

5.16 LIGHTING

Lighting of the project would be provided as required for safety reasons. Lighting is not required on the main carriageway, but would be provided for interchanges, ramps, and local road intersections as appropriate based on traffic volumes.

The reconfiguration of the Croom Regional Sporting Complex (Section 5.18) would require the existing field lighting for the junior rugby league fields to be repositioned to accommodate the relocation of the field.

Light spill from the project onto residential properties and other sensitive areas would where necessary be minimised through the use of mitigation measures such as plant screening. Impacts associated with light spill have been assessed in Technical Paper 10 –Landscape character and visual amenity. The design would take into account the requirement to avoid impact on the operation of the Illawarra Regional Airport (see Section 7.3.4), which has been considered in Technical Paper 2 – Aviation.

5.17 ROAD FURNITURE

Barriers, fences, signs, variable message signs and closed circuit television would be installed along the project for safety and security reasons, to indicate delineation and provide directional guidance. Proposed road furniture is described in Table 5-9.

Table 5-9 Road furniture

Item	Use	Indicative description
Barriers	Safety barriers would be installed to where vehicles travel within 14 metres of the edge of the carriageway to protect them from the following hazards: ▪ Bridge piers ▪ Drainage headwalls (unless drivable) ▪ Trees / vegetation ▪ Water quality basins and standing water ▪ Non-traversable or high embankments ▪ Any other object within 14 metres of the carriageway that would be considered a hazard	Road safety barriers along the motorway would primarily be wire rope safety barriers. On approaches to bridges concrete barriers would be provided. On ramps and local roads a guardrail would generally be used for the tighter curve radii on these roads, where required.
Fencing	Fencing would be used to control access and for security purposes. Boundary fencing would be provided to separate private properties from the motorway and local roads, to prevent unauthorised access to the motorway, and to prevent stock (farm animals) accessing the motorway	Boundary fencing would generally comprise 'post and wire' fencing with concrete posts and barbed and plain wire
Signs	Traffic signs would be used to enforce road rules and regulations, indicate direction of travel, speed, place names, routes, height clearances and feature names. Some signs would include symbols	Traffic signs would be legible at the posted speed limits. The signs would be compatible with the State road network and the rest of the Princes Motorway and Princes Highway

Item	Use	Indicative description
Variable message signs	Variable message signs would be used to communicate information about events, changes to road conditions, road closures and other information to road users. The indicative location of variable messages signs are shown on Figure 5-1 to Figure 5-7	Signs would generally be located in the verge, protected by safety barriers, and comprise an electronic sign board cantilevering over the carriageway
Closed circuit television cameras	Closed circuit television cameras are installed to provide information about traffic conditions, weather, accidents and other information on road condition	Closed circuit television cameras would be located high up on slender poles in the road verges, often adjacent to other substantial items of road furniture

5.18 RECONFIGURATION OF CROOM REGIONAL SPORTING COMPLEX

The motorway route would go through the Croom Regional Sporting Complex. A number of sporting fields and facilities would be directly impacted by the project, including the cricket / AFL oval and the northern extents of the junior rugby league playing fields and netball courts.

To ensure its ongoing use, the project would reconfigure the Croom Regional Sporting Complex. Roads and Maritime has worked closely with Shellharbour City Council, as the facility owner, and the sporting groups that use the facilities to develop a master plan for the reconfiguration of the Croom Regional Sporting Complex. The plan would provide sporting fields and facilities that are comparable with existing facilities. Roads and Maritime is continuing to work with Council and these groups to minimise impacts on users of the venue during the construction period.

The reconfiguration of the Croom Regional Sporting Complex would include construction of new sporting fields, and associated buildings and amenities, to replace those directly impacted by the motorway, as well as new internal roads, pedestrian / cycle paths and parking.

A master plan for the reconfiguration of the Croom Regional Sporting Complex was publicly displayed for comment from 1 April to 29 April 2015 (shown in Figure 4-6). Following the community consultation, a number of proposed changes were received by the project team for consideration. Council formally endorsed the master plan on 2 June 2015. A concept layout for the sporting complex was then prepared, incorporating a number of changes made in response to submissions received during consultation. The concept plan is shown in Figure 5-19 and a copy of the concept design report for the Croom Regional Sporting Complex is provided as Appendix I to the Technical Paper 10 – Landscape character and visual amenity.



Figure 5-19 Croom Regional Sporting Complex concept plan

Table 5-10 summarises the changes to individual sporting facilities and clubs as a result of the reconfiguration of the complex. A summary of consultation undertaken with sporting groups and Shellharbour City Council is provided in Chapter 6. Impacts associated with the reconfiguration, both positive and negative, are summarised in Chapter 13.

Table 5-10 Croom Regional Sporting Complex reconfiguration

Sport	Changes to the Croom Regional Sporting Complex
Junior Rugby League	- Two existing field would be reconfigured in their current location - Amenities building relocated to a central location to the fields, close to parking - Formalised parking area provided.
Senior Rugby League	Improved / formalised parking area provided.
Netball	- Six new (grassed) junior courts relocated behind the stadium in a more central location and closer to parking - Existing senior sealed courts retained in current position - Formalised parking area provided.
Cricket / Junior AFL	- New sporting field relocated in the southern area of the Croom Regional Sporting Complex - New 'drop-in' cricket pitch, which overcomes the issue whereby growing a new pitch takes 1+ years to establish and cannot be used during that period of time - New amenities building provided in a central location to the fields, near to the parking - Improved parking facilities, located close to the field - Improved visibility from / to both the motorway and Croome Road.
Hockey	Improved parking facilities
Recreational horse use	- Existing arenas within Croom Reserve relocated to the Horse Recreational Area west of Frazers Creek - Fenced access for riders - Existing site in Croom Reserve can be revegetated - Retention of existing equine access from the Horse Recreational Area along Frazers Creek to Croome Road - Existing parking area reinstated and able to accommodate trailers and floats.
Stadium	- Retained in existing location as entry feature to Complex - Improved visibility from the motorway and Croome Road.
Overall	- Relocation and replacement of four sporting groups - Reconfiguration of facilities for one sporting group - Two new amenities buildings - Four new formalised, sealed carparks located near to amenity buildings and sporting facilities - Two existing carparks formalised - New entry road - New landscaping and design enhancements - Overall improvement to standard and quality of sporting facilities - Replacement / improvement in standard of amenities - Generally improved roads

Sport	Changes to the Croom Regional Sporting Complex
	- Provision of a new entry road to highlight the Complex and the Stadium as the centrepiece of the Complex, and to provide direct access to the Stadium and adjoining carpark - Improved connectivity between eastern and western (Terry Reserve) parts of complex by a vehicular bridge across Frazers Creek - Maintenance of three vehicular entry points - Safe and efficient pedestrian / cycle connectivity throughout the complex which does not presently exist - Opportunity for enhancement of Croom Reserve.

The model cars, BMX, athletics and soccer clubs facilities would remain unchanged.

5.19 LANDSCAPE AND URBAN DESIGN

Urban design and landscape objectives have been prepared for this project to guide the concept design to ensure that the project is physically, visually and operationally integrated with the surrounding environment. The aim of the project would be for it to:

- Fit with the landform and built, natural, heritage and community environments
- Contribute to the accessibility and connectivity of communities and a general permeability of movement through areas
- Contribute to the overall quality of the public domain for the community.

These aims were based on an understanding of the wider existing landscape and urban values of the area, as well as urban design issues that affect, or are affected by, the project. To meet the aims listed above, the following project specific objectives have been developed for the project (Table 5-11).

Table 5-11 Project urban design objectives

Objective topic	Objective
Design of the motorway, interchanges and bridges	- Objective one: To achieve an integrated road design form and character that blends with the adjoining areas - Objective two: To achieve a design that efficiently utilises road related elements and requires minimal maintenance.
Landscape and scenic quality	Objective three: To achieve a project that fits sensitively with the existing qualities and characteristics of the Albion Park Rail and Albion Park setting.
Heritage and cultural values	Objective four: To protect the integrity of the heritage and cultural values of the Albion Park Rail and Albion Park area.
User connectivity	Objective five: To contribute to the accessibility and connectivity into and through Albion Park Rail, Albion Park and other surrounding areas.
Urban development	Objective six: To create a project that facilitates future urban development and revitalisation along and surrounding the proposed project area.
Public domain	Objective seven: To enhance the quality and value of the public domain along and surrounding the proposed project area.

To achieve these objectives, the project would incorporate urban design and landscape objectives and design principles that are consistent with the Beyond the Pavement (Roads and Maritime, 2014b), as outlined in Technical Paper 10 -Landscape character and visual amenity.

These urban design objectives and principles would be reviewed and, if required, refined during detailed design. The project design would also be influenced by the Crime prevention by design guidelines and the assessment of development applications guidelines under section 79C of the *Environmental Planning and Assessment Act 1979* (Department of Urban Affairs and Planning, 2001).

5.20 CONSTRUCTION WORK

5.20.1 OVERVIEW

The key construction activities would include:

- Mobilisation and site establishment
- Clearing, grubbing and topsoil stripping, including clearing of all areas within the project boundary (except within the nominated environmental protection areas) and temporary ancillary sites
- Demolition of existing roads and buildings
- Establishment of temporary ancillary facilities
- Bulk earthwork and haulage of materials
- Construction of the road pavement
- Construction of drainage structures
- Construction of bridges (this would likely include heavy vehicle deliveries of over-sized loads)
- Relocation and construction of sporting facilities
- Changes to property access
- Signposting
- Installation of lighting and roadside furniture
- Landscaping, waste disposal and rehabilitation of disturbed areas with no future use.

The key construction features, including temporary ancillary facilities and construction footprint, are shown in Figure 5-20 to Figure 5-26. A description of temporary ancillary facilities is provided in Section 5.20.4.

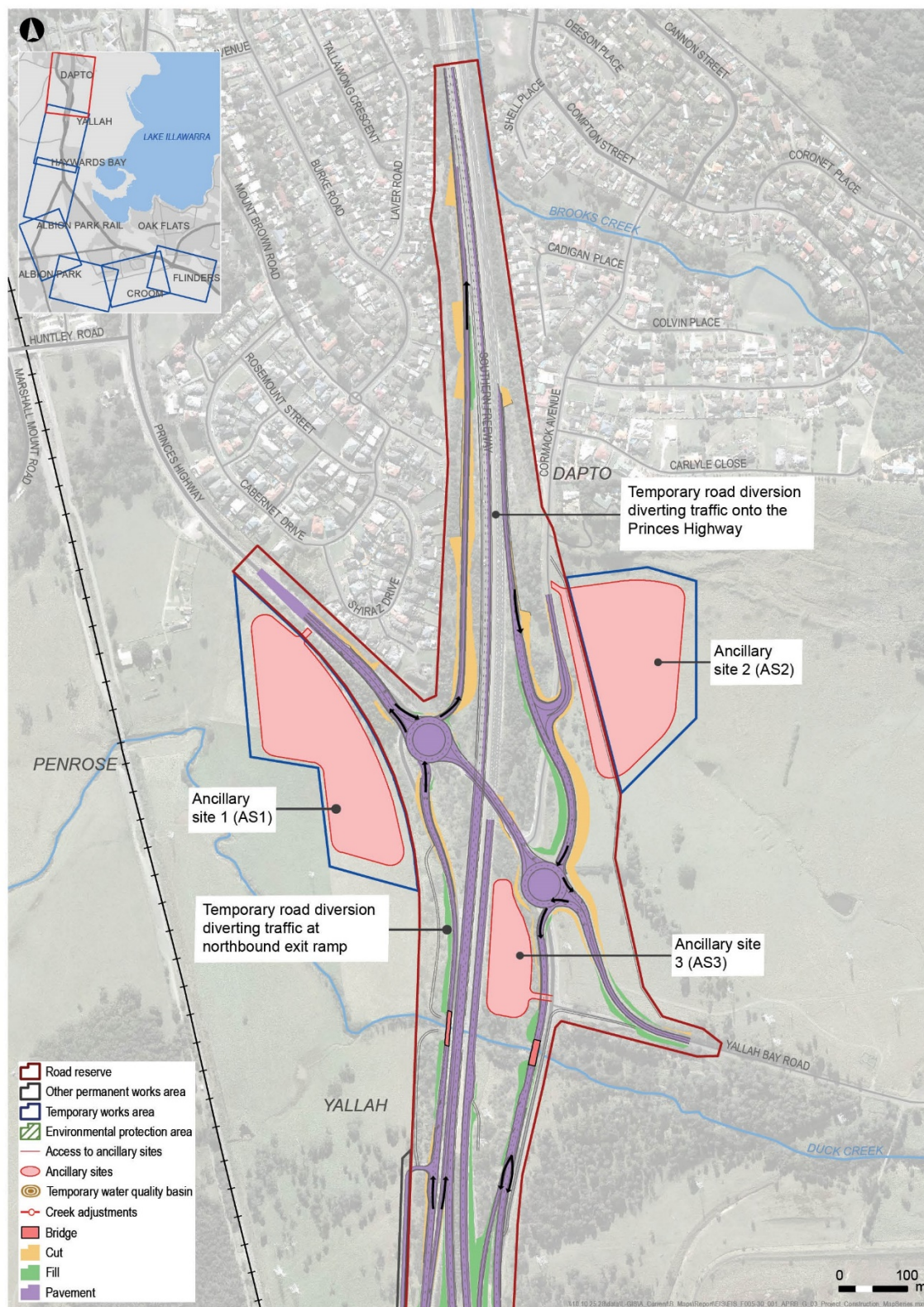
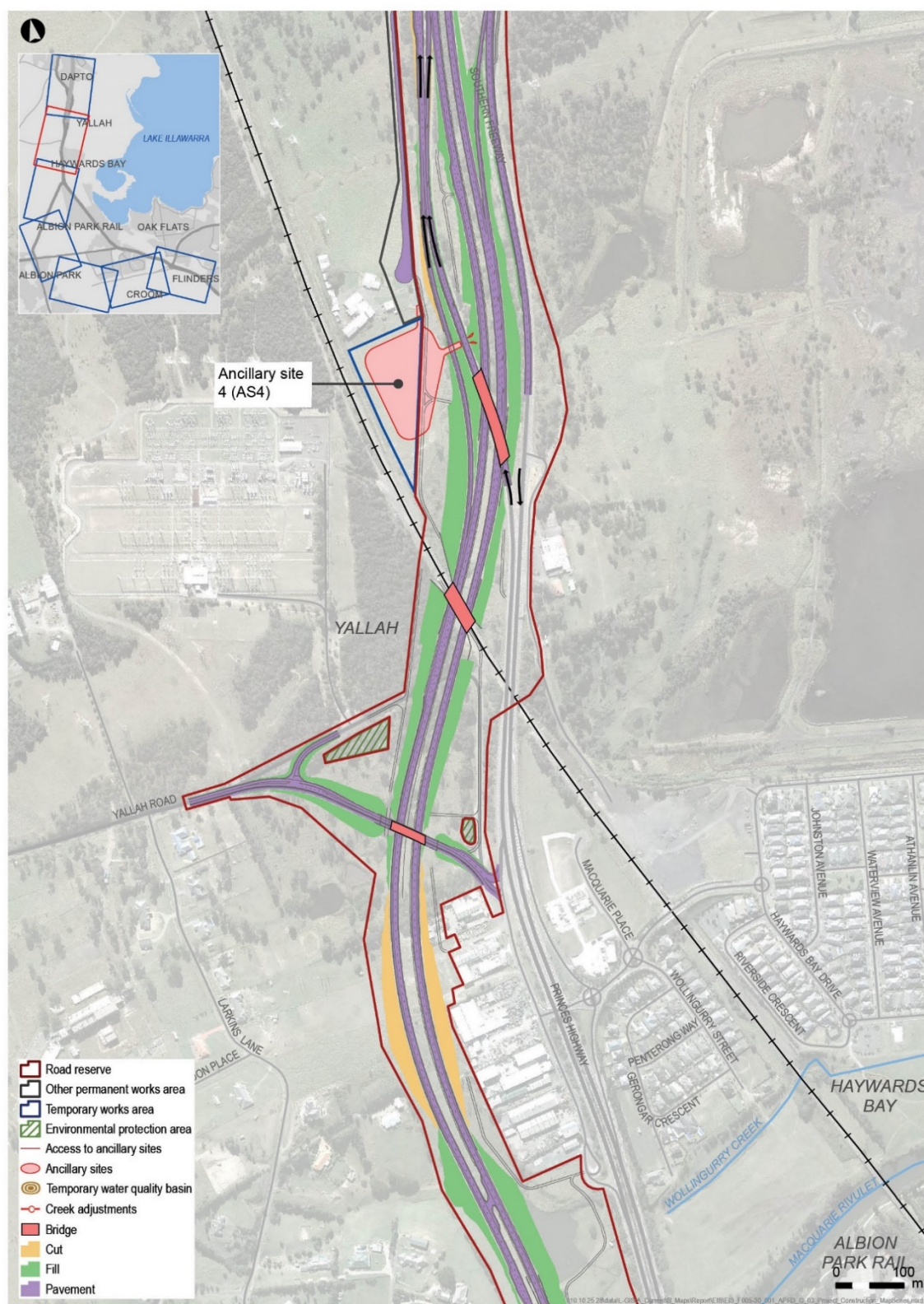


