

## Review of Environmental Factors

### Proposed new Water Reservoirs at the Gloucester Cemetery Road Site and associated Trunk and Reticulation Mains at GLOUCESTER



**Final**

**7 August 2020**

**Project Reference: 100120**

**Assessment Date: 7 August 2020**

This REF has been prepared under current legislation to adequately consider those matters which are likely to affect the environment if the activity goes ahead. Such environmental impact assessment matters are described in:

- Part 5 Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EPA Act),
- Part 14 Division 1 Clause 228 of the *Environmental Planning and Assessment Regulation 2000*,
- Part 7 Clause 7.3 of the *Biodiversity Conservation Act 2016*,
- Council's procedures and policies, and
- Other relevant statutes and legislation referred to within this document.

**The project / activity and any associated construction works must not commence unless:**

- The officers completing, reviewing and determining the REF have signed the completed document, verifying that each of the steps has been satisfied and no further assessment or investigation is required, and
- It has been concluded that the impacts of the project / activity are reasonably foreseen and that these environmental impacts are not unreasonable or significant and the project can proceed subject to relevant mitigation measures (which are clearly stated in this report) and the conditions of any approvals, licences or permits, and
- Any required approvals, licences and permits have been obtained, and
- All construction personnel are aware of their responsibilities, project details, environmental impacts, the mitigation measures (which are clearly stated in this report) and the conditions in any required approvals, licences or permits.

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## Terminology

<b>subject site</b>	means the area directly affected by the project / activity.
<b>study area</b>	means the subject site and any additional areas which are likely to be affected by the project / activity, either directly or indirectly. The study area extends as far as is necessary to take all potential impacts into account.
<b>study locality</b>	means the area within a five (5) kilometre radius of the subject site.
<b>project / activity</b>	means the works proposed to be undertaken.
<b>direct impacts</b>	means those impacts that directly affect the community and the environment. When applying each factor, consideration must be given to all the likely predicted direct impacts of the project / activity. This includes noise generation and direct loss of wildlife habitat.
<b>indirect impacts</b>	means those impacts (other than direct impacts) that are facilitated by or associated with the project / activity. They may include edge-effects, disturbance of wildlife by lights or noise and / or pollution impacts.
<b>habitat</b>	means an area or areas occupied, or periodically or occasionally occupied, by a species, population or ecological community and includes any biotic or abiotic component.
<b>habitat trees</b>	are defined as: standing live or dead trees providing ecological niches (microhabitats) such as hollows (cavities) including termitaria, bark pockets, large dead branches, epiphytes, cracks, sap runs, or trunk rot.

## Site Inspections:

Numerous site inspections were undertaken by the person(s) completing the REF, including (but not limited to) the following:

- 24 September 2019
- 2 June 2020
- 27 June 2020
- 6 July 2020
- 4 August 2020

**Project Management:**

<b>Project Phase:</b>	Concept	Design
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## Section 1. Project details

Item	Project Description and Justification
1.1	<b>Description of the nature of the project / activity (include all associated activities);</b>
	<p data-bbox="229 427 651 461"><b>Summary of the project / activity</b></p> <p data-bbox="229 499 1469 819">The project / activity assessed in this REF includes certain specified works to upgrade and enhance the Gloucester water supply network. This includes the construction of two (2) new Reservoirs on Council-owned land at Lot 379 DP 1158901 on Cemetery Road, Gloucester. This land is zoned SP2 Infrastructure, which permits the proposed work. The site of the new reservoirs is on a Council Reserve and is surrounded by land zoned E2 Environmental Conservation (and managed specifically for the protection of the threatened species, the grey-crowned babbler). Within the designated SP2 Infrastructure zone on the subject site, there is an existing 1.5 ML water storage reservoir (which will be retained) and a 40-metre tall communication tower. The proposed new construction is confined to the area of the designated SP2 Infrastructure zone.</p> <p data-bbox="229 857 1458 1032">The project / activity also involves the construction of a new trunk water main from the existing Gloucester Water Treatment Plant to the new Reservoirs. The main will be installed using trenching and under-boring methods. The new main is proposed for mainly Council-owned and managed street verges and within an existing easement on private land in the north. From north to south, the new main is to be constructed from the Gloucester Water Treatment Plant:</p> <ul data-bbox="277 1077 1374 1323" style="list-style-type: none"> <li>• In easement across private freehold grazing land to Showground Lane,</li> <li>• Along Showground Lane to Thunderbolts Way,</li> <li>• Along Thunderbolts Way to Boundary Street (with an underbore of the Gloucester River),</li> <li>• Along Boundary Street to Phillip Street,</li> <li>• Along Phillip Street to Church Street,</li> <li>• Along Church Street to Cemetery Road, and</li> <li>• Along Cemetery Road to the subject site of the new reservoirs.</li> </ul> <p data-bbox="229 1361 1449 1469">The work is also associated with the decommissioning of the existing Tyrell Street reservoir (which, as a local heritage item, will be retained) and the demolition of the structurally-unsound Ravenshaw Street Reservoir (and associated assets including sheds, pipes, electrical assets, pumps, etc).</p> <p data-bbox="229 1507 1458 1648">The work also involves the upgrading of certain existing water pipelines, including the removal of an existing 100mm asbestos cement water main installed in the street verge of The Bucketts Way, between Cemetery Road and Jacks Road and replacement with a new water main of improved capacity. Other local water mains are scheduled to be removed and replaced with larger diameter pipelines.</p> <p data-bbox="229 1686 660 1720"><b>Objectives of the project / activity</b></p> <p data-bbox="229 1758 1102 1789">The project / activity will improve the Gloucester water supply network to:</p> <ul data-bbox="277 1827 1422 1962" style="list-style-type: none"> <li>• eliminate a requirement for multiple pressure booster stations,</li> <li>• decommission and demolish the aged and structurally-unsound Ravenshaw Street Reservoir,</li> <li>• retire and preserve the heritage-listed (local heritage item) Tyrell Street Reservoir, and</li> <li>• increase the treated water storage volume.</li> </ul>

