise changes to the existing road network, property access, bus stops and pedestrian/cyclist facilities where feasible • Measures to communicate and notify of any changes in traffic conditions on roads or paths to road users, emergency services, public transport operators, and other relevant stakeholders • Measures to manage construction traffic interfaces and access arrangements with Western Sydney International Airport and Sydney Metro – Western Sydney Airport 	Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
		<ul style="list-style-type: none"> Requirements for appropriate warning and signage for traffic and other road users such as cyclists and pedestrians in the vicinity of work areas and work site access, and road diversions. 		
	TT02	Changes to bus stops will be implemented in consultation with TfNSW, relevant councils, and relevant bus operators. Alternate temporary bus stops will be provided with appropriate signage to direct commuters. Safe access will be provided in accordance with relevant safety and accessibility standards.	Contractor	Prior to construction, during construction and after construction
	TT03	Movements of haulage vehicles will be planned to minimise movements on the road network during the AM and PM peak periods where practicable.	Contractor	Prior to construction and during construction
Impacts on M7 Motorway traffic and shared user path users	TT04	Consultation will be carried out with the operators of the M7 Motorway to develop measures to manage the potential impacts of construction within the operating M7 Motorway corridor.	TfNSW / Contractor	Detailed design, prior to construction, and during construction
	TT05	<p>TfNSW will continue to work with Western Sydney Parklands Trust to support the delivery of a shared user path within Western Sydney Parklands to connect from Range Road to the existing M7 Motorway shared user path.</p> <p>If it is determined during consultation that the shared user path connection through the Western Sydney Parklands will not be delivered, TfNSW will provide an alternative alignment for the shared user path in this section via either Elizabeth Drive, or alongside the M12 Motorway from Range Road to the M7 Motorway shared user path network.</p>	TfNSW	Detailed design, during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Damage or impacts on local road infrastructure	TT06	A road dilapidation report will be prepared before impacts on local roads in consultation with relevant councils and other relevant stakeholders. The report will document the existing conditions of local roads and outline measures to repair damage to roads from heavy vehicle movements associated with the project.	Contractor	Prior to construction
Impacts on property access	TT07	Existing property access would be maintained at all times. Any changes to access arrangements or alternative access that are necessary during construction will be done with consultation with the landowner. Any changes to access will provide the same equivalent pre-existing level of access unless agreed to by the land owner. Property access that is physically affected by the project will be reinstated to at least an equivalent standard, in consultation with the landowner.	TfNSW / Contractor	Detailed design, prior to construction, and during construction
Impacts on businesses	TT08	A signage strategy will be prepared as part of the CTTMP to provide for appropriate signage for businesses where existing signage is obscured/no longer visible or where customers are required to use alternative access to reach the businesses during construction.	Contractor	Prior to construction
Urban design, landscape character				
Impacts on views and landscape character from construction and operation of the project	LVIA01	An Urban Design and Landscape Plan (UDLP) will be prepared to minimise landscape character and visual impacts, and detail and guide the implementation of landscape features to be installed as part of the project, including re-vegetation requirements. This will include requirements for the provision of vegetative screening to soften the appearance of structural elements of the project such as noise walls and provide screening of sensitive views. The UDLP will also consider the requirements of the heritage interpretation framework that will be prepared for the project (NAH02). The UDLP will be prepared in accordance with applicable guidelines, be consistent with the concept project identity in the EIS and relevant urban design objectives and principles for the project including consideration of implementation of Crime Prevention Through Environmental Design (CPTED) principles, and in consultation with relevant councils.	Contractor / TfNSW	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	LVIA02	A detailed Landscape Plan will be prepared for the project and implemented throughout construction. The plan will guide the implementation of measures to minimise landscape character and visual impacts, including revegetation requirements.	Contractor	Detailed design, prior to construction and during construction
	LVIA03	Existing vegetation within the construction footprint will be retained and protected where possible. This includes densely vegetated areas such as remnant riparian forests and Cumberland Woodlands in Western Sydney Parkland.	Contractor	Detailed design and during construction
	LVIA04	Site levels and grades for the project will integrate with the surrounding terrain to help the visual assimilation of the project into the surrounding landscape where practicable. Engineered slopes will have gradients no steeper than 3H:1V where possible to maximise the establishment of vegetation on these batters and allow for appropriate maintenance.	Contractor	Detailed design
	LVIA05	Project elements such as ancillary facility hoardings will be designed and maintained to minimise impacts on landscape character and visual amenity. This will include selecting colours and materials that are visually recessive and blend into the surrounding landscape where practicable, and the prompt removal of graffiti.	Contractor	Detailed design, prior to construction and during construction
	LVIA06	Where noise mitigation such as noise barriers are required, they will be designed with the aim of minimising visual impacts.	Contractor	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	LVIA07	<p>Temporary and permanent lighting will be designed and implemented with consideration of:</p> <ul style="list-style-type: none"> • The need to orientate lighting to minimise light spill and glare impacts on nearby receivers • The need to minimise vandalism and maintenance requirements • Requirements of the National Airports Safeguarding Framework (NASF) (National Airports Safeguarding Advisory Group, n.d.) for operational lighting • Opportunities to implement sustainability initiatives in design such as energy efficient or solar lighting. 	Contractor	Detailed design, prior to construction and during construction
	LVIA08	TfNSW will investigate opportunities to undertake early tree planting in consultation with landowners to soften impact of structural elements and screen sensitive views.	TfNSW	Prior to and during construction
Urban design elements	LVIA09	The findings and recommendation of the Aboriginal cultural heritage design process managed by Balarinji will be incorporated into the urban design and implemented as part of the project, including interpretive initiatives.	TfNSW / Contractor	Detailed design, prior to construction and during construction
	LVIA10	Shared user paths to be delivered as part of the project will not preclude connections to future open space corridors and land use as identified in the Western Sydney Land Use and Infrastructure Implementation Plan (LUIIP) (DPE 2018). Where further design of adjacent open space corridors is undertaken, shared user paths will be provided to connect at an appropriate location. Shared user paths will be designed to be located away from road-side edges to provide an immersive landscape experience for pedestrians and cyclists, where possible.	TfNSW / Contractor	Detailed design
	LVIA11	Establish an Urban Design Review Panel to provide advice and input into the development of the UDLP.	TfNSW	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	LVIA12	Highly visible elements of the project including potential noise barriers, retaining walls, bridge structures and urban design material selection will be designed to satisfy functional requirements and adopt the design principles detailed in the M12 Motorway EIS Landscape Character, Visual Impact Assessment and Urban Design Report. The proposed designs will be documented in the relevant UDLP for the project.	Contractor	Detailed design
	LVIA13	Consider a standard design for retaining walls and major structures across the project, to present a coordinated 'suite of elements'.	Contractor	Detailed design
Safety in design	LVIA14	The project must consider CPTED principles during detailed design to minimise safety risks to all users. The project must carry out periodic CPTED reviews by a qualified professional and implement any additional recommendations where reasonable and feasible.	Contractor	Detailed design
Revegetation and landscaping	LVIA15	<p>A tree management strategy will be prepared for the project, outlining:</p> <ul style="list-style-type: none"> • Measures to minimise tree removal to retain and protect as many trees within the construction footprint as reasonable and feasible • Measures to avoid damage to trees that are to be retained within the construction footprint to ensure the maintenance of health and stability of the trees in accordance with AS4970-2009 Protection of trees on development sites • Requirements for the pruning of trees to be carried out by a suitably qualified person in accordance with AS 4373-2007 Pruning of amenity trees • Consideration of maintenance requirements and safety standards • Requirements for the replacement trees where removal cannot be avoided including: <ul style="list-style-type: none"> – Net increase in the number of trees (not identified as within an EEC) – Where it is not practicable to plant trees in the operational footprint an alternative location will be identified in consultation with relevant councils and in consideration of future development in the local area • Minimum pot size in accordance with part 3.2.1 (Rural road reserves) in the TfNSW Landscape Guideline (2018) subject to long-term viability of the plant. 	Contractor	Detailed design and prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	LVIA16	Revegetation for the project will consider the land use requirements of the National Airports Safeguarding Framework (NASF) (National Airports Safeguarding Advisory Group, n.d.) to minimise the risk of wildlife strikes at the Western Sydney Airport.	Contractor	Detailed design
	LVIA17	Carry out appropriate soil analysis and identify soil preparation requirements for landscaping treatments to inform the Urban Design and Landscaping Plan and vegetation management in accordance with TfNSW Batter Surface Stabilisation Guideline (Roads and Maritime 2015).	Contractor	Detailed design and during construction
Socio-economic, land use and property				
Property acquisition and lease	SLP01	Areas of land leased for the purposes of construction will be reinstated at the end of the lease to at least equivalent standard in consultation with the landowner.	Contractor	During construction
	SLP02	All partial and full acquisitions and associated property adjustments will be carried out in accordance with the requirements of the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> and the Land acquisition reform 2016 in consultation with landowners.	TfNSW	Prior to construction
	SLP03	A Personal Manager - Acquisition (PMA) will be appointed to assist landowners and residents who may be affected by acquisition requirements for the project. The PMA will provide ongoing support for relocated persons, including dispute resolution and counselling, and provision of contact information for relevant services.	TfNSW	Detailed design
	SLP04	Property adjustments, including replacement of farm infrastructure (such as fencing) and relocation of property access, prior to work that impact the property will be carried out in consultation with property owners/ business managers.	Contractor / TfNSW	Prior to construction, during construction
Utility impacts	SLP05	The project will be designed with the aim of minimising impacts on existing utilities and services, in consultation with utility owners and/or providers of services where feasible and reasonable.	Contractor / TfNSW	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	SLP06	Utility owners and/or providers of services will be identified and consulted with before works start, to determine the requirements for access to, protection of, or relocation of services. Disruption to existing services will be minimised where feasible and local residents and businesses will be notified before any planned disruption.	Contractor	Prior to construction
Agricultural land use	SLP07	Construction activities will be planned to minimise disruption to existing agricultural operations/activities in surrounding properties where feasible and reasonable (eg stock access, access to farm dams, etc) unless otherwise agreed by the landowner.	Contractor	Prior to construction
Social infrastructure	SLP08	Adjustments to facilities in Western Sydney Parklands (eg walking and cycling trails and Sydney International Shooting Centre access) will be carried out in consultation with the Western Sydney Parklands Trust.	TfNSW / Contractor	Prior to construction and during construction