Figure 5-20 Interchange at Yallah at the northern extent of the project – Construction



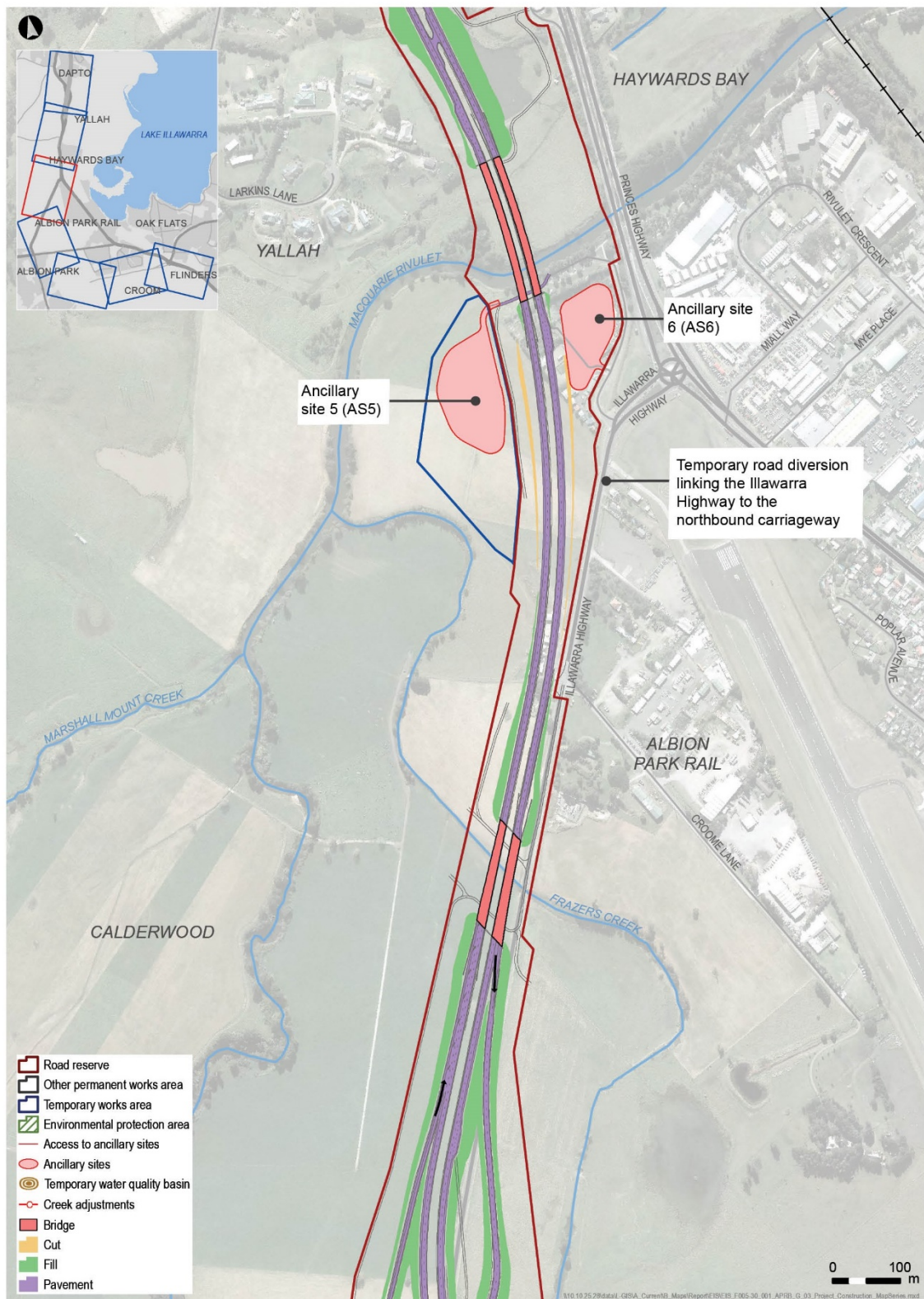


Figure 5-22 Macquarie Rivulet and Illawarra Highway Alignment – Construction

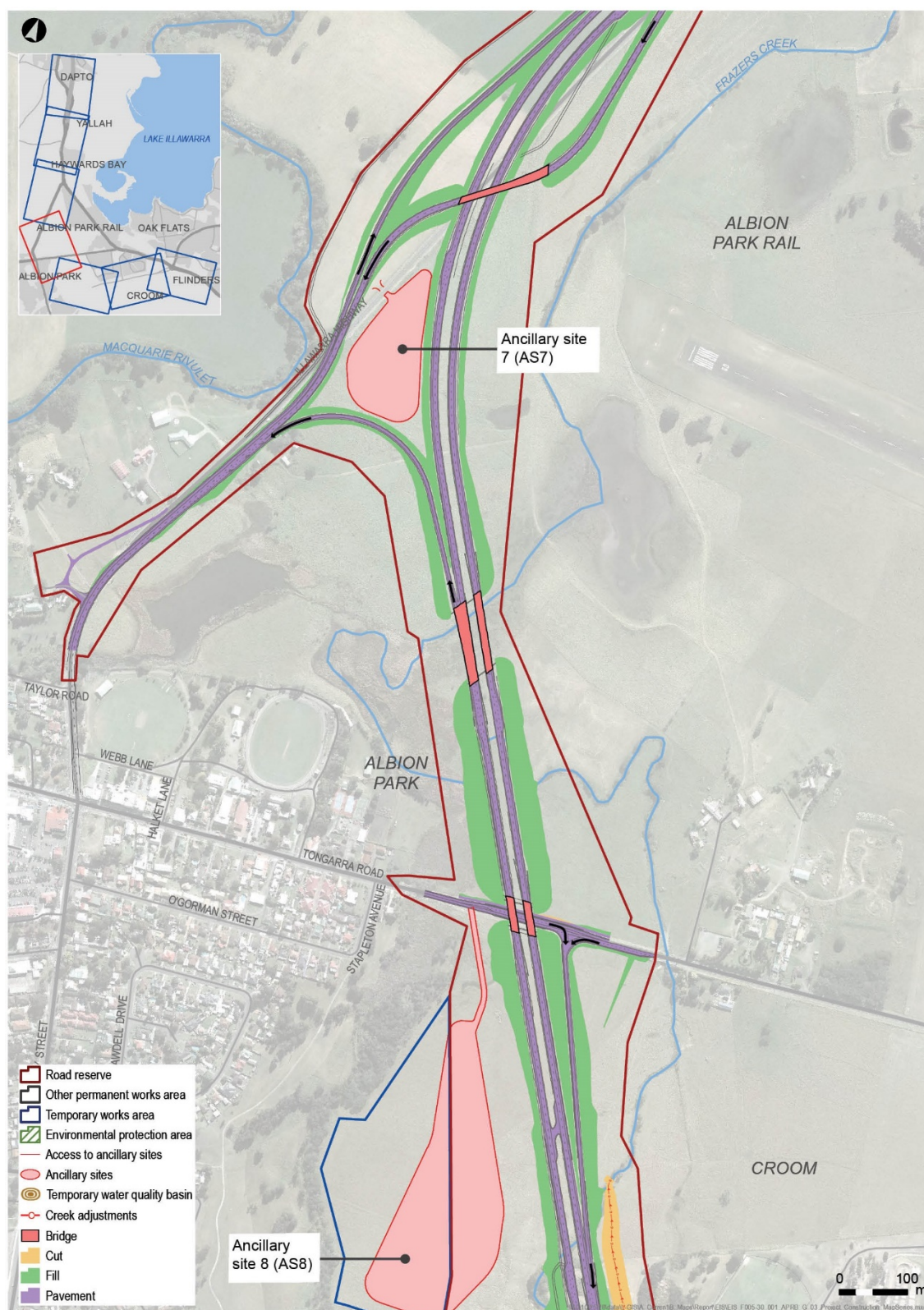


Figure 5-23 Interchange at Albion Park – Construction

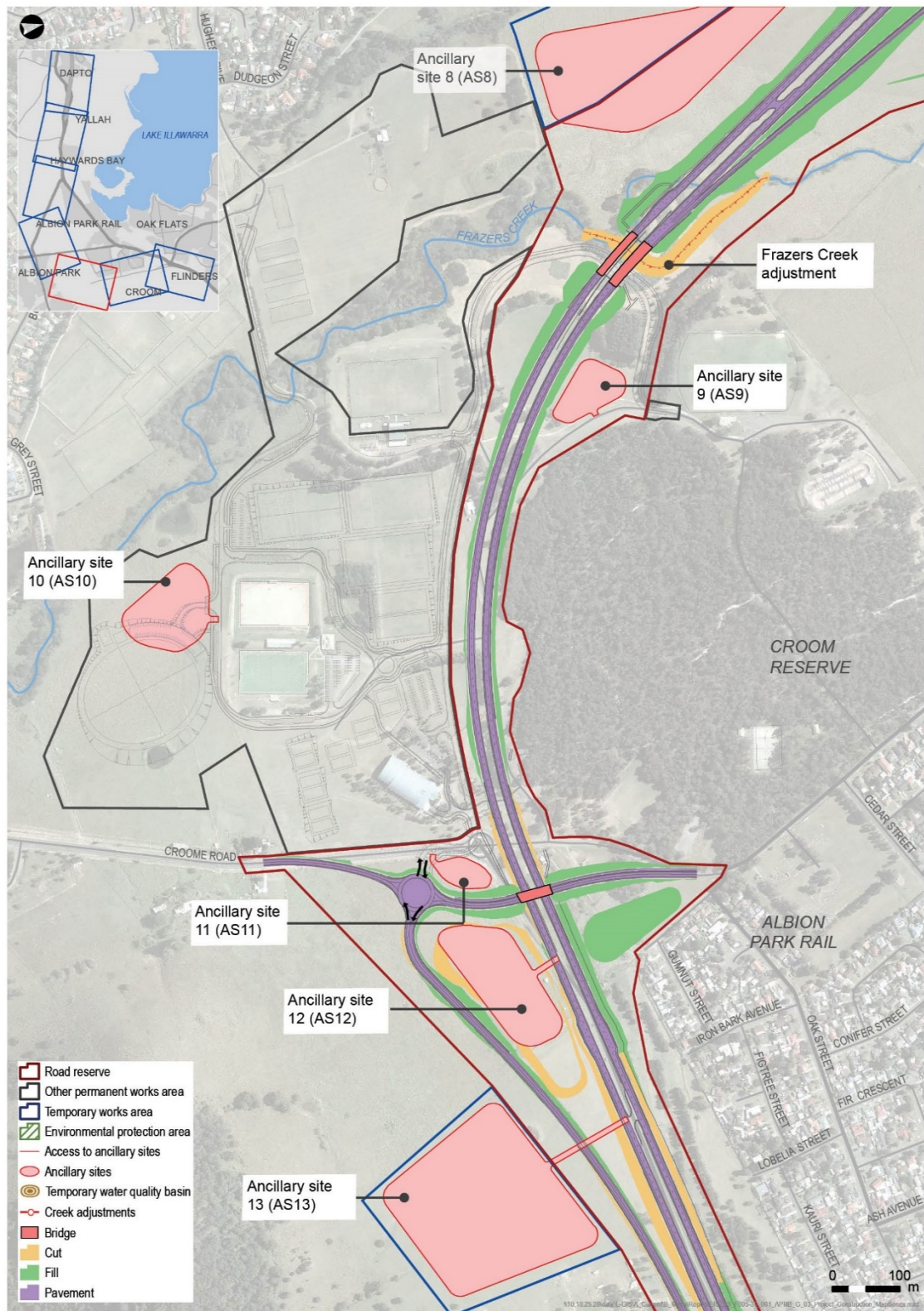


Figure 5-24 Croom Regional Sporting Complex – Construction

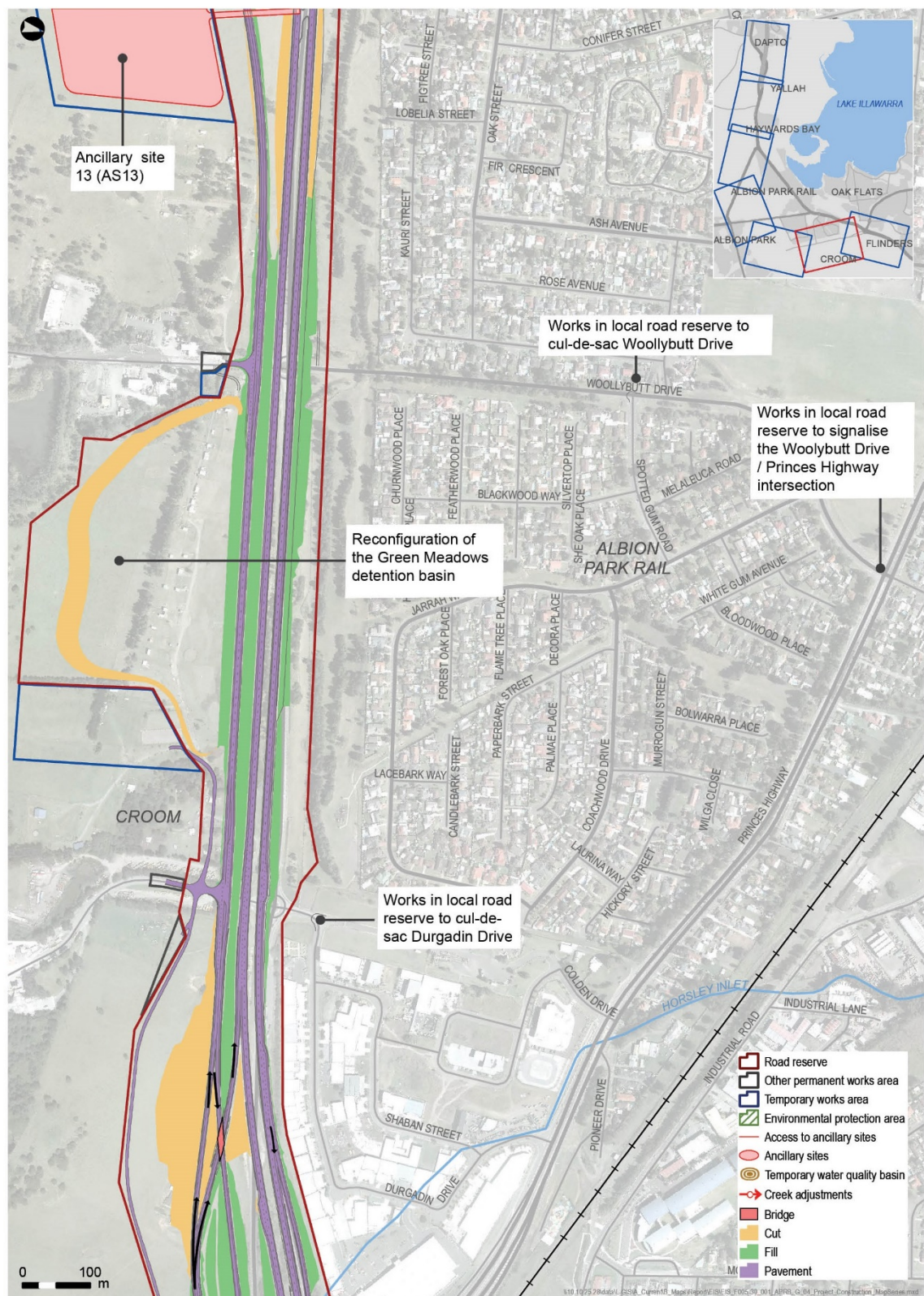


Figure 5-25 Motorway and new East West Link alignment– Construction

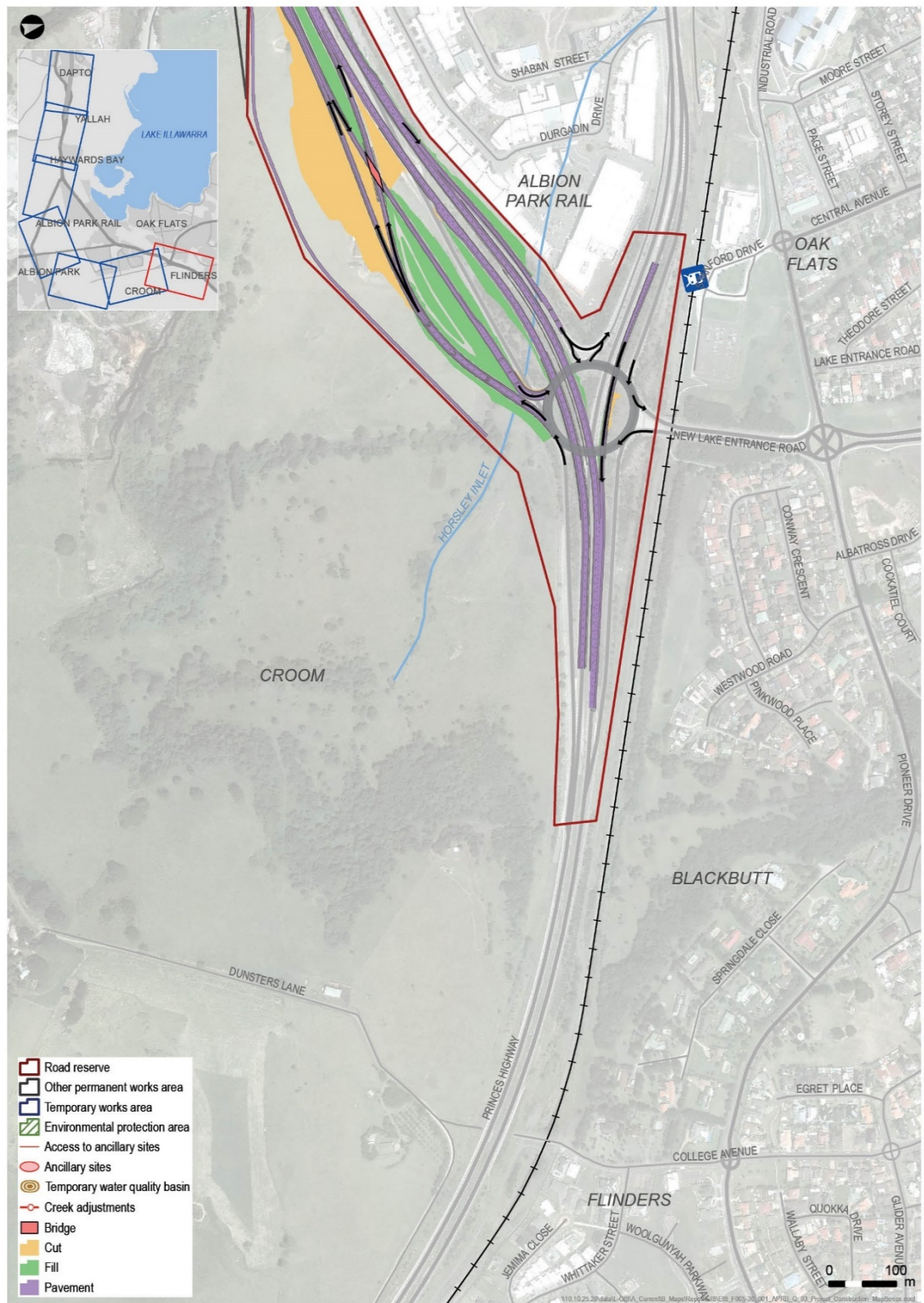


Figure 5-26 Oak Flats Interchange – Construction

5.20.2 STAGING

The start and overall duration of construction would depend on:

- Timing and outcomes of key decisions regarding procurement, such as early works and contract packaging
- The project delivery method (that is, whether it is 'design and construct' or 'design only' then 'construct only').

Construction is expected to start by early 2019 and continue for about three years. The design of the project has carefully considered the requirement to minimise impact on existing traffic, enable safe construction access and egress, and minimise the duration of construction.

A possible construction outline is described below.

Stage 1

Stage 1 would generally include construction of all greenfield areas (i.e. where there is no existing development) and those areas where construction activities would have little impact on existing traffic flows. The main construction activities in Stage 1 would be to:

- Relocate sporting fields, amenities and access for the Croom Regional Sporting Complex
- Construct all areas of the project from the northern extent to the new Frazers Creek twin bridges (BR07). This would be limited to areas where existing roads would not be impacted
- Construct bridges at Duck Creek (BR01 and BR02), Macquarie Rivulet (BR06) and Frazers Creek (BR07 and BR09)
- Construct a bridge over the South Coast Rail Line (BR04)
- Construct bridges over the northbound Princes Highway (BR03), Tongarra Road (BR10) and Croome Road (BR12)
- Construct the entry and exit ramps which connect the Princes Highway and Illawarra Highway (Terry Street) to the motorway
- Partially complete the dual roundabouts either side of the existing underpass where the Princes Highway and Princes Motorway intersect at the interchange at Yallah
- Realign Cormack Avenue, Yallah Bay Road, Yallah Road and Croome Road as required (Section 5.13)
- Construct the proposed East West Link, new service road and associated connection to the Oak Flats Interchange.

Stage 2

The main construction activities in Stage 2 would be to:

- Divert traffic along the existing Illawarra Highway (Terry Street), south of the Princes Highway, onto a short section of temporary road linking to the proposed northbound carriageway of the motorway. This would allow completion of the motorway carriageway and the southbound exit ramp to Illawarra Highway (Terry Street). The detour would re-join the existing Illawarra Highway (Terry Street) about 550 metres north of Taylor Road and operate until the motorway becomes operational
- Detour the existing East West Link traffic between Croome Road and Oak Flats Interchange onto the proposed new East West Link (constructed as part of Stage 1). This would allow for construction of the motorway between the Croom Regional Sporting Complex and the Oak Flats Interchange. This would also result in the immediate closure of Woollybutt Drive and Durgadin Drive north of the motorway

- Complete the dual roundabouts either side of the existing underpass of the Princes Highway and Princes Motorway intersection
- Complete all remaining work on the existing Princes Motorway except for the interchange at Yallah southbound entry ramp and tie-in work.

The timing of the construction of the northbound exit ramp and the southbound entry ramp at the interchange at Albion Park would be dependent on the construction of a future bypass of Albion Park (Tripoli Way). The need for a connection to a future bypass of Albion Park for, and the timing of construction of, the northbound exit ramp and southbound entry ramp has been assessed in Technical Paper 1 – Traffic and Transport.

Stage 3

The main construction activities in Stage 3 would be to:

- Detour the existing Princes Motorway southbound carriageway to complete the Princes Motorway southbound entry ramp at the interchange at Yallah. The detour would likely use the motorway exit ramp near Cormack Avenue and proposed roundabout onto the Princes Highway. This may require temporary widening of the exit ramp to maintain adequate serviceability for through traffic
- Finalise all tie-in work.

5.20.3 CONSTRUCTION FOOTPRINT

The construction footprint would comprise the entire area within the project boundary. Section 5.5 described the project boundary, including the operational area and construction area. The construction area defines the likely extent of the area required to build the project and includes temporary work areas that are outside the operational project area. The total area of land taken up by the construction footprint would be 305 hectares. This includes about 31 hectares of land located outside the operational area that would be required for construction purposes only.

The construction footprint was used to assess the disturbance that would be caused during construction. The construction footprint is indicative only and would be subject to refinement during detailed design and construction. Some factors that could affect the final construction footprint include the location and size of water quality basins, the construction methodology, and arrangements made with directly affected landowners.

5.20.4 TEMPORARY ANCILLARY FACILITIES

Temporary ancillary facilities would be required to enable the construction of the project and would include:

- The main project compound and offices
- Secondary compounds
- Materials stockpile areas
- Bridge construction support areas
- A workshop for servicing plant
- Materials handling areas
- Areas for the reconfiguration of the Croom Regional Sporting Complex
- Intensive work zones.