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	<p>As such, the project / activity is an important element in the provision of a modern, secure, efficient water supply for the township of Gloucester.</p> <p><b>Options assessment / preferred option justification</b></p> <p>MidCoast Council has evaluated a range of sites and options to deliver the project / activity, including the following site locations for new water storage reservoirs:</p> <ul style="list-style-type: none"> <li>• Option 1: Approximately 2.20 km west of the Water Treatment Plant (WTP)</li> <li>• Option 2: Approximately 0.75 km south-east of the WTP, across the Gloucester River</li> <li>• Option 3: Approximately 2.30 km south-west of the WTP, across Thunderbolts Way</li> <li>• Option 4: Cemetery Road existing reservoir site</li> <li>• <b>Adopted Option: Cemetery Road site</b></li> </ul> <p>Due to the availability of Council owned land, the suitable zoning of the site, the favourable elevation of the land and the existing infrastructure (roads, power and pipework) in this location, it is optimal and justified to construct the additional water storage reservoirs at the Council owned Cemetery Road site.</p> <p>MidCoast Council has also evaluated an alternate arrangement for part of the alignment of the new water main. This option co-located the new main with an existing sewer gravity main within the Council drainage reserve Lots between Church Street and Farley Parade, on land zoned RE1 – Public Recreation, comprising Lot 34 DP791866 (0.68-hectares), Lot 60 DP807183 (0.22-hectares), Lot 78 DP844338 (0.22-hectares), Lot 41 DP1227815 (0.65-hectares), Lot 299 DP1083928 (0.28-hectares) and Lot 325 DP1158901 (0.11-hectares). However, there are significant practical difficulties with the installation of the main in this option. The drainage reserves are narrow, contain a meandering watercourse, contain an occurrence of a threatened ecological community (Forest Red Gum-dominated woodland near Church Street), contain other services and assets (sewer, footpaths, etc) and is crossed by Clement Street (necessitating an under-bore). This option was evaluated to avoid an area of known grey-crowned babbler nesting habitat along Cemetery Road. However, the nesting habitat can be avoided along Cemetery Road by installing the main within the cleared, artificial near road edge. As such, the adopted alignment is the preferred alignment from an environmental and practical perspective.</p> <p>The selected option for the water main installation is deemed to deliver the best community and environmental performance outcomes.</p>
1.2	<p><b>Description of main and ancillary activities associated with the project and their proposed timing:</b></p>
	<p><b>Scope of works</b></p> <p>The project / activity includes the following work:</p> <ul style="list-style-type: none"> <li>• Construction of a new trunk main from the Gloucester Water Treatment Plant to the Cemetery Road new reservoirs site,</li> <li>• Construction of one (1) on-ground 7 mega-litre (ML) water storage reservoir (Cemetery Road site),</li> </ul>

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	<ul style="list-style-type: none"> <li>• Construction of one (1) 0.5 ML elevated storage reservoir (Cemetery Road site),</li> <li>• Installation of lift pumps and the construction of a new lift pump building (Cemetery Road site),</li> <li>• Installation of a chlorine boosting station (Cemetery Road site),</li> <li>• Installation of improved access arrangements and fencing (Cemetery Road site),</li> <li>• Modification to the existing reticulation network to isolate the high-level zone,</li> <li>• Construction of a new trunk main to service the Gloucester Industrial zone,</li> <li>• Removal of several existing under-sized water mains (including the 100mm asbestos coated water main currently between Cemetery Road and Jacks Road along The Bucketts Way) and replacement with large diameter, modern mains,</li> <li>• Decommissioning of the existing Tyrell Street reservoir and retention and ongoing management as a local heritage item, and</li> <li>• Decommissioning and demolition of the existing Ravenshaw Street reservoir and associated structures.</li> </ul> <p>The work modernises and updates the water supply network for the Gloucester township and represents essential infrastructure replacement and enhancement.</p> <p><b>Construction Activities</b></p> <p>The key construction activities of each element / component of the project / activity are listed below:</p> <p><b>Establish a new 300 mm water main from Gloucester WTP to Cemetery Road</b></p> <ul style="list-style-type: none"> <li>• Install 300 mm PVC water main with associated trenching along the route including an under bore of the Gloucester River on the Thunderbolts Way,</li> <li>• Construct new mains to connect the reservoirs with the water supply system,</li> <li>• Flush and chlorinate new water mains,</li> <li>• Undertake all associated works for trenching, valves, joins, etc.</li> </ul> <p><b>Establish site office, lay-down areas and parking (Cemetery Road)</b></p> <ul style="list-style-type: none"> <li>• Establish and maintain an area for parking, site amenities and a lay-down area in the existing cleared portion of the Babbler Reserve (to the east of the existing lattice communication tower),</li> <li>• Investigate a construction compound on nearby land, including stockpile sites, construction areas, site office.</li> </ul> <p><b>Establish a Construction Site (Cemetery Road)</b></p> <ul style="list-style-type: none"> <li>• Prepare management plans,</li> <li>• Survey the site to establish the existing SP2 Infrastructure Zone,</li> <li>• Install fences to delineate the SP2 Infrastructure Zone from the E2 Environment Zone,</li> <li>• Establish a secure compound and take delivery of materials,</li> <li>• Upgrade and/or maintain existing access roads as required,</li> <li>• Clear and grub the site.</li> <li>• Install bollards to prevent unauthorised vehicle access to the eastern end of the Babbler Reserve.</li> </ul> <p><b>Other water main work</b></p> <ul style="list-style-type: none"> <li>• Relocate the existing gravity main that exits the existing 1.5 ML reservoir and runs south towards Cemetery Road and reconnect with the 250 mm main on Cemetery Road,</li> <li>• Remove and replace currently under-sized local water mains such as the 100mm asbestos</li> </ul>