	SLP09	TfNSW will continue to work with Western Sydney Parklands Trust to support their delivery of a replacement for the Wylde Mountain Bike Trail by Western Sydney Parklands Trust.	TfNSW	Prior to construction
Impacts on community facilities	SLP10	Ongoing consultation regarding management of potential impacts will be carried out in accordance with the Community Communication Strategy with the following community facilities: <ul style="list-style-type: none"> • Kemps Creek Sporting and Bowling Club • Kemps Creek Cougars Baseball Club • Science of the Soul Study Centre • Muhammadi Welfare Association of Australia • Schools such as Kemps Creek Public School and Christadelphian Heritage College, and Irfran College • Western Sydney Parklands • Sydney International Shooting Centre. 	TfNSW / Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Construction fatigue	SLP11	Construction fatigue will be managed in accordance with the Community Communication Strategy.	TfNSW / Contractor	Prior to construction and during construction
Impacts on businesses	SLP12	On-going consultation will be carried out with local business owners that may be impacted during construction (including owners of agricultural businesses) in accordance with the Community Communication Strategy for the project.	TfNSW / Contractor	Prior to construction and during construction
	SLP13	A business impact risk register will be established and maintained for the duration of construction to identify and manage specific impacts on individual businesses.	Contractor	Prior to construction and during construction
Employment opportunities	SLP14	Employment opportunities for the project will align with the commitments outlined in the Western Sydney City Deal (2018), including targets for Indigenous, social and local employment and procurement.	TfNSW / Contractor	Prior to construction and during construction
Aboriginal heritage				
General	AH01	<p>A construction cultural heritage management plan (CCHMP) will be developed for the project in consultation with the project RAPs and EESG. The CCHMP will include:</p> <ul style="list-style-type: none"> An unexpected finds procedure for the discovery of Aboriginal ancestral remains, Aboriginal objects or new Aboriginal sites consistent with TfNSW Standard Management Procedure Unexpected Heritage Items (Roads and Maritime, 2015). This procedure will also outline requirements to manage unexpected human remains finds in accordance with NSW statutory requirements, and relevant guidelines and standards prepared by EESG. The Procedure will outline the process for consulting with the RAPs in the event that previously unidentified Aboriginal heritage is discovered. 	Contractor	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
		<ul style="list-style-type: none"> • Procedures for the management and curation of salvaged Aboriginal objects • Detailed locations and installation procedures for fencing and protective coverings • Details of permissible activities inside protected Aboriginal areas • Details of permissible activities inside protected Aboriginal areas • Procedures for consideration of heritage aspects within site inductions and toolbox talks for construction workers and supervisors. 		
	AH02	<p>A detailed Aboriginal Cultural Salvage Strategy will be prepared for the project in consultation with project RAPs and EESG to guide the salvage excavation process for Aboriginal sites that will be salvaged. The strategy will address specific questions about each site and will be based on the salvage excavation methodology outlined in the ACHAR and prepared in consultation with EESG and project RAPs.</p> <p>All salvage collections and excavations will be carried out by a suitably qualified and experienced archaeologist. The method and extent of excavation required, and management of artefacts finds will be determined in consultation with project RAPs and EESG.</p> <p>Following completion of all salvage works associated with Aboriginal heritage sites, an Aboriginal Cultural Heritage Report will be prepared in accordance with relevant guidelines and in consultation with project RAPs and EESG. The Aboriginal Cultural Heritage Report will document all results of the salvage activities including analysis of artefacts from collections and excavations and management of all artefact finds.</p>	TfNSW / Contractor	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Impacts on Aboriginal heritage during construction	AH03	<p>A work method statement will be prepared for the works within identified Aboriginal sites in consultation with a suitably qualified and experienced archaeologist. The method statement will be prepared to minimise impacts on Aboriginal sites where feasible, including input into detailed design. Measures will include (but not be limited to):</p> <ul style="list-style-type: none"> • Designing and locating bridges (including bridge pylons), haulage routes and other access roads to minimise potential disturbance of soils where feasible • Focusing protection measures on the zone within 100 metres of creeks including consideration of opportunities to cover the original cultural deposits in temporary protective barriers such as geotextile fabric and a layer of clean fill. 	Contractor	Detailed design, prior to construction and during construction
Impacts on identified cultural deposits	AH04	An investigation will be carried out during detailed design to minimise impacts on the CHRP site where feasible.	Contractor	Detailed design
	AH05	<p>Investigations will be carried out during detailed design to determine the feasibility of retaining cultural deposits between the pylons of bridges or elevated structures at the following sites:</p> <ul style="list-style-type: none"> • BCW • BCE • SCW T1 • SCW T2 • SCE. <p>This will include covering the original cultural deposits beneath temporary protective barriers such as geotextile fabric and a layer of clean fill material.</p>	Contractor	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	AH06	Salvage collection of surface artefacts will be carried out at the following sites: <ul style="list-style-type: none"> • BCE • SCW T2 • KCW • PCP8 • CHRP • RR • M12A1 • Isolated artefact 4 • TNR-AFT-14. 	Contractor / TfNSW	Prior to construction
	AH07	Salvage excavation will be carried out at the following sites: <ul style="list-style-type: none"> • CCW • BWB • BCW • SCW T1 • SCW T2 • SCE • KCW • CHRP. <p>The methodology and extent of excavations required for the above sites will be in accordance with site specific requirements outlined in the ACHAR prepared for the project.</p>	Contractor / TfNSW	Prior to construction
	AH08	Exclusion zones will be set up in the form of an appropriate barrier / fencing along the portion of AHIMS site 45-5-2721 (PAD-OS-7) that extends into the amended construction footprint, with visible signage notifying construction personnel to avoid ground impacts.	Contractor / TfNSW	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	AH09	Archaeological text excavation will be carried out at PAD-OS-7 in the instance that construction restrictions result in impacts to that site. Test excavations would be conducted in accordance with Requirement 16a of the Code of Practice (DECCW 2010), Stage 2 PACHCI (Roads and Maritime 2011) and in consultation with RAPs.	Contractor / TfNSW	Prior to construction
Non-Aboriginal heritage				
General	NAH01	<p>A construction cultural heritage management plan (CCHMP) will be prepared for the project as part of the CEMP in consultation with DPC (Heritage). The CCHMP will include as a minimum:</p> <ul style="list-style-type: none"> • A list, plan and maps with GIS layers showing the location of identified heritage items both within, and near, the construction footprint • A significance assessment and statement of significance for each item • Protocols and procedures including inductions and toolbox talks for all contractors and subcontractors working in the area to be informed of all exclusion zones, the elements and their significance, to prevent accidental damage or encroachment • Protocols and procedures to be implemented during construction to avoid or minimise impacts on items of heritage significance including protective fencing • The TfNSW Unexpected Heritage Items Procedure (Roads and Maritime, 2015) which would be followed in the event that unexpected heritage finds are uncovered during construction. 	Contractor	Prior to construction
	NAH02	<p>A suitably qualified heritage specialist will be engaged to prepare a heritage interpretation framework to guide development of the detailed urban design for the project. This framework will be prepared in accordance with the Interpreting Heritage Places and Items Guidelines (NSW Heritage Office, 2005) and will include:</p> <ul style="list-style-type: none"> • Integration of heritage themes and values to be incorporated • Collaboration with other design elements and themes for the project, including those associated with Western Sydney Airport and Sydney Metro – Western Sydney Airport, to develop an integrative design approach with surrounding development • Opportunities for design responses for Aboriginal and non-Aboriginal heritage. 	Contractor / TfNSW	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	NAH03	Impacts on Non-Aboriginal heritage items will be avoided or minimised where reasonable and feasible. Where impacts are unavoidable, works will be carried out in accordance with the measures for individual Non-Aboriginal heritage items outlined in measures NAH04 to NAH11.	TfNSW / Contractor	Detailed design, prior to construction and during construction
McGarvie Smith Farm (Item 1, Penrith LEP 857)	NAH04	<p>A suitably qualified heritage consultant will be engaged to prepare an archival photographic recording of the site in accordance with the Heritage Information Series How to prepare archival records of heritage items (NSW Heritage Office, 1998). This will include both buildings and landscape features such as dams, and earthworks. The recording will include a detailed map showing the location of the features.</p> <p>Options will be investigated to provide funding support to the property's current owner to prepare a thematic heritage study of CSIRO and other agricultural research stations, including both McGarvie Smith Farm and McMaster Field Station, and other relevant agricultural research stations and similar facilities located in NSW. The thematic study will include a review of the role of such properties in veterinary research, association with agricultural, pastoral and animal husbandry groups, use of pioneering methods and practices and contribution to the development of farming in Australia. In the event that landowners do not prepare this study, TfNSW will engage a heritage specialist to do so.</p>	TfNSW / Contractor	Detailed design and prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
The Fleurs Radio Telescope Site (Item 2, Penrith LEP 832)	NAH05	<ul style="list-style-type: none"> All extant elements of the radio telescopes and associated infrastructure, including rubbish mounds situated outside the construction footprint will be left intact Ground penetrating radar, or other remote sensing survey techniques, will be carried out under the supervision of a suitably qualified and experienced archaeologist before any ground disturbance within the heritage curtilage of the Fleurs Radio Telescope Site contained within the construction footprint to identify any sub-surface cables Measures will be included in the CHMP to describe how the heritage values of the site will be conserved and managed during construction TfNSW will engage a suitably qualified heritage consultant to prepare an archival photographic recording of the impacted areas of the property, in accordance with DPC (Heritage) guidelines (Heritage Council of NSW 2006) The heritage interpretation framework for the project (NAH02) will include interpretation measures that will improve community awareness of the history of the Fleurs Radio Telescope as well as determine suitable locations for the presentation of information that are publicly accessible. 	TfNSW / Contractor	Detailed design and prior to construction
Upper Canal System (Pheasants Nest Weir to Prospect Reservoir (Item 4, SHR 01373))	NAH06	<ul style="list-style-type: none"> Relevant conservation policies outlined in the Upper Canal CMP (NSW Public Works Government Architect's Office, 2016) will be considered during detailed design and incorporated into CCHMP to ensure heritage fabric is not impacted by the project. The CCHMP will be consistent with and require implementation of relevant measures outlined in the Guidelines for development adjacent to the Upper Canal and Warragamba Pipelines (Sydney Catchment Authority 2012) (WaterNSW 2020) which sets out guidelines for designing, planning or assessing development on land adjacent to the canal at this location. Additional structures identified in the construction footprint will be investigated and measures implemented to avoid or minimise impact. Guidelines and associated safe working distances to be adhered to for heritage structures as outlined in Appendix K of the EIS A safe working distance exclusion zone will be established around the exposed tunnel air shaft in the M7 Motorway median in accordance with the process outlined in noise and vibration management measures NV09 - NV10. 	TfNSW / Contractor	Detailed design, prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