These ancillary facilities would be located within the project boundary (Section 5.20.3). The project may use all, some or none of these temporary ancillary facilities. The final decision to use temporary ancillary facilities will be based on the contractor's construction methodology and the ability of Roads and Maritime or the contractor to agree with the affected land owners to lease or buy the land.

To provide the construction contractor with the necessary flexibility in the location of facilities, 13 ancillary sites have been identified and considered in this environmental impact statement. Seven of these ancillary sites are located within the operational area of the project. The remaining six are located in temporary works areas wholly or partially outside the operational area. Temporary work areas largely encompasses previously cleared and sparsely vegetated areas. Minimal clearing of some remnant vegetation would be required in the temporary work areas.

The main project site office and compound is expected to be on the corner of the Princes and Illawarra Highways. Existing buildings at this site may be used. Up to 100 personnel could be based at this location for the project duration. Access would be from the Illawarra Highway via an existing driveway.

Temporary ancillary sites outside the operational project boundary would be rehabilitated upon completion of construction and restored to their existing land use, or otherwise agreed with the landowner. Temporary ancillary facilities within the operational boundary would be rehabilitated and converted to transport corridor. Landscaping for temporary ancillary site within the operational boundary would be carried out in accordance with the landscape plan. Where practical temporary ancillary sites would be progressively rehabilitated to minimise soils exposure and the potential for dust generation, erosion and sedimentation, and visual impacts.

Table 5-12 lists the proposed temporary ancillary sites and their potential uses.

Table 5-12 Ancillary sites potential activities

Ancillary site ID and location	Potential uses						
	Material stockpile	Bridges construction support	Main project offices	Possible workshop for plant servicing	Double handling laydown	Support CRSC facilities construction	Proximity to intensive work zone between Croome Road and Oak Flats
AS01 – West of the interchange at Yallah	✓						
AS02 – East of the interchange at Yallah							
AS03 – Near Yallah Bay Road							
AS04 – Near the existing Princes Highway and South Coast Rail Line		✓					
AS05 – West of Illawarra Highway intersection		✓					

Ancillary site ID and location	Potential uses						
	Material stockpile	Bridges construction support	Main project offices	Possible workshop for plant servicing	Double handling laydown	Support CRSC facilities construction	Proximity to intensive work zone between Croome Road and Oak Flats
AS06 – East Illawarra Highway intersection	✓		✓	✓			
AS07 – Near interchange at Albion Park		✓			✓		
AS08 – Near Tongarra Road bridge		✓			✓		
AS09 – At Croom Regional Sporting Complex		✓				✓	
AS10 – Near Croom Regional Sporting Complex						✓	
AS11 – Near East West Link		✓					✓
AS12 – Near East West Link		✓					✓
AS13 – Near East West Link					✓		

The former Department of Planning and Infrastructure (now Department of Planning and Environment) published draft conditions for State significant linear infrastructure approvals in March 2012. These conditions outline the expected criteria that would be applied to the project with respect to site selection for ancillary facilities. The conditions state that the location of ancillary facilities shall:

- a) Be located more than 50 metres from a waterway
- b) Be located within or next to land where the State significant infrastructure is being carried out
- c) Have ready access to the road network
- d) Be located to minimise the need for heavy vehicles to travel through residential areas
- e) Be sited on relatively level land
- f) Be separated from nearest residences by at least 200 metres (or at least 300 metres for a temporary batching plant)
- g) Not require vegetation clearing beyond that already required by the State significant infrastructure
- h) Not impact on heritage items (including areas of archaeological sensitivity) beyond those already impacted by the State significant infrastructure

- i) Not unreasonably affect the land use of nearby properties
- j) Be above the 20 year ARI flood level unless a contingency plan to manage flooding is prepared and implemented
- k) Provide sufficient area for the storage of raw materials to minimise, to the greatest extent practical, the number of deliveries required outside standard construction hours.

As required by the Department of Planning and Environment model conditions for linear infrastructure, where the criteria cannot be met, an assessment demonstrating that there would be no substantial adverse impact from the ancillary site's construction or operation must be provided. Table 5-13 provides an assessment of currently proposed temporary ancillary facilities locations against the criteria set by the Department of Planning and Environment.

Eight ancillary sites were found to not meet the criteria for distance from a waterway. Nine sites were found to be within 200 metres of a residence and eight sites were found to be below the 20 year ARI flood level. Only one site has a potential to impact on heritage items, the risk of which would be mitigated in accordance with the measures identified in Table 5-14.

Of the six ancillary sites that are outside of the operational area (but inside the construction area), four are currently pasture or contain existing development, and would not require clearing of any remnant or native vegetation. The remaining two ancillary sites outside of the operational area require minimal clearing of remnant vegetation.

Potential impacts from the temporary ancillary facilities in relation to nearby residences (noise and vibration), heritage values, ecology, flooding and traffic are discussed in Chapter 7-12 of this environmental impact statement. Measures to mitigate and / or manage adverse impacts from ancillary facilities are listed in Chapter 23.

Table 5-14 lists sites which do not meet the criteria and cross references management measures identified in Chapter 23 that will be implemented to manage impacts resulting from the ancillary facilities.