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	<p>cement main in The Bucketts Way verge, from Cemetery Road to Jacks Road.</p> <p><b>7 ML on-ground reservoir</b></p> <ul style="list-style-type: none"> <li>• Construct the 7 ML on-ground reservoir,</li> <li>• Connect the new reservoir pipework,</li> <li>• Construct an overflow / dissipater from the reservoir that directs this water to Cemetery Road,</li> <li>• Integrate the reservoir into the reticulated network.</li> </ul> <p><b>0.5 ML elevated tower, lift pump station and chlorine boosting system</b></p> <ul style="list-style-type: none"> <li>• Construct the 0.5 ML elevated tower,</li> <li>• Construct the lift pump station,</li> <li>• Integrate the elevated tower into the reticulated network.</li> </ul> <p><b>Water Pump Station Decommissioning and Removal</b></p> <ul style="list-style-type: none"> <li>• Decommission and remove the following assets: <ul style="list-style-type: none"> <li>• Ravenshaw Street Reservoir to Cemetery Road Reservoir lift pump,</li> <li>• Ravenshaw Street Reservoir booster pump,</li> <li>• Clement Street booster pump,</li> <li>• Rogers Street booster pump,</li> <li>• Tyrell Street Reservoir booster pump.</li> </ul> </li> </ul> <p><b>Other Reservoir Decommissioning and Removal</b></p> <ul style="list-style-type: none"> <li>• Decommission and demolish the Ravenshaw Street Reservoir,</li> <li>• Decommission and retain the Tyrell Street Reservoir and manage the site for its heritage values.</li> </ul> <p><b>General Requirements</b></p> <ul style="list-style-type: none"> <li>• Install and maintain sediment and erosion and pollution controls, including the stabilisation of all finished landforms,</li> <li>• Manage and dispose of waste including hazardous materials. Reuse and recycle material, where possible,</li> <li>• Implement other procedural measures and actions.</li> </ul> <p><b>Operational Requirements</b></p> <ul style="list-style-type: none"> <li>• Test all constructed assets,</li> <li>• Operate the new system,</li> <li>• Periodically maintain all pumps,</li> <li>• Periodically inspect all assets,</li> <li>• Delivery of and replace empty chlorine gas cylinders,</li> <li>• Maintain the overflows / dissipaters from the new reservoirs,</li> <li>• Maintain the reticulation and trunk system.</li> </ul>

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1.3	<p><b>Location of the area of the project / activity and any proximal areas that may be directly or indirectly harmed or affected:</b></p>
	<p>The proposed new water storage reservoirs are located within the SP2 - Infrastructure Zone area on Lot 379 DP1158901 by MidCoast Council.</p> <p>The new main will be within an existing easement in favour of MidCoast Council on one (1) private rural property (Lot 20 DP862766 and Lot 400 DP980328) and in Council-owned road reserves. This comprises the road verges of:</p> <ul style="list-style-type: none"> <li>• Irrawang Road,</li> <li>• Showground Lane,</li> <li>• Thunderbolts Way,</li> <li>• Boundary Street,</li> <li>• Phillip Street,</li> <li>• Church Street, and</li> <li>• Cemetery Road.</li> </ul> <p>The route has been selected to limit disruption to Gloucester businesses and residents and protect important features of the natural environment.</p> <p>The decommissioning of the existing reservoir and associated assets at Lot 11A Sec B DP977288 22 Tyrell Street (948.5m<sup>2</sup>) and the management of this site and asset as a local heritage item.</p> <p>The decommissioning and demolition of the existing reservoir and associated assets at Lot 48 DP1179871 Ravenshaw Street (934.6m<sup>2</sup>). The fate of this site will be determined by Council as part of the development of a new comprehensive Local Environmental Plan (LEP) for the MidCoast Council area.</p> <p>The removal of under-sized or ageing water mains and the replacement with larger mains.</p> <p><b>Figures 1 to 3</b> in this REF provide details of the site of the proposed new reservoirs. <b>Figures 4 to 8</b> provide details of the proposed rising main alignment. <b>Figure 9</b> identifies the locations of the Ravenshaw and Tyrell Street Reservoirs.</p>
1.4	<p><b>Land zoning of the area of the project / activity:</b></p>
	<p>Lot 379 DP DP1158901 is zoned partly SP2- Infrastructure and partly E2- Environmental Conservation. The construction of the reservoirs is located on the SP2 –Infrastructure zoned land.</p> <p>The reticulation and trunk main will be within private property, road reserve or drainage reserve on land that is zoned variously (from north to south, generally):</p> <ul style="list-style-type: none"> <li>• E3 – Environmental Management,</li> <li>• R5 – Large Lot Residential,</li> <li>• B4 – Mixed Use,</li> <li>• R2 – Low Density Residential,</li> <li>• E2 – Environmental Conservation.</li> </ul>

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	<p>These zonings do not inhibit or preclude the mains construction / installation.</p> <p>The reservoirs at Ravenshaw Street and Tyrell Street are located in the residential landscape but are on land specifically zoned SP2 – Infrastructure.</p>
<b>1.5</b>	<b>Ownership of the land to be modified or affected by the project / activity:</b>
	<p>The land for the reservoir construction and Ravenshaw Street reservoir is owned by MidCoast Council. The reticulation and trunk mains will be partly within an established existing easement in favour of MidCoast Council, across privately owned land and within Council road reserves.</p>
<b>1.6</b>	<b>Reference to the construction/activity plans in the preparation of and attached to this REF:</b>
	<p>This REF has been prepared to assess the impacts of the proposal and to inform the development of engineering design/plans. There are no construction/activity plans referenced in the preparation of and attached to this REF.</p> <p>Maps, plans and site photos are provided of the project / activity in <b>Figures 1 - 9</b>.</p>
<b>1.7</b>	<b>Description of the environment of the land to be modified or affected by the project / activity:</b>
	<p><u>Climate:</u> The climate of the Gloucester area is classified as warm temperate with generally warm to very warm summers and mild to cool winters. Rainfall is relatively evenly spread throughout the year, although there may be summer to early autumn peaks. Rainfall for the Gloucester area averages approximately 1,100mm per year.</p> <p><u>Soils and Geology:</u> For the new reservoir site and much of the main construction alignment, the soils are from an erosional soil landscape. The underlying soils comprise moderately deep to deep, moderately well-drained Brown Sodosols and Yellow Soloths and shallow to deep, moderately well-drained Grey Kurosols (Yellow Soloths) on imperfectly to moderately well-drained sideslopes and crests. Shallow, moderately well-drained Bleached-Leptic Tenosols (Lithosols) on crests and steeper sideslopes. The underlying geology comprises Permian Coal Measures of the Gloucester Coal Measures and the Dewrang Group; mainly lithic sandstone, sandstone, siltstone, mudstone, shale, coal and conglomerate.</p> <p>Near to the Gloucester Water Treatment Plant site and initial mains construction, the soil landscape is alluvial (associated with the Gloucester River).</p> <p><u>Hydrology:</u> The site of the proposed new reservoirs is located on the crest of a ridge from which surface run-off to the east flows north via an unnamed tributary to the Avon River and run-off to the west flows north eventually to the Gloucester River. The reservoir construction does not impact on existing watercourses.</p> <p>The mains construction from the Gloucester WTP to the new reservoirs site crosses a number of</p>