McMaster Field Station (Item 6)	NAH07	<ul style="list-style-type: none"> • A suitably qualified heritage consultant will be engaged to prepare an archival photographic recording of the impacted area, in accordance with DPC (Heritage) guidelines (Heritage Council of NSW 2006). This will include both buildings and landscape features such as dams, and earthworks. The recording will include a detailed map showing the location of the features. • Options will be investigated to provide funding support to property's current owner to prepare a thematic heritage study of CSIRO and other agricultural research stations, including both McMaster Field Station and McGarvie Smith Farm, and other relevant agricultural research stations and similar facilities located in NSW. The thematic study will include a review of the role of such properties in veterinary research, association with agricultural, pastoral and animal husbandry groups, use of pioneering methods and practices and contribution to development of farming in NSW and Australia. In the event that landowners do not prepare this study, TfNSW will engage a heritage specialist to do so. • A potential use zone will be established around the McMaster Farm group of buildings, including a suitable buffer zone, and no construction activities will take place within this zone. This zone will be incorporated into the construction heritage management plan (CHMP). The potential use zone will include safe working distances to be adhered to for heritage structures as outlined in Appendix K of the EIS. Before occupying or utilising the buildings, a dilapidation survey will be carried out and a heritage architect will be engaged to advise on proposed modifications and management measures to avoid and minimise impact on the buildings. 	TfNSW / Contractor	Detailed design, prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Fleurs Aerodrome (Item 7)	NAH08	<ul style="list-style-type: none"> • A suitably qualified heritage consultant will be engaged to prepare an archival photographic recording of the impacted area before its disturbance and/or removal, in accordance with DPC (Heritage) guidelines (Heritage Council of NSW 2006). The recording will include a detailed map showing the location of the features. • An interpretive framework developed for the project will include consideration of elements to enable the continued interpretation and understanding of the airstrip at Fleurs Aerodrome as a linear and continuous element. This will be carried out in consultation with Department of Defence and consider opportunities for involvement of veterans groups. • Relevant guidelines and associated safe working distances will be adhered to for remaining heritage structures as outlined in the Appendix K of the EIS 	Contractor / TfNSW	Detailed design, prior to construction and during construction
Cecil Park School, Post Office and Church Site (Item 8)	NAH09	<ul style="list-style-type: none"> • TfNSW will liaise with local museums and/or historical societies to arrange a long-term secure artefact repository for the artefact assemblage. Once that arrangement has been made, DPC (Heritage) will be notified for their records. In the short term, TfNSW will provide secure short-term secure storage for the assemblage. • Archaeological salvage excavations will be carried out for the Cecil Park School, Post Office and Church Site (Item 8) in accordance with the research design and methodology outlined in the <i>M12 Motorway: Former Cecil Park Historical Complex Historical Archaeological Salvage Research Design and Methodology</i> (Jacobs, 2020). • An Archaeological Research Design (ARD) for archaeological salvage of the former historical complex will be prepared and implemented prior to construction commencing by a suitably qualified historical archaeologist who fulfils the Heritage Council's Excavation Director Criteria to conduct open area excavation of a locally significant archaeological site. The ARD will include a revised impact assessment, revised research questions and a methodology to ensure archaeological relics within the project construction footprint are adequately investigated in accordance with standard NSW archaeological practice. 	Contractor / TfNSW	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
South, Kemps and Badgerys Creek Confluence Weirs Scenic Landscape (Item 12)	NAH10	<ul style="list-style-type: none"> Management measures identified in the project UDLP (LVIA01) will be implemented during detailed design to minimise impacts on landscape and vistas Flooding management measures (F01 to F08) and surface water quality and hydrology management measures (SWH01 to SWH14) will be implemented to reduce broader impacts on the surrounding scenic landscape. 	Contractor / TfNSW	Detailed design, prior to construction and during construction
Noise and vibration				
General construction noise and vibration	NV01	<p>A construction noise and vibration management plan (CNVMP) will be prepared for the project to mitigate and manage noise and vibration impacts during construction. The CNVMP will be implemented for the duration of construction of the project and will:</p> <ul style="list-style-type: none"> Identify nearby sensitive receivers Include a description of the construction activities equipment and working hours Identify relevant noise and vibration performance criteria for the project and license and approval conditions. Include modelling results showing construction noise impacts based on detailed design information Outline standard and additional mitigation measures from the Construction Noise and Vibration Guideline (CNVG) (Roads and Maritime 2016) and information about when each will be applied Outline requirements for the development and implementation of an Out-of-hours Work Protocol Outline requirements for noise and vibration monitoring that will be carried out to monitor project performance associated with the noise and vibration criteria Describe community consultation and complaints handling procedures in accordance with the Community Communication Strategy to be developed for the project 	Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
		<ul style="list-style-type: none"> Outline measures to manage noise impacts associated with heavy vehicle movements both on and offsite Outline measures to minimise cumulative construction impacts and the likelihood for 'construction fatigue' from concurrent and consecutive projects in the area Outline requirements to minimise and manage construction fatigue, in consultation with the community. 		
	NV02	Measures to minimise and manage construction fatigue are to be investigated through the planning of construction staging.	Contractor	Detailed design, prior to construction and during construction
	NV03	<p>Detailed noise assessments will be carried out for ancillary facilities with the potential to involve high noise generating activities (including batching plant operations). The assessments will consider the proposed site layouts and noise generating activities that will occur at the facilities and assess predicted noise levels against the relevant noise management criteria.</p> <p>The assessments will also consider the requirement for appropriate noise mitigation within ancillary facilities and adjacent to construction works, depending on the predicted noise levels. Any mitigation measures required will be implemented before the start of activities that generate noise and vibration impacts.</p>	Contractor	Prior to construction
	NV04	<p>Monitoring will be carried out at the start of high noise and vibration activities to confirm that actual noise and vibration levels are consistent with the noise and vibration impact predictions. Where mitigation measures were included, measurements will be carried out to confirm the effectiveness.</p> <p>Where the monitoring identifies higher levels of noise and vibration compared to predicted levels, or where mitigation is shown to be ineffective against measured noise and vibration levels, additional mitigation measures will be identified and implemented to appropriately manage impacts where feasible and reasonable.</p>	Contractor	Construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	NV05	Where reasonable and feasible, receivers identified as requiring at-property treatment for operational noise mitigation will be identified and offered treatment before construction activities begin that are likely to impact them.	TfNSW / Contractor	Prior to construction
Vibration impacts	NV06	Activities that generate vibration will be managed to avoid impacts on structures and sensitive receivers. This includes implementing appropriate safe working distances where practicable.	Contractor	Prior to construction and during construction
	NV07	The use of alternatives to vibration generating equipment will be considered where vibration impacts are predicted.	Contractor	During construction
	NV08	Where works are within the minimum working distances and considered likely to exceed the cosmetic damage objectives (as shown in Figure 7-3 of Appendix K of the EIS G of this amendment report), construction works will not proceed unless: <ul style="list-style-type: none"> • A different construction method with lower source vibration levels is used, where feasible • Attended vibration measurements are carried out at the start of the works to determine the risk of exceeding the vibration objectives. 	Contractor	During construction
	NV09	Building Condition Surveys will be offered in writing to property owners before construction where there is a potential for construction activities to cause structural or cosmetic damage. A comprehensive report will be prepared by a suitably qualified professional before the relevant works begin and will comprise a written and photographic condition.	Contractor	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Vibrations impacts on the Upper Canal System and Gas Pipelines	NV10	<p>Surveys will be carried out to confirm the existing condition of the WaterNSW Upper Canal System and Jemena high pressure gas pipelines to determine appropriate vibration criteria. This will also include consideration of distances from the vibration intensive activity (piling, rock-breaking and vibratory rolling), as well as ground conditions.</p> <p>A vibration criterion of a peak particle velocity (PPV) will be determined in consultation with the relevant utility/service providers, including WaterNSW.</p> <p>In-situ monitoring will be carried out to confirm the vibration levels and assess the impact of vibration. Where the monitoring identifies exceedances in the relevant criteria, or where impacts are identified, additional mitigation measures will be identified and implemented to appropriately manage impacts.</p>	TfNSW / Contractor	Detailed design and during construction
Vibration impacts on heritage structures	NV11	<p>The following structures have the potential to be within the safe working distances for sensitive structures (Group 3 from DIN 4150):</p> <ul style="list-style-type: none"> • Item 1: McGarvie Smith Farm • Item 2: Fleurs Radio Telescope Site • Item 4: Upper Canal System • Item 6: McMaster Field Station • Item 7: Fleurs Aerodrome. <p>A detailed survey will be completed to determine the potential for vibration impacts and to define appropriate criteria for each heritage item. Vibration monitoring will be carried out when vibration intensive tasks are occurring within the minimum working distances to heritage structures. Where the monitoring identifies exceedances in the relevant criteria, or where impacts are identified, additional mitigation measures will be identified and implemented to appropriately manage impacts.</p>	Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Construction traffic noise	NV12	<p>Construction vehicle movements (both on and offsite) will be managed to minimise noise impacts. Where feasible, this will include (but not be limited to):</p> <ul style="list-style-type: none"> • Establishment and use of internal haul routes, or existing major roads where this is not feasible • Restriction of heavy vehicle movements to standard construction hours • Locating traffic marshalling areas away from residences to minimise noise impacts from idling vehicles • Instructing workers on the operation of heavy vehicles entering and exiting the site to minimise noise. 	Contractor	During construction
Cumulative construction impacts	NV13	<p>The likelihood of cumulative construction noise impacts will be considered during detailed design when detailed construction schedules of other projects are available. Construction works will be scheduled with the aim of minimising concurrent works near sensitive receivers where possible in consultation with managers of other nearby projects that are likely to result in a cumulative impact. This will include the coordination of respite between the various construction projects where receivers are likely to experience concurrent construction impacts where feasible. Coordination between project teams would be carried out throughout construction.</p>	Contractor	Prior to construction and during construction
Operational noise and vibration	NV14	<p>Operational noise and vibration mitigation measures will be identified in an Operational Noise and Vibration Review (ONVR).</p> <p>Requirements for mitigation measures, including quieter noise pavements, noise barriers, and at-property treatments, will be reviewed as part of the ONVR and as the detailed design progresses. The implementation of treatments will be carried out in accordance with TfNSW Noise Mitigation guidelines (2015).</p>	Contractor / TfNSW	Detailed design, during construction and prior to operation