Table 5-13 Ancillary site selection criteria

AS	Meet criteria (y / n)										
	a	b	c	d	e	f	g	h	i	j	k
AS01	N – intersects watercourse	Y	Y	Y	Y	N – 40 m from nearest residence	N – minimal vegetation clearing required	Y	Y	N – >5 year ARI	Y
AS02	N – intersects watercourse	Y	Y	Y	Y	N – 110 m from nearest residence	N – minimal vegetation clearing required	Y	Y	Y	Y
AS03	N – intersects watercourse	Y	Y	Y	Y	Y	Y	Y	Y	N - >5 year ARI	Y
AS04	Y	Y	Y	Y	Y	N – 34 m from nearest residence	Y	Y	Y	N - >5 year ARI	Y*

AS	Meet criteria (y / n)										
	a	b	c	d	e	f	g	h	i	j	k
AS05	N – 20 m from Macquarie Rivulet	Y	Y	Y	Y	N- 180 m from nearest residence	Y	Y	N	N - >5 year ARI	Y
AS06	Y	Y	Y	Y	Y	N – 180 m from nearest residence	Y	Y	Y	Y	Y
AS07	Y	Y	Y	Y	Y	N – 170 m from nearest residence	Y	Y	Y	N - >5 year ARI	Y*
AS08	N- intersects watercourse	Y	Y	Y	Y	N -140 m from nearest residence	Y	Y	Y	N - >5 year ARI	Y*
AS09	N – 35 m from watercourse	Y	Y	Y	Y	Y	Y	N – intersects a potential archaeological deposit	Y	Y	Y*
AS10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y*
AS11	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y*
AS12	N – intersects watercourse	Y	Y	Y	Y	N – 140 m from nearest residence	Y	Y	Y	N - >5 year ARI	Y*
AS13	N - intersects watercourse	Y	Y	Y	Y	N – 125 m from nearest residence	Y	Y	Y	N - >5 year ARI	Y*

*Site would not be used as a material stockpile site

Table 5-14 Relevant environmental management measures for temporary ancillary facilities

Expected criteria	Ancillary site(s) which do not meet the criteria	Relevant environmental management measure to manage potential environmental impacts (refer to Table 23-1)
a) Be located more than 50 m from a waterway	AS01, AS02, AS03, AS05, AS08, AS09, AS12 and AS13	SW01, SW02, SW03, SW04 and SW05
b) Be located within or next to land where the State significant infrastructure is being carried out	Nil	All temporary ancillary sites are located within or next to land where the State significant infrastructure is being carried out. No additional mitigation measures are required.
c) Have ready access to the road network	Nil	All temporary ancillary sites would have ready access to the road network. No additional mitigation measures are required.
d) Be located to minimise the need for heavy vehicles to travel through residential areas	Nil	All temporary ancillary sites are located in area that would minimise the need for heavy vehicles to travel through residential areas. No additional mitigation measures are required.
e) Be sited on relatively level land	Nil	All temporary ancillary sites are located on relatively level land. No additional mitigation measures are required.
f) Be separated from nearest residences by at least 200 m (or at least 300 m for a temporary batching plant)	AS01, AS02, AS04, AS05, AS06, AS07, AS08, AS12 and AS13	NV01, NV02, NV03, NV04, NV05, SE01 and AQ01
g) Not require vegetation clearing beyond that already required by the State significant infrastructure	AS01 and AS02	BD02, BD03, BD04, and BD05
h) Not impact on heritage items (including areas of archaeological sensitivity) beyond those already impacted by the State significant infrastructure	AS09	AH01, AH03, AH04, AH06, HH01, HH04 and HH05
i) Not unreasonably affect the land use of nearby properties	Nil	All sites would not unreasonably affect the land use of nearby properties. No additional mitigation measures are required
j) Be above the 20 year ARI flood level unless a contingency plan to manage flooding is prepared and implemented	AS01, AS03, AS04, AS05, AS07, AS08, AS12 and AS13	HF01, HF02, and HF03

Expected criteria	Ancillary site(s) which do not meet the criteria	Relevant environmental management measure to manage potential environmental impacts (refer to Table 23-1)
k) Provide sufficient area for the storage of raw materials to minimise, to the greatest extent practical, the number of deliveries required outside standard construction hours.	Nil	All sites would provide sufficient area for the storage of raw materials. No additional mitigation measures are required.

5.20.5 EARTHWORK ACTIVITIES

Bulk earthwork activities would include:

- Excavating cuttings using excavators, graders, scrapes and bulldozers
- Hauling materials from excavated cuttings and external sources to fill embankment locations
- Constructing fill embankments
- Stockpiling material for use on the project
- Blasting
- Permanent stockpiling of excess or unsuitable material.

Areas of cut and fill required for the project are shown on Figure 5-20 to Figure 5-26. The total quantity of imported earthwork material would depend both on the quality of the in-situ material excavated and the final design. It has been assumed that all excavated material would be deemed suitable for use as general fill either in the same section of work or in an adjacent section. Haulage of fill would therefore be largely within the construction area, and would not contribute to traffic volumes on existing roads. In some circumstances, excavated material may not be suitable for use in road embankments and may need to be placed in landscaped earthwork mounds incorporated into the project earthworks (Section 5.12).

Even assuming that all excavated material would be used as fill within the project boundary, it is estimated that about 600,000 cubic metres would need to be imported. The approximate bulk earthwork quantities by work area are listed in Table 5-15. Sources of material are identified in Section 5.20.14.

Table 5-15 Approximate bulk earthwork quantities by work area

Area	Cut (m ³)	Total Fill (m ³)	Balance (m ³)
Northern extent of the project to the bridge BR01 over Duck Creek	117,000	23,000	94,000
Bridge BR02 over Duck Creek to Princes Highway northbound	9000	157,000	-148,000
Princes Highway northbound to the South Coast Rail Line	500	163,000	-162,000
South Coast Rail Line to the bridge over Macquarie Rivulet	221,000	199,000	21,000
Bridge BR06 over Macquarie Rivulet to the bridge over Frazers Creek BR07	29,000	53,000	-27,000

Area	Cut (m ³)	Total Fill (m ³)	Balance (m ³)
Bridge BR07 over Frazers Creek to the Illawarra Highway	1000	211,000	-209,000
Illawarra Highway to bridge BR09 over Frazers Creek	2000	61,000	-59,000
Bridge BR09 over Frazers Creek to Tongarra Road	0	211,000	-211,000
Tongarra Road to bridge BR11 over Frazers Creek	0	150,000	-150,000
Bridge BR11 over Frazers Creek to Croome Road	9000	66,000	-57,000
Croome Road to Woollybutt Drive	126,000	91,000	35,000
Woollybutt Drive to Colden Drive	260,000	139,000	127,000
Colden Drive to southern extent of the project	265,000	84,000	188,000
TOTAL	1,039,000	1,6056,000	-567,000

Blasting

Construction of the project may require the use of explosives at locations where cutting is required. Blasting may be required in the following locations:

- In the main cut north of Macquarie Rivulet
- In the cut in the eastern extent of the East West Link.

Impacts associated with blasting are discussed in Chapter 12.

Soft soils

The project area traverses the Lake Illawarra floodplain. The construction of the project would include a series of embankments within the floodplain to provide flood immunity, and where soft soils occur, the project would include soft soil treatments.

The depth of soft soils in the central part of the project ranges from a few metres to up to 10 metres (Golder Associates, 2015). Uncontrolled settlement of soils following the construction phase can present long term risks to the integrity of the motorway. Embankments are the primary means of facilitating construction in areas of soft soils. There are a range of different construction methods that may be used in soft soil areas such as:

- Loosening and compacting soil materials
- Excavation and replacement with more suitable materials
- Installation of basal reinforcement and drainage layers with wick drains
- Piling down to higher strength materials

It is expected that the proposed soil treatments could reduce settlement periods to less than six months.

The specific type of soft soil treatment to be adopted for the project would be determined during detailed design. A description and assessment of soft soil treatments is provided in Technical Paper 11 – Groundwater assessment.

5.20.6 DRAINAGE AND WATER QUALITY TREATMENT

During construction temporary structures may be required to manage drainage and water quality impacts resulting from the potential erosion and movement of sediments from cleared parts of the site. Where possible, planned long-term structures would be constructed early and used to mitigate these potential short-term impacts. Where required, additional temporary erosion and sediment control measures would be used during construction.

Appropriate erosion and sediment controls would be designed and constructed in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004; Department of Environment and Climate Change, 2008). These controls would be established at the start of construction and maintained in effective working order for the duration of the construction period until the site is restored.

The indicative locations of temporary water quality controls are shown in Figure 5-20 to Figure 5-26. The final locations and details of the structures would not be known until the construction contractor finalises the construction methodology. Depending on the final location and detail of structures, it is considered likely that many, if not all, of the water quality controls would be retained as permanent water quality controls for the operation of the project.

A description of water quality basins are in Section 5.11.

At this stage it is not proposed to extract any water, whether from surface waters or groundwater, for use during construction.

5.20.7 DEMOLITION

The project would require the demolition and removal of existing buildings and infrastructure located within the project boundary. These would include:

- Buildings. Properties to be demolished would be acquired as required. The need for, and impacts of, acquisitions are considered in Chapter 15. All buildings would be demolished in accordance with Australian Standard AS2601: The Demolition of Structures (AS 2601)
- Duck Creek bridge on the Princes Highway. The bridge is not suitable for retention or widening, and a new structure is required
- Redundant roads. The project would make sections of a number of roads redundant; these would primarily be the Illawarra Highway (from Croome Lane to about 550 metres north of Taylors Road) and Woollybutt Drive (from Spotted Gum Road to the existing East West Link). Redundant road surfaces would be removed and the ground rehabilitated in accordance with the project specifications.

Demolition waste would be taken to the closest appropriate facility for recycling or reuse if possible.

5.20.8 BRIDGES

All bridge structures would be designed and configured to follow industry accepted construction practices. Ease of construction and the construction program have been considered in the design of bridges.

Substructures

Geotechnical investigations carried out to date where the bridges would be required have found sandstone / siltstone was generally encountered at reasonably shallow depths. This material would allow the use of cast-in-place reinforced concrete piles anchored into the bedrock, or reinforced concrete pad footings anchored on the bedrock, for the substructure of bridges.

Bridge foundations and substructures (including piles, abutments and piers) would be constructed using standard bridge building techniques.

Superstructures

The concept design indicates bridge superstructures of either Super-T or spaced plank construction (Section 5.7). Other superstructure types may be adopted during the detailed design should these be demonstrated to be more appropriate.

Precast elements of the bridge would be prepared off site at dedicated batching facilities and transported to the project by trucks. A crane would be used to lift the planks or Super-T beams. The bridge beams and girders would be lifted directly onto the abutments and pier headstocks once the bridge bearings are constructed. Temporary bracing may be required between the girders.

The deck would be poured, which would require temporary false work. The formwork would typically be supported directly from the bridge girders. The bridge deck and barriers would typically be constructed from reinforced concrete. In some cases, precast units may be used for the barriers.

An alternate construction methodology may be identified during detailed design. The design and construction of the bridge would consider the requirements of the Policy and guidelines for fish habitat conservation and management (NSW Department of Primary Industries, 2013). It is unlikely that a change to the construction methodology would result in any substantial change in environmental impact.

5.20.9 TEMPORARY ROAD ADJUSTMENTS

The construction of the project would require temporary diversion roads and temporary road closures to facilitate traffic switches. These are described below.

Temporary diversion roads

Temporary roads would potentially include:

- Illawarra Highway near the Princes Highway: A temporary diversion road about 300 metres in length (two lanes wide) would be built to link the existing Illawarra Highway to the proposed northbound carriageway of the motorway. The northbound carriageway and interchange at Albion Park northbound entry ramp would connect to this temporary road and act as a temporary diversion to the Illawarra Highway, maintaining the connection between Albion Park and the Princes Highway. It would be in place for about 18 months
- Princes Motorway southbound at Yallah: A temporary diversion road about 300 metres in length (one lane wide) would be built to provide two lanes on the proposed Princes Highway southbound exit ramp near Cormack Avenue. This would divert traffic onto the Princes Highway, allowing the southbound entry ramp of the interchange at Yallah to be complete. It would be in place for about three months
- Princes Motorway northbound exit ramp at Yallah: A temporary diversion road about 150 metres in length (one lane wide) would be built at the existing northbound exit ramp at the interchange at Yallah while the proposed exit ramp realignment is finalised. It would be in place for about two months.

Temporary road closures

The project would not result in any extended (for up to six month's duration) temporary closures of existing roads. All existing roads would be maintained and operational through localised diversions, with the exception of the Illawarra Highway, which would be maintained via the temporary road described above until its permanent closure upon opening of the motorway.

Construction is expected to require a number of traffic management measures that effectively close sections of local roads for short periods. These would include:

- Temporary stoppage of traffic so construction vehicles can cross existing roads (for example a five minute stoppage of traffic whilst construction vehicles move across Tongarra Road in a north-south direction)
- Temporary local traffic switches (for example night closure of northbound lanes of the Princes Highway while bridge construction occurs over the road, during which time traffic would be diverted to another route).

These temporary road closures would occur outside of peak hours and following approval of the construction contractor's traffic management plan and relevant traffic control plans.

5.20.10 CONSTRUCTION TRAFFIC AND ACCESS

At a number of different locations, the construction site would be near roads within the existing network and could affect traffic at that location. All construction activities would be completed while maintaining traffic movements either on existing roads, or detoured routes. Access will be maintained or alternative access provided to properties with impacted access during the construction and operation of the project. Where required alternate provisions will be agreed with the affected landowner.

Temporary traffic management measures would be implemented at various stages of the project in accordance with Traffic control at worksites (Roads and Maritime, 2010). These measures would include:

- Modification of lane widths to facilitate the safe entry, exit and movement of plant and materials and to allow for construction staging of work near existing roads
- Placement of separation barriers to protect traffic from the worksites
- Reduced speed zones on roads adversely modified by construction work
- Reduced shoulder widths to allow for tie-in work to be completed
- Traffic detours and switches such as those required for the existing Illawarra Highway onto the proposed northbound carriageway of the Princes Motorway.

Table 5-16 identifies likely temporary traffic management measures on each of the interfacing local roads. Temporary traffic management periods would vary in each case.

Table 5-16 Temporary traffic management measures

Road	Location details	Temporary traffic management measures required					
		Traffic switches	Detours	Lane width adjustments & relocation	Shoulders reduced	Reduced speed zones	Separation barriers
Princes Highway	Various discrete areas throughout project	✓	✓	✓	✓	✓	✓
Illawarra Highway	Discrete areas between intersections with Princes Highway and Terry Street	✓	✓	✓	✓	✓	✓
Yallah Bay Road	Intersection and approach with Princes Highway	✓				✓	✓

Road	Location details	Temporary traffic management measures required					
		Traffic switches	Detours	Lane width adjustments & relocation	Shoulders reduced	Reduced speed zones	Separation barriers
Cormack Avenue	Intersection and approach with Princes Highway	✓	✓			✓	✓
Yallah Road	Intersection with Princes Highway and where proposed realignment ties in	✓	✓			✓	✓
Tongarra	Eastern approach to Terry Street intersection	✓		✓	✓	✓	✓
Croome Road	Near intersection with East West Link	✓		✓	✓	✓	✓
Oak Flats Interchange	Junction of Princes Highway and East West Link Road					✓	✓

Temporary directional and advisory signs, along with variable message signs, would be used throughout the project where necessary. A concentration of temporary traffic controls would be necessary at junctions where the project ties in to existing roads. In all cases it is envisaged that the contractor would maintain the current level of serviceability with only minor disruptions to traffic during final surfacing and line marking.