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	<p>watercourses (from north to south) including:</p> <ul style="list-style-type: none"> <li>• An unnamed 2<sup>nd</sup> order stream (private rural property),</li> <li>• An unnamed 1<sup>st</sup> order stream (Showground Road),</li> <li>• Gloucester River (Thunderbolts Way),</li> <li>• An unnamed 1<sup>st</sup> order stream (Boundary Street),</li> <li>• An unnamed 2<sup>nd</sup> Order stream (Boundary Street),</li> <li>• An unnamed 1<sup>st</sup> order stream (Phillip Street),</li> <li>• An unnamed 2<sup>nd</sup> order stream (Church Street), and</li> <li>• An unnamed 1<sup>st</sup> order stream (Cemetery Road).</li> </ul> <p>All surface run-off flows from the subject sites eventually to the Gloucester River, which is a major tributary of the Manning River. The Manning River provides water to the domestic water supply for parts of the MidCoast region. Water quality protection and management is a significant consideration in the works.</p> <p>The project is associated with the existing harvesting of water from the Barrington River for domestic water supply for storage in the new reservoirs. The proposal increases water storage capacity and efficiency, but does not alter the approved water harvesting operational arrangements that are presently in place and which are appropriately licensed and approved by the regulating authorities for the protection of the natural environment including groundwater dependent ecosystems.</p> <p><u>Landform:</u> The project is mostly located within an area characterised by undulating low hills on Permian sediments in the Stroud-Gloucester Basin region. The new reservoirs are located on land with a natural elevation of approximately 134-metres AHD. The Gloucester WTP has river intake infrastructure on the Gloucester River floodplain at approximately 100-metres AHD.</p> <p><u>Vegetation and habitat:</u> The vegetation / habitat types within the different zones of this project / activity are described below:</p> <p><u>Babbler Reserve</u> The <i>Grey-crowned Babbler Retention Plan</i> was prepared by Parsons Brinkerhoff on behalf of Gloucester Shire Council in October 2005. This Plan is referenced throughout the REF.</p> <p>The Babbler Reserve off Cemetery Road contains modified / derived areas associated with the existing reservoir and communications tower constructions and associated assets, such as tracks and clear zones.</p> <p>An area of approximately 0.66-hectares of the Reserve is maintained lawn / grassland within which a path, seats and former grey-crowned babbler signage is present.</p> <p>Outside the above modified areas, some 3.6-hectares of the Reserve is naturally vegetated with a high-quality remnant of Rough-barked Apple / Grey Ironbark / Mahogany dry grassy eucalypt forest / woodland. The forest exhibits some influence from past grazing land uses, the harvesting of logs and edge effects from the adjoining residential and industrial interfaces but is in good functional ecological condition. Canopy species present include Rough-barked Apple, Grey Ironbark, Spotted Gum, White Mahogany, Forest Red Gum and Cabbage Gum. These trees grow to between 16 and</p>

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	<p>24+metres at a density of about 40%. Forest Oak is present in the small tree layer. The shrub layer is minimal, but native shrubs such as Prickly Moses, Blackthorn, White Dogwood and Cherry Ballart. Some occurrences of exotic shrubs are present including minor Lantana*. The understorey is mainly native dry grasses, ferns, forbs and twiners, such as Kangaroo Grass, Blue Flax-lily, Basket Grass, Wallaby Grass, Mat Rush, False Sarsaparilla, Pellaea and others. Given the past land uses and edge habitats, there are occurrences of exotic groundcover species. Annual and perennial weeds of disturbed ground are present, including Veined Verbena, Purpletop, Cats Ear, Blackberry Nightshade, Paddys Lucerne, Fireweed, Cobbler’s Pegs and others. Exotic lawn grasses are present in some areas and actively spreading, such as Kikuyu, changing the ecological character of parts of this natural area reserve. The dry forest / woodland contains habitat features, such as hollow-bearing trees, over-mature trees, standing dead trees and fallen timber. Access is controlled through chain mesh fencing, which assists protect this remnant from disturbances. Some waste (litter) is present and a remnant of a barbed wire fence also occurs. The fire history of the Reserve is not known, but the occurrence of regular cool fires on a mosaic pattern would be highly beneficial, provided that fallen timber and standing dead trees can be protected.</p> <p>The Babbler Reserve contains fauna habitats comprising dry grassy open forest / woodland and modified areas. During the field inspection, a suite of common woodland birds and birds of open / modified landscapes was observed including: crested pigeon, rainbow lorikeet, musk lorikeet, eastern rosella, laughing kookaburra, superb fairy-wren, spotted pardalote, yellow-rumped thornbill, noisy miner, golden whistler, willie wagtail, grey fantail, magpie-lark, Australian magpie, Australian raven, welcome swallow and silvereye. No reptiles or frogs were observed. The grey-crowned babbler was observed on site in early July and on the 4 August 2020 by project personnel. The fencing of the Reserve may hinder access to terrestrial and some arboreal mammals, but diggings of the echidna was observed. Mammals such as bush rats, brush-tailed possum, sugar gliders and micro-bats are expected. The Reserve is likely to be access by feral pest animals such as cats and foxes through gaps under fences and between gates.</p> <p>Two (2) motion-activated cameras were installed in the reserve over the period 29 June 2020 to 4 August 2020 (72 camera-nights in total). They were The cameras detected the presence of the following species:</p> <ul style="list-style-type: none"> <li>• Echidna</li> <li>• Red Fox*</li> <li>• Australian King Parrot</li> <li>• Australian Owlet-nightjar</li> <li>• Noisy Miner</li> <li>• White-winged Chough</li> <li>• Grey Butcherbird</li> </ul> <p>Foxes were commonly observed on the cameras. The cameras did not detect arboreal or terrestrial native mammals, other than the Echidna.</p> <p>It is expected that the reserve has a depleted mammal assemblage due to the effects of nearby urbanisation and influence of predatory pest animals.</p> <p><u>Road Verges</u></p>