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	NV15	Within 12 months of start of operation of the project, actual operational noise performance will be compared to predicted operational noise performance. The need for additional mitigation or management measures to address identified operational performance issues and meet relevant operational noise criteria will be assessed and implemented where feasible and reasonable.	TfNSW	During operation
Flooding				
Potential changes to flood impacts resulting from detailed design	F01	Further flood investigations and hydrological and hydraulic modelling will be carried out during detailed design to ensure the flood immunity objectives and design criteria for the project are met. The modelling will be used to define the nature of both main stream flooding and major overland flow along the full length of the project corridor under pre- and post-project conditions and to define the full extent of any impact that the project will have on patterns of both main stream flooding and major overland flow. The hydraulic model(s) will be based on two-dimensional hydraulic modelling software. The modelling will take into account any updated regional flood modelling and information available at the time.	Contractor	Detailed design
Flooding impacts on property	F02	Should the updated flood modelling show the project will result in an adverse flooding impact, TfNSW will consult with landowners regarding appropriate mitigation measures to be implemented by the contractor in relation to each individual property.	TfNSW / Contractor	Detailed design
Flooding impacts during construction	F03	A flood management plan will be prepared as part of the CEMP for the project and will detail the processes for flood preparedness, materials management, weather monitoring, site management and flood incident management. The flood management plan will be developed in accordance with: <ul style="list-style-type: none"> Managing Urban Stormwater, Soils and Construction, Volume 1 4th Edition, March 2004 (Landcom 2004) and Managing Urban Stormwater, Volume 2D – Main Road Construction (DECC 2008) TfNSW Erosion and Sedimentation Management Procedure (Roads and Traffic Authority 2009) 	Contractor	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
		<ul style="list-style-type: none"> TfNSW Technical Guideline: Temporary Stormwater Drainage for Road Construction (Roads and Maritime 2011) TfNSW Stockpile Management Guideline (Roads and Maritime 2011). 		
Flooding and creek adjustment impacts	F04	Creek adjustments would be re-considered and/or further refined to minimise the impact on the creeks during detailed design.	TfNSW / Contractor	Detailed design
Flooding impacts of bridges and culverts	F05	Detailed construction staging plans will be developed during detailed design so that bridges and culverts are constructed in a way that minimises flood risk.	Contractor	Detailed design
	F06	Measures to address potential impacts of culvert blockage on afflux will be further investigated during detailed design and may include the installation of debris deflectors, trash racks or similar on drainage inlets where reasonable and feasible.	Contractor	Detailed design
	F07	During the detailed design phase, TfNSW will seek to refine the design of the works at Elizabeth Drive near Badgerys Creek to minimise flood affectation. Mitigation measures may include adjustment of road levels and/or flood relief culverts through the road.	TfNSW / Contractor	Prior to and during construction
Impacts on existing drainage systems	F08	Activities that may affect existing drainage systems during construction will be carried out so that existing hydraulic capacity of these systems is maintained where practicable.	Contractor	During construction
Flooding impacts during operation	F09	The proposed bridges, culverts and changes to watercourses will be further refined during the detailed design to minimise potential flooding impacts.	TfNSW / Contractor	Detailed design
Consultation regarding flooding impacts	F10	Ongoing consultation will be carried out with Western Sydney International Airport and as further details of their flood management and earthworks are developed, these will be incorporated into an updated M12 Motorway flood model for the detailed design phase of the project.	TfNSW / Contractor	Prior to and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Surface water quality and hydrology				
General	SWH01	<p>A construction soil and water management plan (CSWMP) will be prepared for the project. The plan will outline measures to manage soil and water impacts associated with the construction works, including contaminated land.</p> <p>The CSWMP will provide:</p> <ul style="list-style-type: none"> • Measures to minimise/manage erosion and sediment transport both within the construction footprint and offsite including requirements for the preparation of erosion and sediment control plans (ESCP) for all progressive stages of construction • Measures to manage waste including the classification and handling of spoil • Procedures to manage unexpected contaminated finds including asbestos which would be outlined in the contaminated land management plan and asbestos management plan to be prepared for the project • Measures to manage stockpiles including locations, separation of waste types, sediment controls and stabilisation • Measures to manage groundwater de-watering and impacts including mitigation required • Processes for de-watering of water that has accumulated on site and from sediment basins, including relevant discharge criteria • Measures to manage potential tannin leachate • Measures to manage accidental spills including the requirement to maintain materials such as spill kits • Measures to manage potential saline soils • Details of surface water and groundwater quality monitoring to be carried out before, throughout, and following construction • Controls for sensitive receiving environments including SEPP Coastal Wetlands which may include but not be limited to: <ul style="list-style-type: none"> – Designation of ‘no go’ zones for construction plant and equipment 	Contractor	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
		<ul style="list-style-type: none"> – Creation of catch/diversion drains and sediment fences at the downstream boundary of construction activities where practicable to ensure containment of sediment-laden runoff and diversion toward sediment sump treatment areas (not sediment basins) to prevent flow of runoff to the SEPP Coastal Wetland. • Erosion and sediment control measures will be implemented and maintained at all work sites in accordance with the principles and requirements in Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom 2004) and Volume 2D (NSW Department of Environment, Climate Change and Water 2008), commonly referred to as the “Blue Book”, as well as relevant TfNSW Guidelines. 		
	SWH02	A soil conservation specialist will be engaged by both TfNSW and the Contractor for the duration of construction of the project to provide advice on the planning and implementation of erosion and sediment control including review of ESCPs.	TfNSW / Contractor	Prior to construction and during construction
	SWH03	A water reuse strategy will be developed for both construction and operational phases of the project to reduce reliance on potable water. This strategy will be prepared during the detailed design stage and implemented throughout the project and will outline the construction and operational water requirements and potential water sources to supply the water demand in consultation with Sydney Water. Alternative water supply options to potable water will be investigated, with the aim of reusing water using recycled water where feasible.	Contractor	Detailed design, prior to construction, and throughout construction and operation
Impacts of stockpiles	SWH04	<p>Stockpiles will be managed to minimise the potential for mobilisation and transport of dust and sediment in runoff in accordance with TfNSW Stockpile Sites Management Guideline (Roads and Maritime, 2015). This will include:</p> <ul style="list-style-type: none"> • Minimising the number of stockpiles, area used for stockpiles, and time that they are left exposed • Locating stockpiles away from drainage lines, waterways and areas where they may be susceptible to wind erosion • Stabilising stockpiles, establishing appropriate sediment controls and suppressing dust as required. 	Contractor	Construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Surface water quality impacts	SWH05	<p>A construction water quality monitoring program will be developed and included in the CSWMP for the project to establish baseline conditions, observe any changes in surface water and groundwater during construction, and inform appropriate management responses.</p> <p>The program will be based on the water quality monitoring methodology water quality indicators and the monitoring locations identified in the Surface water and hydrology assessment report (Appendix M of the EIS) and supplementary memo (Appendix I of this amendment report), and Groundwater quality and hydrology assessment report (Appendix N of the EIS) and supplementary memo (Appendix J of this amendment report).</p> <p>Baseline monitoring will be carried out monthly for a minimum of 12 months before the start of construction. As a minimum this will include three wet weather sampling events over six months where feasible.</p> <p>Sampling locations and monitoring methodology to be carried out during construction will be further developed in detailed design in accordance with the Guideline for Construction Water Quality Monitoring (RTA 2003) and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018) 'ANZECC water quality guidelines' (ANZECC/ARMCANZ 2000). It will include collection of samples for analysis from sedimentation basin discharge points, visual monitoring of other points of release of construction waters and monitoring of downstream waterways.</p>	TfNSW / Contractor	Prior to construction, and during construction and operation