Construction access and haulage

At the main project site office and compound (which is likely to be on the corner of Princes Highway and Illawarra Highway), about 300 daily movements in and out are expected. For all other ancillary sites, about 200 daily movements (or less) in and out onto the adjacent roads are expected.

Most construction traffic movements would be within the project boundary or along the existing highway, which would minimise movements by construction vehicles on local roads. However, the local road network would need to be used for:

- Hauling materials from quarries and borrow sources to work areas
- Hauling materials from one section of a work area to another
- Providing access for the delivery of all construction materials and consumables
- Providing access for the workforce to the various locations along the project, particularly to the project laydown areas and project site office.

Table 5-17 and Figure 5-27 summaries the key haulage routes associated with importing materials to the project (the most substantial contributor to additional vehicle movements) and the number of truck movements that would likely be required to transport materials across the project duration.

Table 5-17 Material hauled using existing roads – imported materials

Work location	Assumed route(s)	Duration of haulage (approx.)	Average daily truck movements
Croome Road to Princes Highway	Princes Highway to work front entry via Oak Flats Interchange	1 month	250
Tongarra Road to Croome Road	Princes Highway and entry via Tongarra Road	< 1 month	75
Illawarra Highway to Tongarra Road	Route 1: Princes Highway and entry via Tongarra Road	1 month	250
	Route 2: Princes Highway, Tongarra Road and entry via Illawarra Highway		
Macquarie Rivulet to Frazers Creek	Princes Highway and entry via Illawarra Highway	1 week	182
Frazers Creek to Illawarra Highway	Princes Highway and entry via Illawarra Highway	4 months	262
South Coast Railway line to Macquarie Rivulet	Princes Highway only	1 week	182
Princes Highway northbound carriageway to the South Coast Rail Line	Princes Highway only	1.5 months	258
Duck Creek to the Princes Highway northbound carriageway	Princes Highway only	< 1 month	150
Princes Highway to Duck Creek	Princes Highway only	< 1 month	150

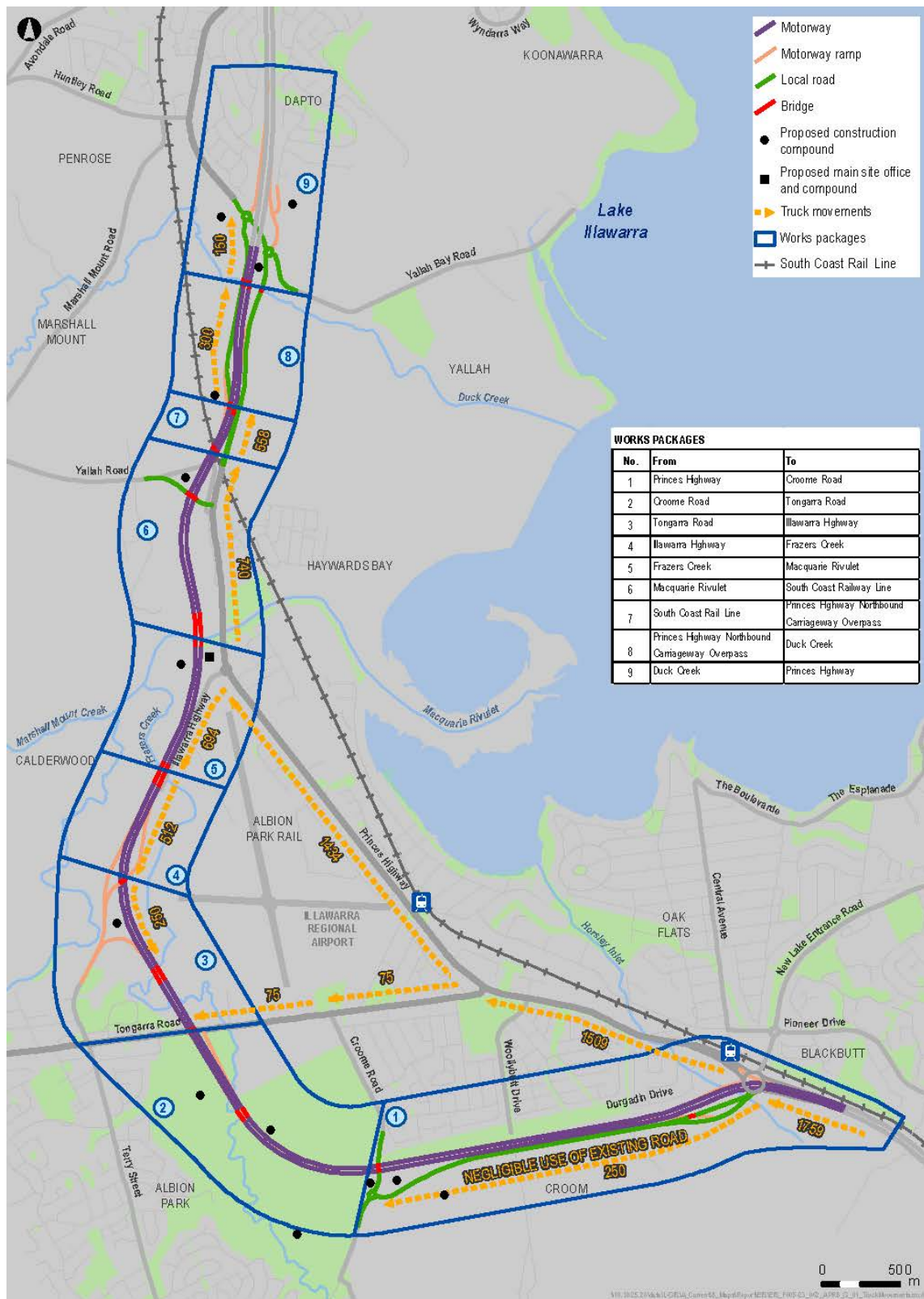


Figure 5-27 Estimated daily truck movements required on existing roads for haulage of material

Based on the information in Table 5-17 the construction effort would result in an additional 270 truck movements per day, each way. Light vehicle movements associated with employees driving to, from and around the construction site would also occur throughout the construction phase. Vehicles would generally be spread evenly over the standard working day.

The volume of construction traffic is considered negligible for all roads used (less than a five per cent increase in total volume). A complete assessment of the impacts of construction traffic is provided in Section 7.3.1 of this environmental impact statement.

Construction traffic would also be generated by:

- Deliveries of general materials and consumables
- Deliveries of oversize loads
- Other infrequent deliveries
- Subcontractor support vehicles.

This traffic would have a negligible contribution to existing traffic volumes.

Haulage and deliveries of materials may occur during extended work hours, and the delivery of oversized structural elements requiring police or other professional escorts may occur out of work hours (Section 5.20.12).

Construction vehicle movements would occur throughout the project, and moderate fluctuations in traffic volumes would occur in keeping with the work program.

Temporary watercourse crossings

Depending on the contractor's preferred construction methodology, temporary structures may be required to cross Duck Creek, Frazers Creek and the Macquarie Rivulet to enable materials to be hauled within the project boundary (as opposed to using the existing road network). Temporary roads may also be needed to cross smaller watercourses for purposes of haulage while the adjacent culvert or bridge is being built.

If required, these crossings would:

- Maintain low-flow conditions
- Be certified by the detailed designer to confirm no additional flooding impacts would occur during relevant flood events
- Be removed and the area rehabilitated following completion of construction.

These crossings would not be used for Class 1 waterways, and would take into consideration the requirements of the Policy and guidelines for fish habitat conservation and management (NSW Department of Primary Industries, 2013) and the Guidelines for watercourse crossings on waterfront land (NSW Department of Primary Industries, 2012d).

Figure 5-28 provides an example of a temporary watercourse crossing.



Figure 5-28 Example temporary side track at a bridge for small creek crossing – constructed and operational

5.20.11 WORKFORCE

The size and composition of the construction workforce would vary over the construction period depending on the activities undertaken and the staging strategy. There may be a number of different work crews on the project at any one time.

The core workforce would comprise a range of professional staff, supervisors and tradespeople who would typically be sourced from within the construction contractor's own organisation. Some of the workforce could be sourced from the local area, and would include a wide range of subcontractors and suppliers. Any recruitment of construction personnel by the construction contractor would consider opportunities for Aboriginal employment in accordance with the NSW Government policy on Aboriginal participation in construction (NSW Government, 2015).

The estimated total workforce to be employed over the course of the project would be about 550 personnel. The workforce excludes part-time, off-site workers and delivery truck drivers.

5.20.12 CONSTRUCTION HOURS

Standard construction hours in NSW are:

- 7am to 6pm Monday to Friday
- 8am to 1pm Saturday.

Extended construction hours

The Interim construction noise guidelines (Department of Environment and Climate Change, 2009) have been developed by a number of State Government agencies to provide guidance on managing noise from construction work in NSW. The guidelines state that, public infrastructure works are one of the five categories of works that may need to be undertaken outside the recommended standard hours. This need is typically based on a requirement to sustain the operational integrity of public infrastructure, as work to restore operation of the infrastructure provides a benefit to the greater community (that is, more broadly, rather than just local residents).

Roads and Maritime is seeking approval for standard construction hours plus additional time at the start and end of each day (Monday to Friday) and Saturday afternoon ('extended construction hours'). Extended construction hours would apply across the project. Roads and Maritime would undertake targeted consultation with affected residents.

Certain activities would occur during extended construction hours. These hours would be:

- Between 6am and 7pm Monday to Friday
- Between 8am and 5pm on Saturdays
- Outside of known likely major traffic peaks (such as avoiding holiday periods).

It is not proposed to undertake work during extended working hours in close proximity to sensitive receivers. To limit the potential impact to sensitive receivers, extended hours work would be limited in the following areas:

- Along the project route between Colden Drive and Croome Road
- At the interchange at Albion Park northbound entry ramp and southbound exit ramp
- Along the project route between Yallah Road and the Macquarie Rivulet.

Extended work hours would be limited to daylight hours, with potentially shorter working periods throughout winter months.

Where possible, an effort would be made to limit the activities conducted in the extended working hours (those outside of the standard construction hours for NSW) to less noisy activities such as refuelling, light vehicle movements and briefing of the workforce (toolbox talks). Noisy activities, such as starting noisy machinery, would be deferred until standard working hours where possible.

Extended construction hours at the start and finish of each working day are considered to be in the public interest as they would:

- Shorten the overall construction period by about 3.5 months or 10 per cent. This would minimise the disruption to the Princes Highway / Princes Motorway and improve access to the Illawarra region. It would also minimise any adverse impacts on local businesses that may be experienced during the construction period
- Reduce the public's exposure to a lower standard and changed traffic conditions during construction, reducing the potential for crashes
- Potentially reduce the overall cost of construction.

Consultation with affected residents would be undertaken before work starts, as part of the construction environmental management plan and community involvement framework.

An assessment of the likely noise impacts resulting from these activities is presented in Chapter 12 and Technical Paper 8 - Noise and vibration. The assessment identifies the management measures that would be implemented to minimise these impacts. Before construction takes place a process of consultation would be implemented with potentially affected receivers.

‘Out of hours’ work

Work outside of both the standard construction hours and extended construction hours would also be required – this is called ‘out of hours’ work. Out of hours work would occur in accordance with the project approvals and notification requirements of any Environment Protection Licence for construction of the project.

Out of hours work, such as night works, would be required where construction activities would otherwise severely impact traffic flow and / or specific stakeholders (such as airport operations), or put at risk the safety of construction staff and the public. Works that would disrupt the operation of the South Coast Rail Line may also be carried out outside working hours to minimise disturbance to railway operations.

The Interim construction noise guidelines (Department of Environment and Climate Change, 2009) provides details on the five categories of work that might be carried out outside the recommended standard hours. These categories are:

- The delivery of oversized plant or structures that police or other authorities determine require special arrangements to transport along public roads
- Emergency work to avoid the loss of life or damage to property, or to prevent environmental harm
- Maintenance and repair of public infrastructure where disruption to essential services and / or considerations of worker safety do not allow work within standard hours
- Public infrastructure works that shorten the duration of construction and are supported by the affected community
- Works where a proponent demonstrates and justifies a need to operate outside the recommended standard hours.

Specific activities requiring special circumstances are described below.

- The erection of bridges over live traffic. Bridge lifts would likely occur at night and may require temporary road closures and / or detours
- The delivery of oversized structural elements requiring police or other professional escorts
- Work requiring the use of over-height equipment such as piling rigs or cranes that would otherwise impact on Illawarra Regional Airport’s operational airspace requirements (possibly requiring the closure of the airport’s runway(s))
- Major traffic switches where safest practice determines they should occur during periods with the lowest traffic volume
- Some tie-in work to existing roads, including asphaltting
- Emergency work as a result of construction activities or environmental factors, such as flood remediation work.

5.20.13 PLANT AND EQUIPMENT

Table 5-18 lists the key construction activities for the project, and the typical equipment used to undertake these activities. The expected duration of each construction activity (in the third column) indicates the intensity and scale of the construction effort. Ultimately the final equipment and plant profile would be determined by the construction contractor.

Table 5-18 Construction plant and equipment

Construction activity	Main plant and equipment required	Approximate duration
Mobilisation and site establishment	Plant: Small cranes and lifting equipment, excavators, front-end loaders, road trucks, light vehicles Equipment: Fences, portable sheds, portable ablutions, fuel storage, generators, waste tanks	1–2 months
Relocation and protection of existing services	Plant: Excavators, backhoes, front-end loaders, dump trucks, road trucks, light vehicles, agitator trucks Equipment: Jack hammers, concrete saws and other small hand-held equipment.	3–6 months
Clearing, grubbing and topsoil stripping	Plant: Excavators, bulldozers, graders, water carts, front-end loaders, dump trucks, fuel trucks, road trucks, scrapers, light vehicles.	2–3 months
Demolition of buildings and bridges, and deconstruction and removal of redundant roads	Plant: Excavators, front-end loaders, road trucks, light vehicles, bulldozers Equipment: Jack hammers, concrete saws and other small hand-held equipment.	1–2 months
Bulk earthwork and haulage of materials	Plant: Excavators, bulldozers, graders, water carts, front-end loaders, vibratory rollers, dump trucks, road trucks, scrapers, fuel trucks, light vehicles Equipment: Hand-held compactors.	12–15 months
Construction of the road surface	Plant: Excavators, bulldozers, graders, water carts, front-end loaders, Bomags, road sweepers, fuel trucks, asphalt pavers, bituminous spray sealing trucks, vibratory rollers, road trucks, line-marking machines, light vehicles Equipment: Hand-held compactors, jack hammers, concrete saws and other small hand-held equipment.	6–12 months
Construction of drainage structures	Plant: Excavators, mobile cranes, front-end loaders, vibratory rollers, road trucks, light vehicles, agitator trucks Equipment: Hand-held compactors and other small tools.	6–8 months
Construction of bridges – most likely including heavy vehicle deliveries of over-sized loads	Plant: Excavators, elevated work platforms, mobile cranes, agitator trucks, piling rigs, concrete pumps, vibratory rollers, road trucks, light vehicles Equipment: Hand-held compactors and other small tools.	12–15 months

Construction activity	Main plant and equipment required	Approximate duration
Construction and relocation of sporting facilities	▪ Plant: Excavators, bulldozers, graders, water carts, front-end loaders, vibratory rollers, dump trucks, road trucks, elevated work platforms, fuel trucks, road sweepers, asphalt pavers, bituminous spray sealing trucks, line-marking machines, light vehicles ▪ Equipment: Small tools.	6–8 months
Changes to property access	▪ Plant: Excavators, graders, water carts, front-end loaders, road sweepers, asphalt pavers, bituminous spray sealing trucks, vibratory rollers, road trucks, line-marking machines, light vehicles ▪ Equipment: Hand-held compactors, jack hammers, concrete saws and other small hand-held equipment.	3–6 months
Signposting	▪ Plant: Excavators, elevated work platforms, mobile cranes, agitator trucks, road trucks, light vehicles ▪ Equipment: Hand-held compactors, jack hammers and other small tools.	1–2 months
Installation of lighting and roadside furniture	▪ Plant: Excavators, elevated work platforms, mobile cranes, agitator trucks, road trucks, light vehicles ▪ Equipment: Hand-held compactors and other small tools.	2–3 months
Landscaping, waste disposal and rehabilitation of disturbed areas with no future use	▪ Plant: Excavators, bulldozers, water carts, front-end loaders, graders, road trucks, light vehicles ▪ Equipment: Small tools.	2–3 months

5.20.14 CONSTRUCTION MATERIALS

A range of materials would be used to build the project. These would mostly comprise asphalt, steel, rock, earth and concrete, as outlined below.