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	<p>The road verges that are to be used for mains installation are generally characterised by maintained or rank exotic grasses, with occurrences of street trees:</p> <ul style="list-style-type: none"> <li>• Showground Lane is mostly rank exotic grassland and weeds of disturbed ground. Near Thunderbolts Way there are specimens of Silky Oak, Camphor Laurel, Forest Red Gum and Grey Box.</li> <li>• Thunderbolts Way is maintained (mown) exotic grassland and weeds of disturbed ground. There are occurrences of heavily pruned Willow Bottlebrush under powerlines, as well as various native and exotic trees such as Camphor Laurel, River Oak and Forest Red Gum. The Gloucester River riparian zone contains River Oaks.</li> <li>• Boundary Street / Phillip Street is maintained exotic grassland and weeds of disturbed ground, with occasional mostly exotic street trees (Maple). There is one outstanding Forest Red Gum specimen near the Thunderbolts Way intersection.</li> <li>• Church Street is a narrow verge of maintained grassland with street trees that are under powerlines and are heavily pruned (Willow Bottlebrush, Myrtle).</li> <li>• Cemetery Road is heavily modified in the west but contains significant dry open forest and woodland in the verges through the central and eastern portions.</li> </ul> <p><u>Private farmland</u> The private farmland in the north of the mains alignment is production pasture, with a small riparian occurrence, which contains riparian weed trees and native rainforest elements.</p> <p><u>Reservoirs to be decommissioned</u> The Tyrell Street and Ravenshaw Street Reservoirs are both constructed structures in the residential landscape, with maintained lawns and occasional specimen trees and shrubs in landscaping.</p> <p><u>Aboriginal Cultural Heritage:</u> There are no known Aboriginal cultural heritage values associated with the project areas. An AHIMS search has been conducted and has identified two (2) Aboriginal sites recorded in or near the reservoir site and reticulation and trunk main vicinity. Both these sites are not within any main alignment or proposed works areas for the reservoir construction. The AHIMS search is provided in Schedule 2.</p> <p><u>Local, State and National Heritage:</u> There are no state listed heritage items in or near the project / activity subject sites.</p> <p>There is one (1) listed heritage item actually associated with the project / activity. This is the "Tyrell Street Water Tower", which is listed in Schedule 5 of the <i>Gloucester Local Environmental Plan 2010</i>. The reservoir is being de-commissioned and will be retained and managed in accordance with its heritage significance as part of this project / activity. There are other local heritage items listed in Schedule 5 of the <i>Gloucester Local Environmental Plan 2010</i> in the vicinity of the work, including:</p> <ul style="list-style-type: none"> <li>• The Gloucester Showground precinct,</li> <li>• St Clements Historic Park at the corner of Church Street and Oak Street,</li> <li>• John Mackenzie's grave in Gloucester Cemetery, and</li> <li>• Second Hillcrest Hospital at 16 Tyrell Street.</li> </ul> <p><u>Built and social environment:</u> The reservoir area and reticulation and trunk main alignment area are</p>

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	<p>surrounded by residential and agricultural lands in partly an agricultural and partly residential context. Gloucester cemetery is located approximately 350 meters south-east of the project reservoir site. No items or features of special built or social significance occur.</p>
<b>1.8</b>	<b>Description of the environmental impacts of the project / activity:</b>
	<p><u>Landform modifications:</u> Topography will be disturbed during the construction. The following landform modification activities are proposed:</p> <ul style="list-style-type: none"> <li>• At the site of the new reservoirs, the existing land surface will be modified in order to create a flat, level building site,</li> <li>• Along the alignment of the new trunk main, the land will be trenched / excavated to allow installation of the new pipeline and then backfilled to reinstate a stable natural landform, and</li> <li>• At the various demolition sites, landform modification is not reasonably expected other than associated landform stabilisation following the de-commissioning works.</li> </ul> <p><u>Native vegetation:</u> The construction of the new reservoirs will clear native vegetation from an area of 68-metres by 34-metres (2,312m<sup>2</sup>) within the SP2 – Infrastructure zone of the Babbler Reserve area. For this REF, all vegetation in this zone is assumed to be removed, which is part of the wider remnant forest of the reserve. The clearing would affect the following trees (greater than 15cm trunk diameter):</p> <ul style="list-style-type: none"> <li>• Rough-barked Apple – 14 trees (trunk diameters of 15cm, 15cm, 15cm, 15cm, 15cm, 15cm, 15cm, 15cm, 15cm, 20cm, 20cm, 25cm and 25cm)</li> <li>• Grey Ironbark – 8 trees (trunk diameters of 15cm, 15cm, 15cm, 20cm, 30cm, 30cm, 30cm and 40cm)</li> <li>• Spotted Gum – 4 trees (trunk diameter 30cm, 40cm, 50cm and 50cm).</li> </ul> <p>As such, the clearing for the new reservoirs will remove 26 trees, with trunk diameters ranging from 15 to 50cm and average trunk diameters of 22.6cm.</p> <p>No hollow-bearing trees will be removed and none of the Forest Oaks present indicated feeding activity by Glossy Black-cockatoos. No Grey-crowned Babbler nests occur in the clearing area but are present in very close proximity. None of the trees to be removed are local preferred koala food tree species. Some fallen timber occurs in the clearing area and there are some whitewash droppings which may indicate some perching use by Babbler.</p> <p>The only part of the subject site mapped on the NSW Biodiversity Values and Threshold Tool is the riparian zone of the Gloucester River. This area will not be affected as the river and its riparian zone will be under-bored.</p> <p><u>Water quality impacts:</u> The main water quality impact risk associated with the project / activity is associated with sedimentation from exposed soils, which may be carried in surface run-off to local waterways. The reservoirs will be installed with appropriate overflows / dissipaters, which may be operated as required and which may cause intense water flows and scouring risks. The project / activity will seek to manage sedimentation risks through the installation of sediment and erosion controls, as specified in Schedule 1.</p>