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Surface water quality impacts	SWH06	<p>An operational water quality monitoring program will be developed and implemented following the completion of construction to observe any changes in surface water and groundwater following construction, and inform appropriate management responses.</p> <p>The program will be based on the water quality monitoring methodology, water quality indicators, and the monitoring locations presented in the Surface water and hydrology assessment report (Appendix M of the EIS), and Groundwater quality and hydrology assessment report (Appendix N of the EIS).</p> <p>The monitoring program will be carried out monthly and will preferentially monitor following wet weather events when rainfall results in discharge from control sites or is greater than a nominated rainfall threshold which will be identified in detailed design. Monitoring will be carried out for a minimum of 12 months following the completion of construction, or until the affected waterways are certified by a suitably qualified and experienced independent expert as being rehabilitated to an acceptable condition and/or the permanent water quality structures are deemed to be operating satisfactorily.</p> <p>Should the results of monitoring identify that the water quality management measures are not effective in adequately mitigating water quality impacts, additional mitigation measures will be identified and implemented as required.</p>	TfNSW / Contractor	Prior to operation and during operation
	SWH07	<p>The performance water quality controls developed for the design as set out in the EIS and the amended water quality and hydrology controls outlined in this amendment report document (including but not limited to temporary and permanent sediment basins) will be verified as the detailed design develops for the project to ensure the objectives of the project are achieved.</p> <p>In the instance that water quality (MUSIC) modelling carried out during detailed design cannot demonstrate that the water quality controls would be effective in mitigation potential impacts, potential additional mitigation measures would be identified and implemented where possible.</p>	Contractor	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	SWH08	Further water quality assessment will be undertaken during detailed design to establish site specific discharge criteria for construction sediment basins. Based on this, the number, location and size of the basins will be further refined during the detailed design with consideration to the relevant NSW EPA Environment Protection Licence application requirements and the environmental values of the downstream receiving waterway.	TfNSW / Contractor	Detailed design
	SWH09	Practical measures to prevent water pollution and control, abate or mitigate impacts to the environment will be investigated at the detailed design stages of the project with the aim to make improvements to the currently proposed water quality controls. Such measures may include: <ul style="list-style-type: none"> • Larger or high efficiency temporary basins • Alternative dry bioretention operational basins. 	TfNSW / Contractor	Detailed design
	SWH10	The use of water sensitive urban design measures will be considered during detailed design to meet water quality objectives.	Contractor	Detailed design
Impacts of dewatering	SWH11	A de-watering management plan will be prepared as part of the CSWMP which will outline the de-watering methodology, supervision requirements, staff responsibilities and training, and approvals required before any de-watering activity begins.	Contractor	During construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Impacts on water bodies	SWH12	<p>The following measures will be carried out to manage activities within watercourses or on waterfront land:</p> <ul style="list-style-type: none"> • Implementing practices to minimise disturbance of banks • Undertaking bank stabilisation and installing instream structures • Maintaining minimum flows to assist in maintaining the viability of aquatic communities and preventing barriers to fish passage • Constructing instream crossings during low flows and design so that drainage off crossing doesn't contribute sediment load to the stream • All drainage feature crossings (permanent and temporary watercourse crossings and stream diversions), drainage swales and depressions will be designed by a suitably qualified and experienced professional and will be designed and constructed in accordance with relevant guidelines. 	Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	SWH13	<p>A set of hydrologic and hydraulic models will be developed, which are to be used to define the nature of both main stream flooding and major overland flow along the full length of the project operational footprint under pre- and post-project conditions. The hydraulic model is to extend a sufficient distance upstream and downstream of the project operational footprint, to negate any boundary effects and to define the full extent of any impact that the project will have on patterns of both main stream flooding and major overland flow. The hydraulic model(s) is to be based on the TUFLOW (or equivalent) two-dimensional (in plan) hydraulic modelling software.</p> <p>The models will be used to verify the nature and extent of impacts and to confirm the type of mitigation measures required, including potential mitigation measures identified throughout the EIS (see Table 5-9 in Appendix M of the EIS) and this amendment report and supplementary memo (see Table 5-6 in Appendix I of this amendment report).</p> <p>The models will also be used during detailed design to describe the interaction between the project and flows particularly with respect to culverts and to assist in refining the design for flows arriving at and travelling through culverts.</p>	Contractor	Detailed design
Impacts on SEPP Coastal Wetlands	SWH14	<p>Consideration will be given to the design of operational water quality, erosion and sediment controls incorporated into the design of the construction access track being left in place upstream from the SEPP wetland, and within the proximity area of the SEPP Coastal Wetland ID117.</p>	Contractor	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Groundwater quality and hydrology				
Impacts on groundwater quality and flows	GW01	<p>Groundwater monitoring will be carried out as part of the construction water quality monitoring program for the project. The groundwater monitoring will be based on the water quality monitoring methodology, water quality indicators and the monitoring locations shown in Appendix N of the EIS and Table 7-1 in the groundwater supplementary technical memorandum (Appendix J of this amendment report).</p> <p>Baseline groundwater monitoring will be carried out at least monthly for at least six months before construction. Monitoring will also be carried out at least monthly during construction and will continue for at least six months of operation to verify that there are no groundwater impacts, and that management measures are adequate.</p>	TfNSW / Contractor	Prior to construction, and during construction
Alteration of groundwater flows and levels	GW02	<p>Potential impacts on groundwater flows will be reconsidered as the detailed design for the project progresses, particularly in relation to the project's vertical alignment and extent of road cuttings. The aim of this will be to ensure that the groundwater controls proposed for the design as set out in this document would remain effective in mitigating groundwater impacts.</p> <p>In the instance that, during detailed design it cannot be demonstrated that the groundwater controls would be effective in mitigating potential impacts, or if observed groundwater inflow rates into the western cut or airport interchange northern and southern cuts are higher than estimated, additional measures will be implemented to minimise potential impacts to groundwater to minimise potential impacts on groundwater flows due to road cuttings or other sub-surface components of the project.</p>	Contractor	Detailed design
	GW03	<p>Installation of supplementary groundwater monitoring bores in the area of both airport interchange cuts would be carried out at detailed design stage, to better understand groundwater depths and levels (and groundwater quality) in these areas.</p>	Contractor	Detailed design