Asphalt

The total quantity of asphalt would depend on the final design. Preliminary estimates indicate about 14,000 tonnes would be required to build the motorway, bridges, arterial roads and local roads.

It is expected that asphalt would be sourced from existing local asphalt batch plants at Port Kembla and Kembla Grange, in lieu of temporary batch plant(s) being installed at the site or haulage from more distant sites.

Steel

Reinforcing steel for structures would be sourced from suppliers throughout Australia or overseas. The construction contractor would select a source that conforms to the quality and performance requirements of the project.

Earth

The total quantity of imported fill would depend on the quality of in-situ material excavated and the final design.

It is estimated that 600,000 cubic metres of imported fill would be required (refer Section 5.20.5).

A number of quarries near the project offer fill that is suitable for use. The identified quarries are Cleary Brothers Quarry and Holcim Quarry, both of which are immediately adjacent to the project; and Boral at Dunmore and Hanson Quarry, Bass Point, which is about 13 kilometres from the project. It is possible that a number of these quarries would be used in order to optimise material quality and cost. Each quarry has indicated that they have sufficient capacity to supply the project.

Rock

Rock for drainage blankets, bridging layers, gabion walls, scour protection and pavement gravels would also be sourced from the quarries identified in the “Earth” section above.

The crushing of rock would take place at the source quarries and not occur on the project site.

Concrete

Concrete would be required for bridges and road surface sub-base. Existing local batch plants would be used, with agitator trucks delivering to the work sites. There are a number of concrete batch plants in the Illawarra region, including at the Holcim and Cleary Brothers Quarries, which is located adjacent to the project.

5.20.15 SPOIL AND WASTE DISPOSAL

Various waste streams would be generated during construction. The main waste streams are likely to include:

- Excavated material, including rock, gravel, clay and sand
- Demolition waste, including building materials, bridge removal materials, vegetation, kerbs and road surfaces
- Vegetation waste from the removal of trees, shrubs and groundcovers
- Packaging materials, including crates, pallets, cartons, plastics and wrapping materials
- Liquid wastes
- Construction materials
- General waste from construction sites, including office wastes, scrap materials and biodegradable waste.

Potential waste types expected to be generated by the project and the proposed measures for the management of waste are provided in Chapter 20.

This chapter provides a summary of the consultation activities carried out to inform the design and assessment of the project, and describes how the outcomes of these activities have been, and will continue to be considered by Roads and Maritime. (Chapter 4 provides details of community and stakeholder consultation activities carried out before the announcement of the preferred option). Engagement with the community will continue throughout the exhibition of the environmental impact statement. Public submissions on the environmental impact statement will be documented and assessed late in 2015.

The consultation process complies with the Secretary's Environmental Assessment Requirements:

Secretary's Environmental Assessment Requirement relevant to this chapter	Where addressed
During the preparation of the environmental impact statement, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners. In particular you must consult with: ▪ local, State and Commonwealth government authorities, including the: - o Environment Protection Authority - o Office of Environment and Heritage (including Heritage Division) - o Department of Primary Industries - o NSW Office of Water - o NSW Trains - o TransGrid - o Civil Aviation Safety Authority - o Airservices Australia - o Illawarra Regional Airport - o Shellharbour City Council - o Wollongong City Council - o Emergency services.	Section 6.3.2
▪ Specialist interest groups, including local sporting groups, Illawarra Local Aboriginal Land Council, Aboriginal stakeholders, and pedestrian and bicycle user groups	Section 6.2.2- 6.3
▪ Utilities and service providers	Section 6.3
▪ The public, including community groups, businesses, and adjoining and affected landowners.	Section 6.2.2, Section 6.4.3
The environmental impact statement must describe the consultation process and the issues raised, and identify where the design of the proposal has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.	Section 6.2.2 (also addressed in other chapters)

6.1 CONSULTATION OBJECTIVES

The objectives of the community and consultation activities were to:

- Raise awareness of the Albion Park Rail bypass in the local community, explain the preferred option design and provide information about the project development and approval process
- Engage key stakeholders early in the planning process, so that issues raised can be identified to help refine the motorway design and inform the environmental impact statement
- Provide a range of opportunities for community members to meet with Roads and Maritime to ask questions and to provide feedback on the preferred option
- Engage early with property owners about the potential need for property acquisition for the development of the motorway.

6.2 CONSULTATION PROCESS TO DATE

6.2.1 STAKEHOLDER IDENTIFICATION

The relevant stakeholders, interest groups and communities were initially identified as those who contributed to the route selection process or road corridor review (refer Chapter 4) and those who may be impacted by the project. The following stakeholder groupings were established:

- Directly impacted property owners who may be affected by property acquisitions
- Property owners who live adjacent to the project
- Businesses with potential to be directly impacted
- Businesses with a specific interest in the project (such as access requirement)
- Aboriginal stakeholders and Local Aboriginal Land Councils
- Interest groups such as community and sporting groups, road user groups and business groups
- Government and non-government agencies who have a role in project approval and may have comment on the environmental assessment process or concept design
- The wider community, who may have particular concerns or raise issues of relevance to the environmental assessment process or concept design.

A list of stakeholder groups that have been consulted is provided in Table 6-1.

Table 6-1 Summary of stakeholder groups consulted with

General stakeholders	Special interest groups	Local, State and commonwealth agencies	Utilities owners, service providers and emergency services
Local residents Local businesses Property owners and tenants Local chamber of commerce Schools Churches and religious groups Aboriginal stakeholders, including Native Title claimants (Aboriginal focus group) Flood focus group Road users Pedestrians and bicycle users Trucking groups Tourism operators	Illawarra Bike User Group Croom Regional Sporting Complex sporting clubs, including: ▪ Stony Range Sporting Club ▪ Model Car Club ▪ Albion Park Soccer Club (Juniors) ▪ Horsepitality Trail Riders ▪ Illawarra Churches Soccer Association ▪ White Eagles Football Club ▪ Netball clubs ▪ South Coast Equestrian Club ▪ Athletics Club ▪ Illawarra Trail Riding Club ▪ BMX Club ▪ Junior and Senior Football Club (Rugby League) ▪ The Rail Cricket Club ▪ Hockey Association ▪ Illawarra Kareelah Orienteering ▪ Junior AFL Club ▪ Shellharbour City Stadium	Local Government: Wollongong City Council Shellharbour City Council State Government Agencies: Department of Planning and Environment Department of Primary Industries Office of Environment and Heritage (incl. Heritage Division) Office of Water Environment Protection Authority Transport for NSW NSW Dam Safety Committee Commonwealth Agencies: Civil Aviation Safety Authority Airservices Australia	Transport operators: Illawarra Regional Airport NSW Trains RailCorp Utilities: TransGrid Jemena Endeavour Energy Energy Australia Sydney Water Emergency Services: State Emergency Service NSW Police NSW Fire and Rescue NSW Rural Fire Service NSW Ambulance

6.2.2 CONSULTATION OVERVIEW

Community and stakeholder consultation has been an integral part of project planning since the mid-1990s. Following publication of the Road Corridor Review Report in 2013, a range of communication and consultation activities were undertaken to inform the community about the project and seek feedback. The Preferred Option Report (Roads and Maritime, 2014a) provides a summary of the activities undertaken during the 1990s and during the preparation of the Road Corridor Review (2013a), and is available on Roads and Maritime webpage.

Following the Road Corridor Review Report, Roads and Maritime began concept design and the selection of a preferred project in 2014 (refer to Chapter 4).

This chapter outlines the activities undertaken, and feedback received from the community and stakeholders, following the selection of the preferred option and during the preparation of this environmental impact statement. It provides a summary of the key stakeholders that have been consulted, the activities and methods of consultation, and a summary of the issues and concerns raised by stakeholders.

A media announcement releasing the preferred option was made on 28 October 2014 by the Member for Kiama, Gareth Ward. The following communication activities were carried out to raise awareness of the preferred option and consultation activities being held during the display period.

- Phone calls were made to property owners to discuss the potential acquisition of their property
- Project webpage updated with the preferred option design, community update and flyover video. During this period there were more than 5,200 unique page views on the project webpage (and more than 6,300 page views)
- The Princes Highway Facebook page was used to promote the preferred option display. More than 19,000 people were reached via Facebook
- Project email broadcasts
 - o Announcement of preferred option display – sent 28 October 2014
 - o Reminder of the community information sessions - sent 7 November 2014
 - o Reminder and comments close on 24 November – sent 20 November 2014
- Distribution of the October Albion Park Rail bypass post card to more than 17,500 residences and businesses, local organisations, schools and community groups in the project area to inform them of the preferred option display. An unaddressed letter box drop was carried out to the suburbs of Albion Park, Albion Park Rail, Tullimbar, Oak Flats, Shellharbour, Flinders, Blackbutt, Dapto (part) and Haywards Bay
- Copies of the preferred option community update and 'Have your say' poster were displayed at seven locations including Wollongong City Council, Dapto Library, Shellharbour City Council, Albion Park Library, Oak Flats Library, Albion Park Post Office and the Member for Kiama's Electoral Office
- Information was provided directly to local schools and pre-schools for inclusion in school newsletters
- Advertisements were placed in local newspapers to promote the display of the preferred option and the community information sessions:
 - o Illawarra Mercury - 1 November 2014
 - o Lake Times - 5 November 2014
- Approximately 20 local businesses door knocked to discuss the preferred option display

- Two variable message signs were used to promote the preferred option display and consultation sessions. One was located on the Princes Highway at Albion Park Rail and the other on Tongarra Road Albion Park.

A copy of the Preferred Option Community Feedback Report can be found on the project webpage: <http://www.rms.nsw.gov.au/apr>.

6.3 CONSULTATION DURING ENVIRONMENTAL IMPACT STATEMENT PREPARATION

Preparation of the environmental impact statement began after the announcement of the preferred option on 28 October 2014. Consultation since that time is presented below.

Consultation with Croom Regional Sporting Complex sporting groups

As part of the options assessment process (described in Section 4.3), a decision was made to shorten the project route through the Croom Regional Sporting Complex. Due to the direct impacts on the complex, a Croom Regional Sporting Complex stakeholder group was established in February 2014 to inform the regular users of the investigations that were being undertaken and to involve them in decisions around reconfiguring the sporting complex.

The purpose of the group was to enable information sharing with sports clubs during the planning process. The group was made up of two representatives from each sporting group that uses the complex – these groups are listed in Table 6-5. Members of the group had an opportunity to inform decisions and come up with solutions to minimise the impacts of the project on the complex.

The wider community was also provided an opportunity to comment on the reconfiguration of the Croom Regional Sporting Complex via public exhibition of the draft master plan which showed the design of the reconfigured complex (Section 4.4). The public exhibition period ran from 1 April to 29 April 2015. Following public exhibition, four submissions were received for consideration by Roads and Maritime and Shellharbour City Council. Council formally adopted the master plan on 2 June 2015.

Regular meetings with the Croom Regional Sporting Complex stakeholder group took place for the duration of the concept design stage of the project, and are continuing Shellharbour City Council, as the owner of the complex, was involved in all meetings.

The following meetings were held with the Croom Regional Sporting Complex stakeholders and sporting groups:

- An initial meeting with the stakeholder group established by Roads and Maritime
- One-on-one meetings with each of the sporting clubs, with Council in attendance
- A second meeting with the stakeholder group to report back on the outcomes of the one-on-one meetings, and to discuss the potential impacts of the project
- Ongoing one-on-one meetings with the affected sporting clubs to refine the design and develop the structure plan for the complex
- A third meeting of the stakeholder group to present the structure plan prior to public exhibition
- Ongoing consultation with each of the sporting clubs during the development of the master plan. This resulted in modifications of the master plan, such as the co-location of horse user groups in one area of the complex.

While not every idea from the sporting groups and Council could be incorporated in the reconfiguration, Roads and Maritime engaged with Council and the groups for advice to formulate appropriate solutions. Over the course of more than 40 stakeholder meetings the project team sought the sporting groups' input, including what they valued about the complex and their long term plans for their clubs, and incorporated this advice into the reconfiguration of the complex to a large extent.

The concept design for the reconfigured Croom Regional Sporting Complex is provided as Appendix I of the Technical Paper 10 – Landscape character and visual assessment.

Information updates

Roads and Maritime provided regular project updates on its webpage and in emails to more than 300 registered stakeholders. This includes:

- General project updates
- The publication of the Feedback Report, detailing feedback and next steps following the display of the preferred option
- Calling for community involvement in the Flood Focus Group process
- Publication of presentations and meeting notes from each Flood Focus Group meeting. This was done to include the wider community in this process.
- Updates to the project's next steps and flow chart
- Information about project funding.

Consultation with landowners

Roads and Maritime has met with directly affected property owners plus lessees and other nearby neighbours to discuss the potential impact of the project on individual properties and explain the property acquisition process. Questions were answered and concerns recorded about potential impacts during construction and operation of the project.

The project would impact Crown land, including a parcel of Crown land to the north of the Macquarie Rivulet adjacent to the Illawarra Highway, the bed of watercourses passing through the project, a crown road (refer Chapter 15). Consultation was undertaken with the Department of Primary Industries (Crown Lands Division) as an affected landowner. Consultation activities and outcomes with the Crown Lands Division are discussed in Section 6.3.2 and Section 6.4.1.

Consultation with businesses

To gauge the views of businesses on the project and the extent of perceived impacts, and to better understand their businesses, face-to-face interviews were conducted at premises in four locations within the area on 3 and 4 December 2014. Contact details were left with businesses that could not participate, and subsequent follow-up telephone interviews were held with a number of businesses. The following interviews were held:

- Retail businesses in the Albion Park Rail neighbourhood centre, between Creamery Road and Hargraves Avenue (11 businesses)
- Highway-oriented business in the Kaylaur Crescent to Tongarra Road area (four businesses)
- Bulky goods premises at the Miall Way estate (three businesses)
- Bulky goods premises at the Central Business Park (five businesses).

The outcomes of the consultation are presented in Chapter 13 and Technical Paper 9 – Socio-economic

Flood focus group

During the consultation on the preferred option flooding was identified as a key concern. To provide additional engagement and enable information exchange on flooding issues between community members and the project team, Roads and Maritime established a flood focus group during the preparation of the environmental impact statement.

In February 2015, Roads and Maritime called for expressions of interest from members of the community to join the flood focus group. It was issued via a postcard sent to over 17,500 residences. A paid advertisement was also placed in the Illawarra Mercury and Lake Times, the project webpage updated and an email sent to over 300 registered stakeholders.