Item	Project Description and Justification
	<p><u>Truck and machinery movement:</u> Truck and machinery movements for the project will be limited to the project locations, with traffic management to be engaged where necessary for the trunk and reticulation main works.</p> <p><u>Pollution and contamination:</u> There are risks of pollution and contamination arising from this project / activity. This includes the risk of diesel and oil spill from machinery, wastes generated from the de-commissioning works and wastes brought onto the site by construction personnel. These risks will be managed on-site as specified in Schedule 1.</p> <p><u>Noise, fumes and vibrations:</u> There will be some noise, fumes and potentially vibrations generated from machinery and other associated activities. The impacts will be short term and the works are confined to standard working hours (Monday to Friday 6am to 6pm, Saturdays 8am to 1pm, no work Sundays or public holidays). No noise, fumes and vibrations are anticipated from the electric pumps during operation of the reservoirs, which will be housed in a building on-site.</p> <p><u>Emissions:</u> The project / activity is associated with minor clearing of native vegetation, which may release sequestered carbon. The operation of the assets in this project / activity require electricity supplied from regional networks and which the generation of that electricity produces greenhouse gas emissions.</p> <p><u>Waste generation:</u> Two types of waste are anticipated from this project / activity. That is, waste generated by the construction and construction personnel as well as demolition waste. All waste, including rubbish, brought onto site will be managed as per the details in Schedule 1. The de-commissioning of the various assets in this project / activity will generate significant building / demolition waste. Some of this material may contain asbestos. A waste management plan will be prepared and implemented for all de-commissioning works.</p> <p><u>Bushfire:</u> There are negligible bush fire risks or impacts associated with this project / activity. The project / activity does not alter bushfire patterns or modify the ability to manage or control bushfires.</p> <p><u>Heritage impacts:</u> The local heritage feature associated with the project / activity, namely the Tyrell Street Reservoir, is to be de-commissioned and then retained and managed in accordance with its heritage value. De-commissioning this asset will allow its heritage values to be enhanced and promoted.</p> <p>The project / activity is not expected to modify or impact the identified local heritage features that are close to the works areas.</p> <p><u>Social or community impacts:</u> The project / activity will enhance the Gloucester water network and is ultimately beneficial and positive for the Gloucester community. There will be some disruptions to traffic and some noise and disturbance during the physical work, but these will be minimised and managed. The new reservoirs are to be constructed near the Gloucester Cemetery and there may be disruption to people using the cemetery for funeral services or remembrances. This will need to be effectively recognised and managed.</p> <p>The impacts of the proposed development have been investigated further in this REF.</p>

Item	Project Description and Justification
<b>1.9</b>	<b>Project benefits:</b>
	<p>The project aims to improve the Gloucester water network so that MidCoast Council can reduce risks to supply, meet agreed levels of service and reduce ongoing operation and maintenance costs in the Gloucester area. The work will result in substantially improved pressure and reliability for Gloucester residents. Pressure provided by booster pumps is not as reliable as pressure provided by a reservoir at sufficient height. According to the WSAA Water Supply Code, <i>"the use of boosters increases the risk of water supply interruptions (reduction in available pressure) due to loss of electrical power supply"</i>. Booster pumps should be used to boost pressure only, ideally only through diurnal or summer peaks, and they should not be the only means of supplying water to the required service levels. Also, where practicable, <i>"water supply systems shall be planned and designed to exclude a boosted supply to customers such as a hospital of any class..."</i> (WSAA 2011). It is estimated that the Gloucester Soldiers' Memorial Hospital would experience a pressure of 12.3m during average demand periods, if there was no boosted pressure (assuming a second story height of 113m AHD, a reservoir TWL of 126.5m AHD and a head-loss gradient of 1m/km over 1,200m). This is well below the desirable minimum service pressure of 25m. Five of seven pump stations will be decommissioned as a result of the works.</p> <p>The project / activity will help alleviate existing local pressure problems, particularly in the south of Gloucester (the industrial area) and provide adequate pressure for when new developments are connected to the system.</p> <p>The project / activity provides additional, much-needed, storage in the system. Currently, there is only approximately 4 ML of storage within the Gloucester reservoirs. Even without this project, Gloucester immediately needs at least a new 2ML reservoir to provide enough capacity, plus capacity to compensate for the loss of the Ravenshaw Reservoir, which is structurally unsound. The project / activity meets and addresses these existing capacity concerns whilst also contributing to enhanced delivery pressures to water users.</p> <p>The project / activity decommissions two (2) existing reservoirs and other assets, which are at the end of their life. One of these assets to be de-commissioned (the Ravenshaw Street Reservoir) is known to be structurally unsound. The other is a heritage item and can be managed to reflect these values.</p> <p>To not take action, Gloucester and Barrington customers will continue to experience what is essentially a lower level of service as compared to the majority of MidCoast Council customers, and which deviates from industry practice and current standards (WSAA 2011). The work modernises and updates the Gloucester water network. This is a key driver of this project / activity.</p>
<b>1.10</b>	<b>Description of community consultation undertaken or proposed:</b>
	<p>The location of the two (2) proposed new reservoirs is on Council owned land that is zoned appropriately for Infrastructure purposes. The trunk and reticulation main alignments are within road reserve. The REF will be put on public display by the MidCoast Council dedicated community engagement team.</p> <p>Any complaints or comments on the project can be directed through the MidCoast Council Customer Service Line.</p>