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	GW04	<p>Groundwater will be monitored at the airport interchange northern and southern cuts and the western cut during the construction phase and operational phase as outlined in Table 7-1 in the groundwater supplementary technical memorandum (Appendix J). The groundwater indicators to be monitored will be as per Section 7.2.5 of Appendix N of the EIS.</p> <p>Groundwater inflows to the airport interchange northern and southern cuts and the western cut are to be observed by the groundwater monitoring contractor during the construction and operational phases at monthly intervals. As part of observing the airport interchange northern and southern cuts and the western cut groundwater inflows, the groundwater monitoring contractor is to estimate the groundwater inflow rates and note the areas where groundwater inflow is occurring.</p> <p>During construction, if groundwater inflows are observed from the airport interchange northern and southern cuts and the western cut, the groundwater quality from the cut is to be sampled.</p> <p>Operational phase groundwater quality sampling, including the quality sampling of the airport interchange northern and southern cuts and the western cut inflows, is to occur at a monthly interval for at least 6 months.</p>	Contractor	Construction and operation
Soils and contamination				
Salinity	SC01	<p>Construction within areas of moderate to high risk saline soils will be managed in accordance with the CSWMP. Specific measures will also include (but not be limited to):</p> <ul style="list-style-type: none"> • Ongoing groundwater monitoring of salinity as part of the water quality monitoring program • Identification and management of saline discharge sites • Progressive stabilisation and revegetation of exposed areas following disturbance as soon as is practicable • Testing to confirm the presence of saline soils in areas of high salinity potential prior to disturbance. • Soil salinity management will also be carried out in accordance with the NSW Department of Primary Industries (2014) Salinity Training Handbook. 	Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	SC02	Testing will be carried out to confirm the presence of saline soils in areas of high salinity potential and to confirm the presence of ASS around creeks prior to disturbance.	Contractor	Prior to construction and during construction
Impacts of soil and groundwater contamination	SC03	<p>A contaminated land management plan (CLMP) will be prepared for the project. The CLMP will include:</p> <ul style="list-style-type: none"> • Control measures to manage identified areas of contamination, including surface soils in the vicinity of TP303, TP304, TP310 and TP311 containing heavy metal and PAH concentrations • Procedures for unexpected contamination • Measures to manage potential ASS (as required based on testing results) within sediments of the creeks in the construction footprint to minimise impacts to the environment • Requirements for excavation of unexpected contaminants to be carried out in consultation with project Remedial Actions Plans. • Requirements for the disposal of contaminated waste in accordance with the POEO Act and the Protection of the Environment Operations (Waste) Regulation 2014. 	Contractor	Prior to construction
	SC04	<p>An asbestos management plan (AMP) will be prepared as part of the CLMP for the project. The AMP will guide the excavation, handling, storage and disposal of management of asbestos discovered during construction, including procedures for any unexpected asbestos. The AMP will also outline requirements for the encapsulation of asbestos to be carried out in accordance with project Remedial Action Plans.</p>	Contractor	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	SCO05	<p>Detailed site (contamination) investigations will be carried out in accordance with the NSW EPA (1995) Sampling Design Guidelines and other NSW EPA endorsed guidance including the NEPM (2013) guidelines within the following AEI locations to confirm the presence of contamination before the start of construction at these locations:</p> <ul style="list-style-type: none"> • AEI 17: Stockpiles within Hi-quality Quarry Group Head Office • Within AEI 19: the area of miscellaneous construction activities and stockpiles of building materials along Luddenham Road (Lot 1, DP228498) • Within AEI 7: Area of waste and imported fill Former Kari and Ghossayn solid waste landfill (Lot 17, Clifton Avenue) • Within AEI 21: Area of illegally dumped material along Range Road, Cecil Park • Within AEI 24: Stockpiles within the OzSource property • Within AEI 26: TreeServe (wood processing, stockpiles of woodchips, logs and fire wood) • Within the 'potential areas of existing fill' identified in the Soils and contamination assessment report (Appendix K Appendix Q) for the amended project. <p>Further soil investigations will be required in areas of the amended construction footprint located adjacent to the following two AEIs to confirm the presence of contamination before the start of construction at these locations:</p> <ul style="list-style-type: none"> • Within AEI 6: PGH Bricks and Pavers • Within AEI 9: Sydney Recycling Park/ Wanless Recycling and Former Kari & Ghossayn Pty Ltd (Solid Waste Landfill) • AEI 10: SUEZ Kemps Creek Resource Recovery Park. <p>Additional soil and groundwater investigations will be required in the areas of additional cut around the airport interchange northern cut and airport interchange southern cut to further assess the potential impacts to the amended project.</p> <p>Depending on results of the investigations, or if remediation is deemed required at any site within the amended construction footprint, a Remedial Action Plan will be prepared before the construction.</p>	Contractor	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Impacts of soil and groundwater contamination	SC06	Further intrusive asbestos investigations throughout the construction footprint will be carried out to assess asbestos risks before the start of construction. The investigations are to include visual assessments and ground truthing along the length of the project.	Contractor	Prior to construction
	SC07	A hazardous building materials management plan will be prepared in accordance with relevant guidelines to manage the removal of known and unexpected hazardous building during demolition activities. Before demolishing structures and/or buildings, a hazardous building materials audit will also be carried out in accordance with Australian Standard (AS 2601-2001) The demolition of structures. Where hazardous building materials are present, they will be managed to reduce the potential for contamination in accordance with the POEO Act and the Protection of the Environment Operations (Waste) Regulation (2014).	Contractor	Prior to construction and during construction
	SC08	All waste will be classified in accordance with the NSW EPA's Waste Classification Guidelines, with appropriate records and disposal dockets retained for audit purposes.	Contractor	Before and during construction
	SC09	A section B site audit statement will be prepared for the asbestos encapsulation and for sites where intrusive investigations confirm highly complex contamination issues.	Contractor	Prior to construction and during construction
Soil gas contamination	SC10	A detailed investigation will be carried out within the area next to the SUEZ Kemps Creek Resource Recovery Park to assess the extent of high-risk soil gas. A report will be prepared to document the outcomes of the investigation and outline measures to manage risks including nuisance odours to the surrounding area during excavation, and prevent the build-up of gases in buildings, basins, and sub-surface trenches and pits, and other enclosed spaces/depressions associated with the project during construction. These investigations will be carried out in accordance (where applicable) with the Guideline for the Assessment and Management of Sites Impacted by Hazardous Ground Gases (NSW EPA 2012) and Assessing Risks Posed by Hazardous Ground Gases to Buildings Report (C665) (Wilson et al. 2007). This will include undertaking gas monitoring.	Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	SC11	Should the further investigations determine that gas concentrations remain elevated near the project footprint, gas monitoring will be carried out during construction within the construction footprint next to the SUEZ Kemps Creek Resource Recovery Park. If excavations are to be carried out within enclosed structures, gas accumulation monitoring will be carried out before and during construction. On site gas monitoring will be carried out in accordance with the NSW EPA (2016) Environmental Guidelines: Solid Waste Landfills.	Contractor	During construction
Air quality				
General air quality impacts during construction	AQ01	<p>A construction air quality management plan (CAQMP) will be developed and implemented for the project to manage potential air quality impacts associated with construction. The CAQMP will identify activities that may results in air quality impacts and associated mitigation measures to avoid or minimise these impacts.</p> <p>The CAQMP will provide:</p> <ul style="list-style-type: none"> • Measures to minimise dust generation associated with earthworks and other activities that disturb the ground surface, stockpiles, and haulage routes • Measures to minimise emissions from machinery and vehicles associated with the project • Procedures for inspection, monitoring and addressing any impacts where required. <p>The CAQMP will be implemented for the duration of construction.</p>	Contractor	Prior to construction and during construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Dust impacts during construction	AQ02	<p>Dust generation will be minimised during construction where possible. Where practicable, specific measures will include (but not be limited to):</p> <ul style="list-style-type: none"> • Regularly watering exposed and disturbed areas including stockpiles, especially during inclement weather conditions • Adjusting the intensity of activities based on measured and observed dust levels, weather forecasts and the proximity of and direction of the works in relation to the nearest surrounding receivers • Ensuring loads are covered, and any loose materials/debris are removed before vehicles exit the site • Minimising the number of stockpiles and amount of material stockpiled where practicable • Positioning stockpiling areas as far as possible from surrounding receivers, including potentially ecologically sensitive receivers • Limiting stockpiling activities during conditions where winds are blowing strongly in the direction(s) from the stockpiling location to nearby receivers • Consultation with nearby developers to co-ordinate and plan activities where practicable to minimise the potential for cumulative dust-related impacts • The planning and undertaking of demolition activities, including the removal of hazardous building materials in a manner that minimises dust generation. This will also include the removal of hazardous building materials before the start of general demolition works. 	Contractor	During construction
Odours during construction	AQ03	<p>Odorous materials identified on site will be excavated in a staged process and exposed areas of odorous material will be kept to a minimum to reduce the total emissions from the site where feasible.</p>	Contractor	During construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Health and safety				
General	HS01	<p>A work health safety management plan (WHSMP) will be prepared for the project. The WHSMP will include:</p> <ul style="list-style-type: none"> • Details of the hazards and risks associated with construction activities • Risk management measures • Procedures to comply with all legislative and industry standard requirements • Use of appropriate personal protective equipment • Contingency plans, as required • An incident response management plan • Training for all personnel (including subcontractors) including site inductions, the recognition and awareness of site hazards and the locations of relevant equipment to protect themselves and manage any spills. All staff would have the relevant training and certificates. 	Contractor	Prior to construction
Bushfire	HS02	Measures to mitigate and manage bushfire risk will be developed and included as part of site-specific hazard and risk management measures within the WHSMP. Measures will include the maintenance of ancillary facilities in a tidy and orderly manner and the storage and management of dangerous goods and hazardous materials in a safe location.	Contractor	Prior to construction
Incident response	HS03	<p>An incident response management plan will be developed and implemented.</p> <p>The response to incidents within the road will be managed in accordance with the memorandum of understanding between TfNSW and the NSW Police Service, NSW Rural Fire Service, NSW Fire Brigade and other emergency services.</p>	Contractor	Prior to construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Storage of dangerous goods and hazardous substances	HS04	Storage, handling and use of dangerous goods and hazardous substances would be in accordance with the <i>Work Health and Safety Act 2011</i> and the <i>Storage and Handling of Dangerous Goods Code of Practice</i> (WorkCover NSW, 2005).	Contractor	During construction and operation
	HS05	Secure, bunded areas will be provided around storage areas for oils, fuels and other hazardous liquids.	Contractor	During construction
	HS06	Safety Data Sheets will be obtained for dangerous goods and hazardous substances stored onsite before their arrival.	Contractor	During construction
Contamination from transportation of hazardous good	HS07	All hazardous substances will be transported in accordance with relevant legislation and codes, including the Road and Rail Transport (Dangerous Goods) (Road) Regulation 1998 and the 'Australian Code for the Transport of Dangerous Goods by Road and Rail' (National Transport Commission, 2008).	Contractor	During construction
Sustainability				
Project sustainability outcomes	SU1	A sustainability management plan for the project will be developed and implemented during detailed design, to give effect to the sustainability strategy for the project. The management plan will detail measures to meet the sustainability objectives and targets and Infrastructure Sustainability rating tool credit requirements.	Contractor	Throughout detailed design, construction, and operation