The flood focus group has 19 members, including:

- 15 community members
- Representatives from Wollongong City Council, Shellharbour City Council, and the Office of Environment and Heritage
- Representatives from the project team, including design, flooding, environmental, consultation and project management specialists.

The flood focus group met on the following dates:

- 16 March 2015, to introduce the project and the project team
- 1 April 2015, to present the initial flood modelling findings and discuss the potential impacts of the proposal
- 18 May 2015, to review in greater detail the flood modelling results using animations and interactive mapping
- 28 September 2015, to review the flood assessment prior to display of the environmental impact statement.

Meeting notes from each flood focus group meeting are available on the project webpage.

6.3.1 ABORIGINAL CULTURAL HERITAGE CONSULTATION

Roads and Maritime consulted with the Aboriginal community and carried out investigations in accordance with the following guidelines:

- Procedure for Aboriginal Cultural Heritage Consultation and Investigation (Roads and Maritime, 2011a)
- Aboriginal Cultural Heritage Consultation Requirements for Proponents (Department of Environment, Climate Change and Water, 2010a).

There were four formal opportunities for Aboriginal stakeholders to provide feedback during the preparation of this environmental impact statement, as described below.

Aboriginal stakeholders consulted include:

- Gandangarra Elders Group
- Gunnamaa Dream'n
- Illawarra Local Aboriginal Land Council
- Illawarra Aboriginal Corporation
- National Koori Site Management
- South West Rocks Aboriginal Corporation

- Three Trucks Dreaming Surveying and Consulting
- Wodi Elders
- Several individuals.

On 2 October 2014, a letter was issued to all registered stakeholders inviting them to participate in the Aboriginal focus group. Thirty Aboriginal community members attended the focus group.

The first Aboriginal focus group meeting was held in October 2014 at Dapto Ribbonwood Centre to discuss culturally significant sites, discuss issues, exchange information with the project team's heritage specialists, and agree on the approach to the cultural heritage investigations. Roads and Maritime's approach to cultural heritage investigations changed based on feedback received at this meeting.

A second Aboriginal focus group meeting was held in April 2015 at the Illawarra Aboriginal Corporation, Wollongong. The purpose of the meeting was to discuss the results of the archaeological investigations and plans for managing impacts on Aboriginal cultural heritage from the project.

Copies of the Cultural Heritage Assessment Report (see Technical Paper 6) were mailed out to stakeholders for comment. No written responses were received.

Further information on the outcomes of the engagement with Aboriginal stakeholders can be found in Chapter 10 and Technical Paper 6 – Aboriginal heritage. Specific issues identified by Aboriginal stakeholders are not discussed in detail in this environmental impact statement due to the culturally sensitive nature of the information.

6.3.2 CONSULTATION WITH AGENCIES

Meetings have been held with industry, government departments and agencies, and local service providers.

The key agency consultation forum was the planning focus meeting held on 22 January 2015. The meeting was run by the Department of Planning and Environment. It was attended by Shellharbour City Council, Wollongong City Council, the Office of Environment and Heritage (with representatives present for both flooding and biodiversity), the Heritage Division (part of the Office of Environment and Heritage), and the Environment Protection Authority. The purpose of the meeting was to provide information to the agencies to help develop their respective contributions to the Secretary's Environmental Assessment Requirements; and to get preliminary feedback from government agencies regarding the project.

A second meeting was held in February 2015 with the Office of Environment and Heritage regarding the Secretary's Environmental Assessment Requirements.

The Member for Kiama is provided with regular briefings on the project. The Member for Shellharbour has been briefed on the project.

Consultation with Wollongong and Shellharbour city councils

In accordance with the requirements of the *State Environmental Planning Policy (Infrastructure) 2007* (see Section 2.2), a series of meetings have been held between Roads and Maritime and the two councils representing the local government areas where the project is located. Both councils were invited to attend meetings with other government and non-government stakeholders.

Regular meetings have been held with Wollongong City Council to discuss various aspects of the project, including:

- General project updates and discussions on the design
- Integration with future upgrades to the local road network
- The relationship between the project and current and future land releases in the area, such as the Tallawarra and West Dapto future growth areas
- Traffic impacts
- Hydrology and flooding.

More than 20 meetings since 28 October 2014 have been held with Shellharbour City Council to discuss various aspects of the project. This included six-weekly project meetings. Key issues discussed with Shellharbour City Council include:

- Impact on the Croom Regional Sporting Complex
- The Albion Park bypass (Tripoli Way)
- The Illawarra Regional Airport (which is owned by council) and potential impacts on aviation
- Traffic impacts
- Hydrology and flooding.

The flooding officers from both councils are represented on the flood focus group.

Consultation with NSW government agencies and utilities

As identified above, the Department of Planning and Environment held a planning focus meeting in January 2015 that was attended by government agencies. Meetings were also held with various organisations to discuss the project and get early input on potential issues of concern so they could be understood and resolved. Table 6-2 provides a summary of the organisations and agencies that were consulted.

Table 6-2 Consultation with government agencies and utility providers

Government agency	Date and type of consultation
Department of Planning and Environment	▪ July 2015: Meeting ▪ May 2015: Meeting ▪ January 2015: Planning focus meeting
Department of Primary Industries (NSW Fisheries)	▪ 24 June 2015: Meeting
Department of Primary Industries (Crown Lands)	▪ Email correspondence regarding the project
Office of Environment and Heritage	▪ June 2015: Ongoing liaison via telephone and email ▪ May 2015: Meeting regarding flooding ▪ April 2015: Meeting regarding Aboriginal heritage ▪ January 2015: Biodiversity and flood representative attended planning focus meeting ▪ Email correspondence regarding the Framework for Biodiversity Assessment
Office of Water	▪ June 2015: Meeting

Government agency	Date and type of consultation
Environment Protection Authority	- January 2015: Attended planning focus meeting - July 2015: Meeting
NSW Trains / RailCorp	- July 2015: Meeting - April 2015: Meeting - Email correspondence
South East Australian Transport Strategy Incorporated	November 2014: Presentation of the project
Airservices Australia	August 2015: Meeting
Civil Aviation Safety Authority	August 2015: Meeting
Member for Kiama	- July 2015: Meeting about property impacts - June 2015: Project update - April 2015: Meeting about property impacts - April 2015: Meeting regarding flood focus group - March 2015: Meeting regarding Yallah Road and flooding
Member for Shellharbour	May 2015: Project update
Albion Park Chamber of Commerce	June 2015: Meeting, Member for Kiama in attendance
Emergency services	- July 2015: Project briefing at the Illawarra Local Emergency Management Committee meeting - cross overs for emergency vehicles, flooding and access to Albion Park - March 2015: Project briefing at the Illawarra Local Emergency Management Committee meeting - January 2015: Meeting with NSW Rural Fire Service and NSW Fire Brigade regarding the preferred option, flood immunity and the timing of ramps at the interchange at Albion Park
Jemena	- March 2015: Meeting - April 2015: Meeting - June 2015: Meeting
Endeavour Energy	November 2014
Sydney Water	May 2015: Meeting
Dam Safety Committee	Email correspondence

6.4 SUMMARY OF ISSUES RAISED

Issues raised by the community, stakeholders, special interest groups, government agencies, utilities, service providers and emergency services during the consultation process were recorded and informed the specialist investigations for the environmental assessment, as well as the ongoing development of the concept design. The issues raised by the different groups are summarised in Table 6-3, and discussed in greater detail in the following sections.

Table 6-3 Summary of key issues raised during consultation

Group	Design	Traffic access	Access for other	Flooding	Biodiversity	Heritage	Noise and vibration	Socio economic	Water quality	Urban design and landscaping	Groundwater resources	Air quality
Local residents / community	✓	✓	✓	✓	✓		✓		✓			
Local businesses		✓	✓					✓				
Croom Regional Sporting Complex stakeholder group and sports clubs	✓	✓	✓				✓	✓		✓		
Road users, cyclists, pedestrians, etc			✓									
Aboriginal focus group and stakeholders						✓						
Flood focus group	✓			✓					✓			
Local councils	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
Other government agencies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Transport providers	✓	✓										
Emergency services	✓	✓	✓	✓								

6.4.1 ISSUES RAISED BY AGENCIES AND MAJOR STAKEHOLDERS

The key issues raised during the preparation of the environmental impact statement by government agencies and other major stakeholder groups are summarised in Table 6-4.

Table 6-4 Summary of issues raised by agencies and other stakeholder groups

Agency / stakeholder group	Issue raised	Where addressed
Local councils		
Wollongong City Council	Realignment of Yallah Road	Section 7.3.3
	Traffic and transport	Chapter 7
	Flooding	Chapter 8
	Cumulative impacts of loss of floodplain storage	Section 8.3.2
	Pedestrian and cycling facilities	Section 5.9
	Land use impacts	Chapter 15
Shellharbour City Council	Croom Regional Sporting Complex, reconfiguration and phasing	Section 5.18
	Albion Park bypass (Tripoli Way)	Section 7.3.3
	Timing of construction of the ramps for the interchange at Albion Park	Section 7.3.3
	Flooding	Chapter 8
	Illawarra Regional Airport operational considerations	Section 7.3.4
	Impact on Illawarra Lowlands Grassy Woodlands ecological community	Section 9.3
	Impact on Frazers Creek and SEPP 14 wetlands	Section 9.3
	Historic heritage	Chapter 11
	Impacts to aviation including lighting, air space protections, notification to Civil Aviation Safety Authority and Air Services, flooding of the airport site, and construction airspace encroachment trigger levels, notification and management.	Section 7.3.4
Government agencies		
Department of Planning and Environment	Project-specific declaration under section 115U(4) of the <i>Environmental Planning and Assessment Act 1979</i>	Project declaration
Department of Primary Industries	Offsets for impacts on aquatic ecosystems, flora and fauna	Section 9.5.1
	Potential for scour of bed and / or banks of watercourses	Section 9.3
	Frazers Creek adjustment	Section 5.14
	Macquarie Rivulet crossing	Section 5.7
	Management of construction in watercourses	Section 5.20.9

Agency / stakeholder group	Issue raised	Where addressed
	Impacts on agricultural land	Section 15.3.2
	Impacts on Crown land	Section 15.3
Office of Environment and Heritage	Range of flood specific data to be considered	Section 8.1.3
	Impact of climate change	Section 8.3
	Cumulative development impacts	Chapter 21
	Impact of blockage policies for assessment of flood impacts	Section 8.3
	Emergency management during floods	Section 8.3
	Inclusion of future growth areas in the flood assessment	Section 8.3
	Aboriginal heritage	Chapter 10
	Flooding	Chapter 8
	Croom Regional Sporting Complex	Section 5.18
	The Framework for Biodiversity Assessment and offsetting requirements	Chapter 9
	Historic heritage	Chapter 11
	Water quality and soils	Chapter 16
Office of Water	Potential for groundwater drawdown	Chapter 17
	Potential impacts on groundwater quality	Section 17.3
	Management of groundwater seepage	Section 17.5
	Management of soft soils with respect to potential for groundwater drawdown	Section 16.5
	Impacts on wetlands, watercourses and groundwater dependent ecosystems	Section 9.3.7
	Monitoring of potential impacts on groundwater	Section 17.5
Environment Protection Authority	Out of hours work and extended construction hours	Section 5.20.12
	Impacts related to water and soils, including acid sulfate soils, contaminated sites, general soil issues and water quality	Chapter 16
Civil Aviation Safety Authority and Airservices Australia	Lighting, signs and variable message boards locations and dimensions	Section 5.17
	Construction impacts on airport operations	Section 7.3.2
	Airport operations	Section 7.3
	Intrusion of the project into the obstacle limitation surface to the north of the Macquarie Rivulet	Section 7.3
	Safety of airport operations	Section 7.3
	Flood impacts on the airport	Section 8.3

Agency / stakeholder group	Issue raised	Where addressed
Emergency services (all)	Ability to cross within the median on the motorway to turn around to get to incidents	Section 5.3
	Emergency access to locations along the route	Section 5.3
	Flood immunity	Chapter 8
	Feasibility of including ramps for the interchange at Albion Park from the beginning	Chapter 7
Dam Safety Committee	Green Meadows Detention Basin is to remain a retarding basin. Requests that the Detailed Design Report for the modifications be independently reviewed and submitted to the Dam Safety Committee for endorsement	Section 5.10
Other stakeholders		
Local businesses	Concern from some local businesses that they would experience a decline in trade, with potential to result in closure of some businesses	Section 13.3.2
	Potential for positive impact on the business resulting from decreased local traffic volumes, as shoppers may more easily park, and then re-enter the traffic after their visit	Section 13.3.2
	Other businesses were unconcerned about the impacts of the project on levels of trade	Section 13.3.2
	Need to maintain access to the arterial road network for some businesses	Section 13.3.2
	Concern about the potential for negative impacts on delivery times for some businesses	Section 13.3.2
	A number of businesses identified that they may experience benefits via reduced traffic volumes and improved travel times	Section 13.3.2
Albion Park Chamber of Commerce	General impact on business	Section 13.3.2
	Impact on Ravensthorpe restaurant and guesthouse	Section 11.3
	Timing of Albion Park bypass (Tripoli Way) and preference for ramps to be built at year of opening	Section 7.3.3
Illawarra Bicycle Users Group	There should be a dedicated bicycle lane on both sides of the motorway	Section 5.9
	There should be a connection from both sides of the motorway to connect to the Lake Side bicycle route at Macquarie Rivulet	Section 5.9
	There should be a connection from both sides of the motorway to connect to the shared paths in the Croom Regional Sporting Complex	Section 5.9
	Need for safe cycling facilities on all roundabouts and intersections, in particular at Oak Flats Interchange	Section 5.9

Agency / stakeholder group	Issue raised	Where addressed
	Need to reconstruct any cycling infrastructure removed for the project, including in Croom Regional Sporting Complex	Section 5.9
	Need to integrate the proposed cycle ways with the existing and proposed network	Section 5.9
Transport operators		
Illawarra Regional Airport	The Illawarra Regional Airport is operated by Shellharbour City Council. Their issues raised in relation to the Airport are discussed above.	Not applicable
NSW Trains / RailCorp	Yallah railway crossing bridge	Section 5.7
	Query on whether the proposed bridge caters for future duplication	Section 5.2
Utilities		
TransGrid	Interactions with / impact on TransGrid assets	Section 15.3.2
	Potential for provision of BioBanking credits from TransGrid site	Section 9.5.1
Jemena	The project design needs to consider potential impacts on the Eastern Gas Pipeline and other mains	Section 15.3.2
Endeavour Energy	Impact on high and low pressure power lines and pipelines	Section 15.3.2
	The project design needs to consider future upgrades or additional connections planned to service future growth areas (urban land releases)	Chapter 21
Energy Australia	Impact on Tallawarra Power Station high pressure gas pipeline	Section 15.3
Sydney Water	Confirm location of stormwater treatment devices, including temporary sedimentation basins	Section 5.11
	Outlets from stormwater treatment devices to consider scour protection	Section 5.11

6.4.2 ISSUES RAISED BY USERS OF CROOM REGIONAL SPORTING COMPLEX

Table 6-5 provides a summary of the key concerns raised by each sporting group. A description of the proposed changes and reconfiguration of the complex resulting from these concerns is provided in Section 4.4. An assessment of the socio-economic impacts of the reconfiguration is provided in Chapter 13.