## Section 2. Planning legislation pathway

	Planning legislation	Yes / No / NA
2.1	Is the project / activity a Part 4 matter under the <i>Environmental Planning and Assessment Act 1979</i> ?	No
2.2	Is the project / activity exempt development under the <i>State Environment Planning Policy (Exempt and Complying Development Codes (2008))</i> and the <i>Environmental Planning and Assessment Regulation 2000</i> ?	No
2.3	If the project / activity is a form of development that is exempt, is it being assessed under Part 5 to ensure that environmental impacts are within acceptable standards?	NA
2.4	Is the project / activity development permitted without consent under the <i>SEPP (Infrastructure) 2007</i> ?  This project is being undertaken under Division 24 Clause 125 - Water Supply Systems of the <i>State Environmental Planning Policy (Infrastructure) 2007</i>	Yes
2.5	Does the project / activity meet the requirements of the following legislation? <i>Environmental Planning and Assessment Act 1979 Part 5 Division 5.1, and Environmental Planning and Assessment Regulation 2000 Clause 228 Division 1 Circumstances requiring an environmental impact statement</i>	Yes
2.6	With reference to the <i>SEPP (Coastal Management) 2018</i> is the project / activity located on the coastal wetlands and littoral rainforests area?  <b>Note: Development consent</b> is required for development on land within the coastal wetlands and littoral rainforests area.  <i>State Environmental Planning Policy (Coastal Management) 2018</i> <b>Part 2 Division 1</b> <b>Division 1 Coastal wetlands and littoral rainforests area</b> <b><u>10 Development on certain land within coastal wetlands and littoral rainforests area</u></b> (1) The following may be carried out on land identified as "coastal wetlands" or "littoral rainforest" on the Coastal Wetlands and Littoral Rainforests Area Map only with development consent: <a href="https://www.legislation.nsw.gov.au/#/view/EPI/2018/106/part2/div1/cl10">https://www.legislation.nsw.gov.au/#/view/EPI/2018/106/part2/div1/cl10</a>	No

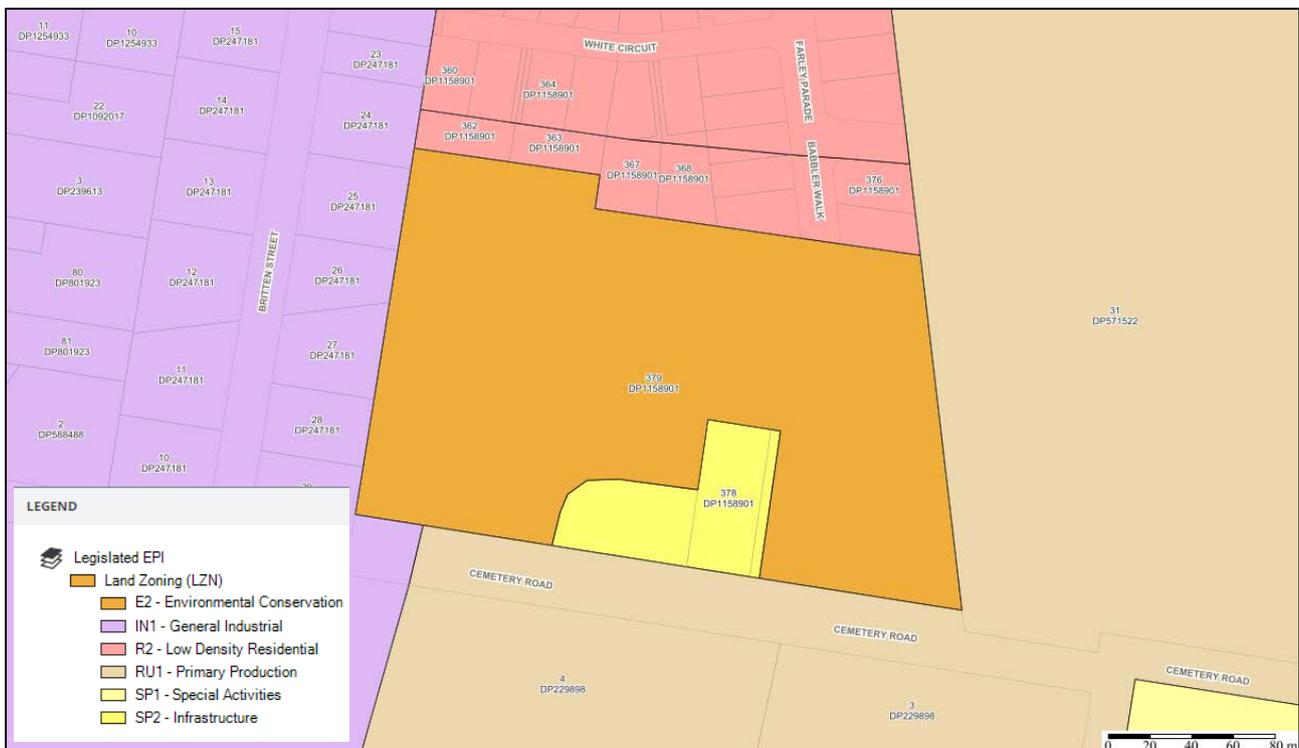
	<b>Planning legislation</b>	<b>Yes / No / NA</b>
2.7	<p>With reference to the <i>SEPP (Coastal Management) 2018</i> is the project / activity located in the <b>proximity of coastal wetlands and littoral rainforests area</b>?</p> <p><b>Note: Development consent is not required</b> for activity within proximity area for coastal wetlands or proximity area for littoral rainforest. However, the consent authority must assess potential impacts.</p> <p><i>State Environmental Planning Policy (Coastal Management) 2018</i> <b>Part 2 Division 1</b> <b>Division 1 Coastal wetlands and littoral rainforests area</b> <b>11 Development on land in proximity to coastal wetlands or littoral rainforest</b></p> <p>1) Development consent must not be granted to development on land identified as “proximity area for coastal wetlands” or “proximity area for littoral rainforest” on the Coastal Wetlands and Littoral Rainforests Area Map unless the consent authority is satisfied that the proposed development will not significantly impact on:</p> <p>(a) the biophysical, hydrological or ecological integrity of the adjacent coastal wetland or littoral rainforest, or</p> <p>(b) the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest.</p> <p><a href="https://www.legislation.nsw.gov.au/#/view/EPI/2018/106/part2/div1/cl11">https://www.legislation.nsw.gov.au/#/view/EPI/2018/106/part2/div1/cl11</a>.</p>	No
2.8	<p><b>Is the project / activity lawful and permissible and can the project / activity be considered under Part 5 of the <i>Environmental Planning and Assessment Act 1979</i>?</b></p>	Yes