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Waste				
Inappropriate handling and/or disposal of waste	W01	<p>A construction waste and resource management plan (CWRMP) will be prepared for the project and outline appropriate management procedures. It will include, but not be limited to:</p> <ul style="list-style-type: none"> • Identification of the waste types and volumes that are likely to be generated by the project • Adherence to the waste minimisation hierarchy principles of avoid/reduce/reuse/recycle/dispose • Waste management procedures to manage the handling and disposal of waste, including unsuitable material or unexpected waste volumes • Identification of reporting requirements and procedures for tracking of waste types and quantities • A resource management strategy detailing the process to identify reuse options for surplus materials • A procurement strategy to minimise unnecessary consumption of materials and waste generation in accordance with relevant legislation and guidelines. 	TfNSW / Contractor	Prior to construction
	W02	<p>A spoil management plan will be prepared for the project as part of the CWRMP and in line with the CSWMP. The spoil management plan will outline appropriate management procedures for the generation and importation of spoil. It will include, but not be limited to:</p> <ul style="list-style-type: none"> • Procedures for classification of spoil • Identification of spoil reuse measures • Spoil stockpile management procedures • Spoil haulage routes • Spoil disposal and reuse locations • Imported spoil sources and volumes. 	Contractor	During construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	W03	Wherever feasible and reasonable, construction material will be sourced from within the Sydney region.	TfNSW / Contractor	During construction
Unexpected waste volumes and types during construction	W04	Suitable areas will be identified to allow for contingency management of unexpected waste materials, including contaminated materials. Suitable areas will be required to be hardstand or lined areas that are appropriately stabilised and bunded, with sufficient area for stockpile storage.	TfNSW / Contractor	During construction
Climate change and greenhouse gas				
Climate change risks	CC01	<p>Detailed design will incorporate appropriate adaptation measures for all climate change risks with an original risk rating of moderate or above. These will include but not be limited to:</p> <ul style="list-style-type: none"> • Consideration of the full range of potential temperature extremes on the project (particularly bridge structures) which may occur as a result of climate change and consider material capacity to withstand heat during material type selection to minimise the likelihood of infrastructure failures • Consideration of energy dissipation at culvert outlets when velocities exceed existing magnitudes • Consideration of the use of native species which are typically more fire tolerant and can more rapidly regenerate after fire events • Maintenance of fauna passage along main creek lines under bridges. 	Contractor	Detailed design
	CC02	A climate change monitoring and adaptive management framework will be prepared and implemented for the project. The framework will incorporate performance monitoring criteria and measures, and the requirement for periodic review of the climate change risk assessment and framework against updated climate data to ensure currency.	TfNSW / Contractor	Detailed design and construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
	CC03	An adaptive management approach will be applied to workplace health and safety planning during construction and operation in line with the WHSMP. This will include use of TfNSW Work Health and Safety Procedures.	TfNSW / Contractor	Prior to construction, during construction and during operation
GHG emissions	GG01	Targets to reduce GHG emissions during construction and operation will be included in the project's sustainability management plan.	TfNSW / Contractor	Detailed design and construction
	GG02	Updated GHG assessment based on the detailed design for the project and the final project when built will be carried out.	Contractor	Detailed design and construction
	GG03	Vegetation removal will be minimised where practicable.	Contractor	Detailed design and construction
	GG04	The procurement of goods and services will consider goods and services that: <ul style="list-style-type: none"> • Are from local suppliers • Make use of recycled materials or materials with a low embodied energy content. • Are energy efficient or have low embodied energy • Minimise the generation of waste 	Contractor	Detailed design and construction
	GG05	Construction plant and equipment will be well maintained to maximise fuel efficiency.	Contractor	Construction