Table 6-5 Croom Regional Sporting Complex user group concerns

Club	Key concerns/issues
Stoney Range Pony Club	▪ Maintain connectivity ▪ Improve cross-country route around the perimeter of the grounds ▪ Pony club needs enough space to operate ▪ Would like an undercover area with tables and chairs ▪ Issues with access during sporting final weekends ▪ Need room to turn horse floats around ▪ Noise scares horses; there needs to be a buffer between their area and the motorway, as well as other sporting fields ▪ Require safe access to agistment areas
Model Car Club	▪ Requires suitable parking for events, and parking near the track to easily carry gear and equipment ▪ Requires similar facilities in an alternative location ▪ Events may be held at any time, and should not be disrupted
Albion Park Soccer Club (Juniors)	▪ Requires more parking (occasional issues sharing parking with the Pony Club) ▪ Requires more toilets (have to hire port-a-loos for game days)
Horsepitality Trail Riders	▪ Would like additional facilities, such as toilets, clubhouse, storage area, additional gravel in the arena and arena fencing ▪ Concerned about the noise impact on horses from the motorway ▪ Need safe horse-riding access to the site ▪ Need to be located close to agistment areas, with safe access to these areas ▪ Multi-purpose tracks are not safe for horses ▪ Currently use an underpass followed by a protected path to the sporting complex
Illawarra Churches Soccer Association	▪ Flexible about the location of fields ▪ Requires access to fields
White Eagles Football Club	▪ Have existing plans for improvements including air conditioning the clubhouse, tables, chairs, and changes to the ceiling. These plans are on hold due to uncertainty regarding the project ▪ Requires more parking spaces; most people drive to the site ▪ Needs to stay in Albion Park, and facilities need to be of suitable standard
Netball clubs	▪ Currently only have a very small equipment cupboard in the stadium ▪ Currently share hockey toilets ▪ Parking is sufficient for training purposes, but not for competitions ▪ Members mostly access the site by car

Club	Key concerns/issues
	▪ If courts require relocation, they need to be kept together, close to the stadium, on flat ground enclosed by fencing. Moving them to the south, or wrapping them around the stadium, may be viable options ▪ The proposed shared pathway from the City Stadium between the two most northern netball courts would be better positioned adjacent to the new proposed carpark.
South Coast Equestrian Club	▪ Current parking adequate and allows for vehicles / floats ▪ Plans to resurface the arenas ▪ Aspires to extend the existing clubhouse to establish a permanent club house ▪ Access to facility is a concern with the narrow causeway ▪ If moved – needs to be flat and well drained, should not be located to areas already allocated for agistment, should be sufficient space to enable vehicles and floats to turn around without the need to reverse
Athletics Club	▪ A \$30,000 grant has been secured to repair the canteen roof ▪ The club has plans to increase the use of the track ▪ There is emergency access via two gates ▪ Even split of members accessing the site from the east and west ▪ If it needs to be relocated, preference would be to remain centrally located ▪ It is the only sole-purpose athletics track in the area ▪ Prefers the facility to remain solely for athletics, not multi-purpose ▪ Concerns about road noise impacting the ability to hear the PA system ▪ Concerns regarding air pollution ▪ Connectivity needs to be maintained for pedestrians and motorists
Illawarra Trail Riding Club	▪ Members access the club by car ▪ Safety turning right out of Hughes Street onto Terry Street could be improved ▪ Members park in the common parking area ▪ If the pony club is relocated it would be preferable if all equestrian clubs could share the facility ▪ Car parking area is currently sufficient ▪ The club requires safe access over or under the motorway ▪ The club requires access to the fields to the north and south of the motorway ▪ If the club must be relocated, it should be relocated on flat land ▪ Access over or under the new East West Link would be required
BMX club	▪ Currently not enough parking for large events ▪ The State series and State titles (bidding for the event in 2015) attract around 800 riders ▪ Would like to hold bigger events (such as Australia wide events) but require a larger start hill (currently not possible due to height restrictions associated with the airports operations) ▪ Currently no toilets ▪ Road noise may be an issue (need to be able to the start) ▪ Many riders access the area from the train station or Albion park and Albion Park Rail by riding ▪ They consider that they would be easy to relocate and do not need to be near other clubs, and would prefer to be located to the southern end of the complex

Club	Key concerns/issues
Junior and Senior Football Club (Rugby League)	Junior: - Currently no concrete access for disabled/prams - One emergency services access point (have requested a second from Council) - Requested Council improve the drainage at the front of the canteen - Have plans for building extension/new building - Facility is currently not fenced. Senior: - Ambulance access is sufficient (although signage could be improved) - Clubhouse is fairly new (2 years) Both: - Parking works fairly well (although when busy overflows to cricket) - No footpath connection - Existing surface not asphalted - Senior and Junior clubs connected and their facilities need to stay co-located
The Rail Cricket Club	- Current grandstand area and equipment shed are too small - Would like a playground - Carpark is not in an ideal location (it is closer to the rugby league field), would prefer a carpark next to the field - Conflict between vehicles and pedestrians / cyclists - Ground does not drain properly (wicket lower than outfield) - If a new wicket is required, it would need to be established 12 months prior use to settle. If a new oval is built, an area would need to be allocated to grow turf for the wicket, and for soil boxes. A new wicket should not be aligned to that players face the sun - Surfaces need to be resealed - Cricket training nets need reconfiguring - Current fencing is inadequate - Preference would be to stay within the sporting complex, in a location with high visibility from the road
Hockey Associated	- Parking requirements sufficient for current use, although not enough formal spaces - Majority of players drive to the facility 10-15 year plan includes development of an additional field to cater for increasing enrolments - Currently enough space between facility and other club facilities - Both fields have a gate for emergency access - If the facility requires relocation, preference would be to be south of the motorway, with sufficient access and parking
Illawarra Kareelah Orienteering	- Course is currently too small, and could be expanded for larger events - Access to the bush is important as a key area for events - Preference would be for two accesses across the motorway, separating cars and pedestrian. Preference to avoid small opening underpasses
Junior AFL Club	- The western side of the field has poor drainage - The oval could be enhanced by adding lighting

Club	Key concerns/issues
	- There are two emergency entrances to the oval - The single oval currently meets the needs of the club
Shellharbour City Stadium	- Car parking is sufficient - Overflow parking areas are used during large competitions - A fourth court is planned for the back of the stadium - There is no conflict between stadium users and other complex users - The vast majority of users access the stadium by car - If the stadium must be relocated, preference is to remain at the gateway to the sporting complex, and remain a prominent part of the complex

6.4.3 ISSUES RAISED BY THE WIDER COMMUNITY

During the display of the preferred option the community provided feedback via a number of channels, including via 45 emails, one phone call, and 191 responses to the 'Have Your Say' survey. In addition, more than 1600 people spoke directly with and provided comments to project team members during the information sessions.

The key issues raised by respondents were in relation to:

- Traffic and access
- The design, including concerns about interchanges, roundabouts and entry/exit ramps
- Flooding
- The environment.

Table 6-6 provides a summary of issues raised to date by the community.

Table 6-6 Summary of issues raised by the community

Issue raised	Description / suggested action	Where addressed
Traffic and access	Impact on future growth areas, particularly with regard to traffic accessing the motorway	Section 7.3.3
	Impact of a future connection with the bypass of Albion Park (Tripoli Way)	Section 7.3.3
	The speed limit should be 100 km/h for the length of the motorway	Section 5.2
	Impact of the termination of some existing roads as a cul-de-sac	Section 7.3.3
	Two northbound entry ramps at the interchange at Yallah would disrupt traffic	Section 7.3.3
	Access if required to / from the Haywards Bay service centre	Section 7.3.3
	The Terry Street and Tongarra Road intersection needs to have sufficient capacity for future traffic	Section 7.3.3
	Residents requiring access west of Croome Road and the Croom Regional Sporting Complex would be impeded and have a longer drive	Section 7.3.3
	Restrictions should be placed on right turns out of Colden Drive and Station Road to prevent the use of Shellharbour Road as an alternative route	Section 7.3.3

Issue raised	Description / suggested action	Where addressed
	Future movements of quarry trucks should be considered as the existing East West Link would be removed	Section 7.3.3
	The southbound exit ramp from the Oak Flats Interchange may experience congestion during the afternoon peak, causing traffic to bank up and impeding property access	Section 7.3.3
	The Jarrah Way northbound traffic being forced to use the Oak Flats Interchange may impact safety	Section 7.3.3
	The Oak Flats Interchange should include a protected turning lane from the Princes Highway at Albion Park Rail for motorists travelling to Oak Flats and Shellharbour?	Section 7.3.3
	The closure of Durgadin Drive would increase traffic on the Oak Flats Interchange	Section 7.3.3
Project design	Rest areas should be provided, preferably near Albion Park	Chapter 4
	Breakdown lanes should be provided	Chapter 5
	A smooth road surface should be provided	Section 5.8
	The interchange at Yallah should have a three-lane crossing on the bridge	Section 5.6.1
	The motorway should be straightened near the airport to minimise aviation impacts	Section 5.3
	An alternative design should be considered, adopting a bridge along and above the existing South Coast Rail Line	Chapter 4
	A new service road replacing the East West Link is not necessary as traffic should be directed onto the motorway	Chapter 7
	The new East West Link should provide access for quarry traffic straight on to the motorway	Section 5.13
	All entry and exit ramps should be built at the same time that the motorway is built	Chapter 7
	The project may impact local streets due to the exit south of Dapto	Chapter 7
	An additional lane should be provided on the interchange at Yallah ramps for access to Dapto	Chapter 7
	Access to Macquarie Pass from the motorway should be provided	Chapter 4
	The exit ramp at the interchange at Albion Park should be extended up to the Tongarra Road traffic lights to cater for future traffic growth	Chapter 7
	The northbound exit ramp for the interchange at Albion Park should be positioned at Tongarra Road	Chapter 4
	A two-lane bridge over the new motorway at Croome Road should be built to minimise the amount of excavation	Chapter 4
	Tongarra Road and Croome Road should have exit and entry ramps from / to the motorway	Chapter 4

Issue raised	Description / suggested action	Where addressed
Flooding	The 100 year ARI and the Probable Maximum Flood should be assessed for the project	Section 8.3
	The motorway should be bridged instead of built on fill to reduce flood impacts	Chapter 4
	The motorway may have a substantial impact on flooding in the	Section 8.3
	Homes and insurance costs may be impacted if flooding increases due to the project	Section 8.3
	Future growth areas should be considered in flood modelling for the project	Section 8.3
	Additional entry and exit ramps should be provided at Tongarra Road to account for floods, as the intersection of the Illawarra Highway and Taylors Road often experiences closures	Section 8.3
	Use of variable messaging signs for flood updates	Section 8.3
	Management of flood risk during construction	Section 8.3
	Impact of noise barriers on flooding	Section 12.4.2
Cycling and pedestrians	The project should provide for public transport, pedestrians and cycling access	Section 15.3.2
	Entry and exit ramps for cyclists should be provided	Section 15.3.2
	Cycle lanes should be provided on both sides of the motorway	Section 15.3.2
	Connections to existing and proposed cycle networks should be	Section 15.3.2
	The project may result in safety impacts for pedestrians near Larkins Lane	Chapter 7
Environmental constraints	The project may impact sensitive wetlands and conservation areas as a result of fill and construction activities	Section 9.2.4
	Environmental assessment should be undertaken for areas outside the project boundary	Chapter 7-20
	Noise mitigation measures should be considered near Larkins Lane, Durgadin Drive, Jarrah Way and other areas of Albion Park Rail	Section 12.4
	Stormwater runoff should be appropriately managed	Section 5.11
	The project may result in noise impacts in Albion Park Rail north of the existing East West Link	Section 12.4
	Lighting on the motorway should consider impact of light pollution	Section 14.3.2
	Construction impacts, such as noise, runoff and pollution, should be appropriately managed.	Section 23.2

6.4.4 ISSUES RAISED BY THE ABORIGINAL COMMUNITY

The key issues raised by Aboriginal stakeholders are summarised in Table 6-7, together with an indication as to how, and where, these issues are addressed in this environmental impact statement.

Table 6-7 Summary of issues raised by the Aboriginal community

Issue raised	Description / suggested action	Where addressed
Aboriginal heritage items and sites	The Macquarie Rivulet site should be appropriately managed	Section 10.5
	The Aboriginal cultural heritage investigation methodology must be appropriate	Section 10.1
	Artefacts recovered during excavations should be appropriately managed	Section 10.5

6.5 CONSULTATION DURING THE ENVIRONMENTAL IMPACT STATEMENT EXHIBITION

This environmental impact statement is being exhibited for a minimum of 30 calendar days. The environmental impact statement can be viewed at the following locations:

- Project webpage (electronic version)
- NSW Department of Planning and Environment, 22-23 Bridge Street, Sydney. Open Monday to Friday 9am to 5pm
- Wollongong City Council, 41 Burelli Street, Wollongong. Open Monday to Friday 8.30am to 5pm
- Shellharbour City Council, Lamberton Crescent, Shellharbour City Centre. Open Monday to Friday 8.30am to 4.30pm
- Roads and Maritime Services, Level 4, 90 Crown Street, Wollongong. Open 8.30am to 4.30pm.

Staffed displays are being held during the exhibition period so community members can directly ask Roads and Maritime representatives questions and provide further information that can be considered prior to finalisation of the environmental impact statement. The displays include drop-in sessions on the following dates:

- Albion Park Public School, Tongarra Road, Albion Park - Saturday 7 November, 9am to 1pm
- Camp Quality Convoy, Croom Regional Sporting Complex – Sunday 15 November 2015, 9am to 3pm
- The Rail Community Centre, Corner of Ash Avenue and Tongarra Road, Albion Park Rail – Thursday 19 November, 6pm to 9pm.

During the exhibition period, the Department of Planning and Environment invites written submissions on the project from the community, government and non-government agencies, stakeholders and other interested parties.

The exhibition of the environmental impact statement, including details of how to make a submission and the location of static and staffed displays is being advertised via the local media, on the project webpage, direct emails to registered stakeholders, Facebook and via mail-out of a flyer to around 17,500 addresses in the local area.

Stakeholder consultation during the exhibition period includes:

- Face-to-face or telephone meetings with directly affected landholders
- Stakeholder briefings with organisations such as Wollongong City Council, Shellharbour City Council, Croom Regional Sporting Complex, and transport providers
- Briefings with the local members of parliament.

After the exhibition of the environmental impact statement, the Secretary of Planning and Environment will provide copies of public submissions to Roads and Maritime or a report containing a summary of the issues raised. The Secretary may then require Roads and Maritime to prepare a submissions report to respond to the issues raised in submissions, and may require a preferred infrastructure report to outline any proposed changes to the project. If significant changes to the project are proposed, the Secretary may make the preferred infrastructure report publicly available.

The Secretary will prepare an environmental assessment report and provide it to the Minister for Planning. The Minister for Planning will then decide whether or not to approve the project and the conditions attached.

6.6 CONSULTATION DURING CONSTRUCTION

Community involvement would continue as part of the construction stage of the project. A community involvement plan would be developed for implementation through the detailed design, construction and delivery of the project. It would detail the community consultation objectives for these phases, identify the stakeholders, communications strategies, activities and evaluation mechanism for the project.

Consultation during the detailed design and construction period would likely involve:

- Development and implementation of a detailed communications plan
- Notification or works (including targeted letterbox drops)
- 24-hour project information line
- Project email address
- Variable message signs
- Regular updates to the project webpage
- Newsletters, information brochures and fact sheets
- Clear signage at construction sites
- Media releases and advertisements in the local media.

The draft community involvement framework for the project is provided in Appendix C.