Environmental issue	Reference	Environmental management measures	Responsibility	Timing
Cumulative impacts				
Cumulative impacts	CU01	Regular consultation will be carried out with nearby/adjoining projects and key stakeholders during the detailed design and construction phase to review potential cumulative impacts and integrate designs and construction methodologies (including traffic impacts and noise management), as far as practicable to minimise cumulative impacts.	TfNSW / Contractor	Detailed design and construction
	CU02	Communication strategies across relevant TfNSW projects will be managed to be consistent in their messaging to the community to avoid confusion.	TfNSW	Detailed design and construction

8 Conclusion

TfNSW proposes to amend the project in response to consultation with the community, businesses, landowners and government agencies, submissions received on the EIS and continued design development and refinement. The proposed changes to the project as described in the EIS include:

- Amendments to the motorway-to-motorway interchange at the M7 Motorway, including:
 - Changes to Elizabeth Drive and Cecil Road intersections, proposed exit ramps, the Wallgrove Road connection to Elizabeth Drive and proposed shared user path realignments
 - The widening of Elizabeth Drive under the M7 Motorway and approaches
- An option to provide a new connection between the M12 Motorway and Elizabeth Drive near the M7 Motorway interchange
- Two new signalised intersections into the Western Sydney International Airport, with provisions for future connection to potential developments north of the Western Sydney International Airport
- Additional and revised ancillary facilities to support the delivery of the project
- Lowering the height of the M12 Motorway in and around the Western Sydney International Airport interchange
- Reduction in the scope of work associated with the M12 Motorway and The Northern Road intersection
- Relocation of utilities
- Changes to property access and acquisition
- Changes to drainage
- Adjustments to construction access, hours, haulage, timing and material quantities.

The assessment in **Chapter 6** found impacts associated with the proposed project changes to be generally consistent with the impacts described in the EIS. The project would still result in impacts due to the removal of vegetation, including threatened ecological communities (TECs), disruptions to traffic and access during construction, visual and landscape character impacts associated with the introduction of new infrastructure elements, socio-economic impacts associated with changes to access and property acquisition, noise and vibration impacts, and impacts to items of both Aboriginal and non-Aboriginal heritage significance.

The key potential impacts and benefits that differ from the EIS for the amended project include additional vegetation removal resulting in increased impacts to TECs and threatened flora and fauna species; improved operational traffic performance due to updated data inputs to traffic modelling; additional property impacts due to acquisition and temporary leasing and an increase in the number of receivers eligible for noise mitigation due to an increase in the operational footprint of the amended project.

The project has applied the Framework for Biodiversity Assessment (FBA) (OEH 2014a) to quantify the impact of threatened species, populations and communities and developed a Biodiversity Offset Strategy to address the requirements of the Threatened Species Conservation Act 1995. A summary of the offset credits required for the project is provided in the biodiversity supplementary technical report (**Appendix A**). All residual impacts associated with biodiversity will be offset in accordance with the FBA.

Potential impacts associated with the amended project would be managed through the implementation of the environmental management measures outlined in **Chapter 7** of this report.

These measures have been revised since the EIS to consider the changes to the project and issues raised during EIS exhibition, responded to in the submissions report.

The amended project is considered justified in relation to its strategic transport need and its anticipated benefits in connecting the Western Sydney International Airport to Sydney's wider transport network, taking into account biophysical, economic and social considerations, including ecologically sustainable development and cumulative impacts.

DPIE will place this amendment report on exhibition for at least 14 days to provide the community and other stakeholders the opportunity to comment on the amended project. The document will be available for inspection at the DPIE website <https://www.planningportal.nsw.gov.au/major-projects/project/10226> and submissions can be made via the online form on the DPIE's website www.planningportal.nsw.gov.au/major-projects/projects/on-exhibition.

9 References

- ANZECC/ARMCANZ (2000), National Water Quality Management Strategy Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian Government Publishing Service: Canberra
- ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments. Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines
- BOM (2018), Australian Groundwater Explorer, accessed at <http://www.bom.gov.au/water/groundwater/explorer/map.shtml>.
- DECCW (Department of Environment, Climate Change and Water) (2010) Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW, Sydney.
- DIPNR (Department of Infrastructure, Planning and Natural Resources) (2004) Guideline for the Preparation of Environmental Management Plans. Department of Infrastructure, Planning and Natural Resources: Sydney NSW
- DIRDC (Department of Infrastructure, Regional Development and Cities) (2018) The Western Sydney City Deal. Australian Government.
- DPE (2018) Western Sydney Aerotropolis - Land Use and Infrastructure Implementation Plan. Stage 1: Initial Precincts
- DPI (2012) Guidelines for instream works on waterfront land, s.l.: NSW Department of Primary Industries.
- DPI (2013) Policy and guidelines for fish habitat conservation and management. Department of Primary Industries: Orange.
- Ecologically Sustainable Development Steering Committee (1992) National Strategy for Ecologically Sustainable Development, endorsed by the Council of Australian Governments
- Ecoplanning (2015) Flora and Fauna Assessment and Vegetation Management Plan: Lot 3/DP 812284, 90-145 Clifton Rd, Kemps Creek. Ecoplanning Pty Ltd: Newtown
- Fairfield City Council (2014) Ropes Creek Flood Planning Map
- Fairfull, S. and Witheridge, G. (2003) Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings. NSW DPI: Cronulla.
- GHD (2019). M12 Motorway Surface Water Monitoring Six Monthly Report – April to September 2019. Roads and Maritime Services, November 2019.
- NEPM (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999 (as revised 2013)
- NSW EPA (1995) Contaminated Sites: Sampling Design Guidelines
- NSW EPA (2011) NSW Road Noise Policy (RNP)
- NSW EPA (2016) Approved Methods for the Modelling and Assessment of Air Pollutants in NSW.
- NSW Government (2014) Land Acquisition Information Guide, available at: <https://arp.nsw.gov.au/sites/default/files/Land%20Acquisition%20Factsheet.pdf> Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010).

NSW Government Department of Primary Industries Office of Water (2012), NSW Aquifer Interference Policy.

NSW Heritage Office (1996, revised 2002) Statements of Heritage Impact.

Penrith City Council (2019) Floodplain Risk Management Study and Plan for South Creek, updated in September 2019

Roads and Maritime Services (2011) Procedure for Aboriginal and Cultural Heritage Consultation and Investigation (PACHCI). Roads and Maritime Services: Sydney

Roads and Maritime (2015) Noise Criteria Guideline (NCG)

Roads and Maritime (2015a) Noise Mitigation Guideline

Roads and Maritime (2016) Environmental Sustainability Strategy 2015-19. Roads and Maritime Services: Sydney.

Roads and Maritime (2018) Guideline for landscape character and visual impact assessment, Environmental impact assessment practice note EIA-N04. Roads and Maritime Services: Sydney.

Roads and Maritime (2019) Environmental Sustainability Strategy 2019-2023. Roads and Maritime Services: Sydney.

Roads and Maritime Services (October 2019) M12 Motorway Environmental impact statement. Roads and Maritime Services: Sydney.

RTA, (2011) Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects. Roads and Traffic Authority: Sydney

RTA (2003) Guideline for Construction Water Quality Monitoring. Roads and Traffic Authority of NSW: Sydney

Transport Authorities Greenhouse Group (2013) Greenhouse Gas Assessment Workbook for Road Projects, TAGG

JAJV (2020) M12 Motorway: Former Cecil Park Historical Complex Historical Archaeological Salvage Research Design and Methodology. Report prepared for Roads and Maritime Services by Jacobs Arcadis Joint Venture: Sydney NSW

Road Noise Policy (RNP) (NSW EPA, 2011)

WaterNSW (2020) NSW groundwater data. available at:
<https://realtimedata.waternsw.com.au/water.stm>, accessed 2020

UK IAQM (United Kingdom Institute of Air Quality Management) (2014), Guidance on the assessment of dust from demolition and construction Version 1.1.