## Section 3. Maps, plans and site photographs

### Site of the proposed new Reservoirs:



**Figure 1: Sketch map of the location of the proposed new reservoirs**



**Figure 2: Land Zoning of Lot 379 DP 1158901 and surrounding properties**



**Figure 3: Location of the existing 1.5 ML reservoir and the Infrastructure zone**



**Plate 1: Cemetery Road Site, looking north towards the existing reservoir**



**Plate 2: Cemetery Road Site, looking south from north east corner**



**Plate 3: Cemetery Road Site, looking north east from the southern boundary of the infrastructure zone**



**Plate 4: Cemetery Road Site, looking north east from the southern boundary of the infrastructure zone**



**Plate 5: Cemetery Road site, looking east along southern boundary of fenced off area**

Site of the proposed new Rising Main:

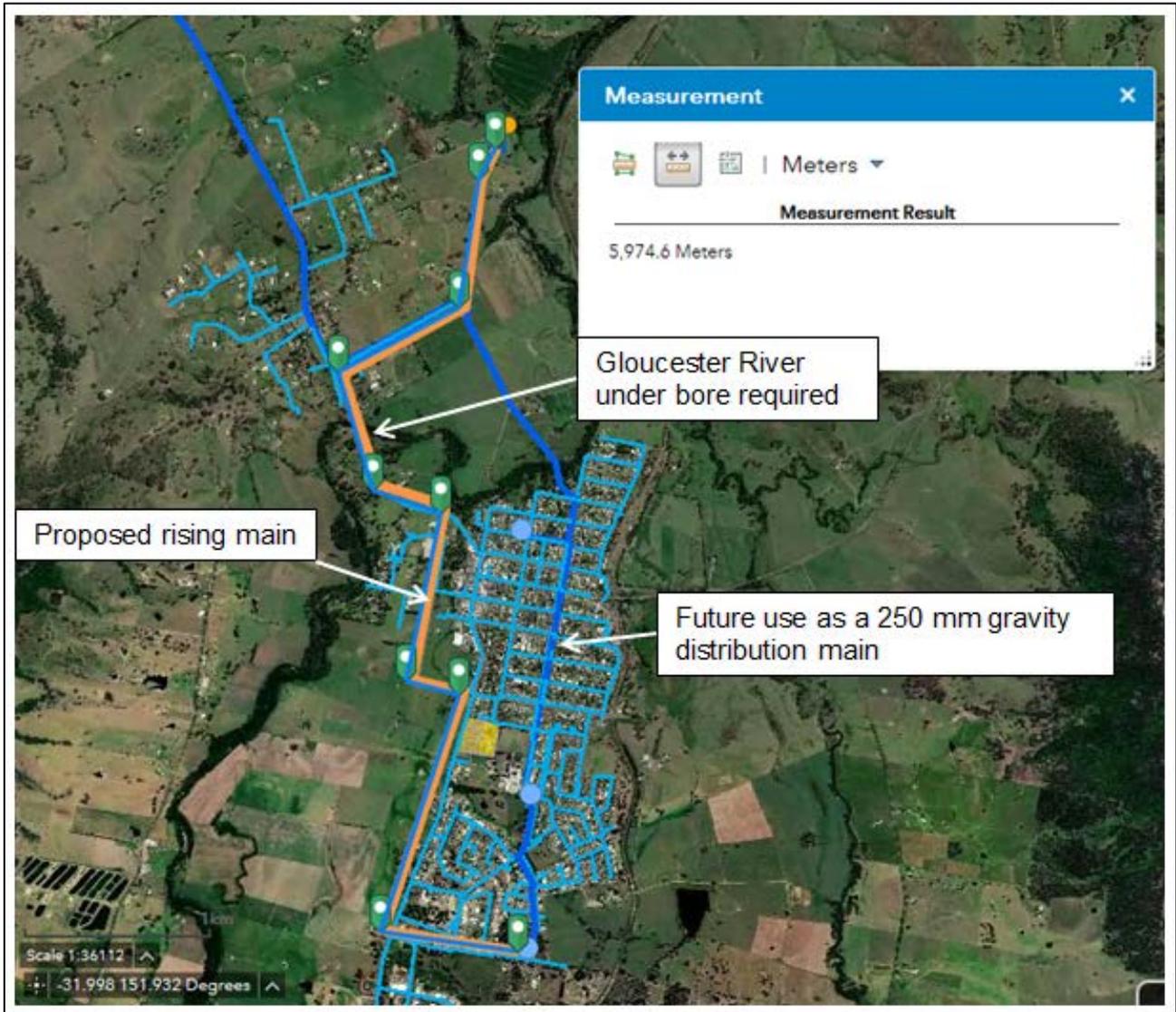
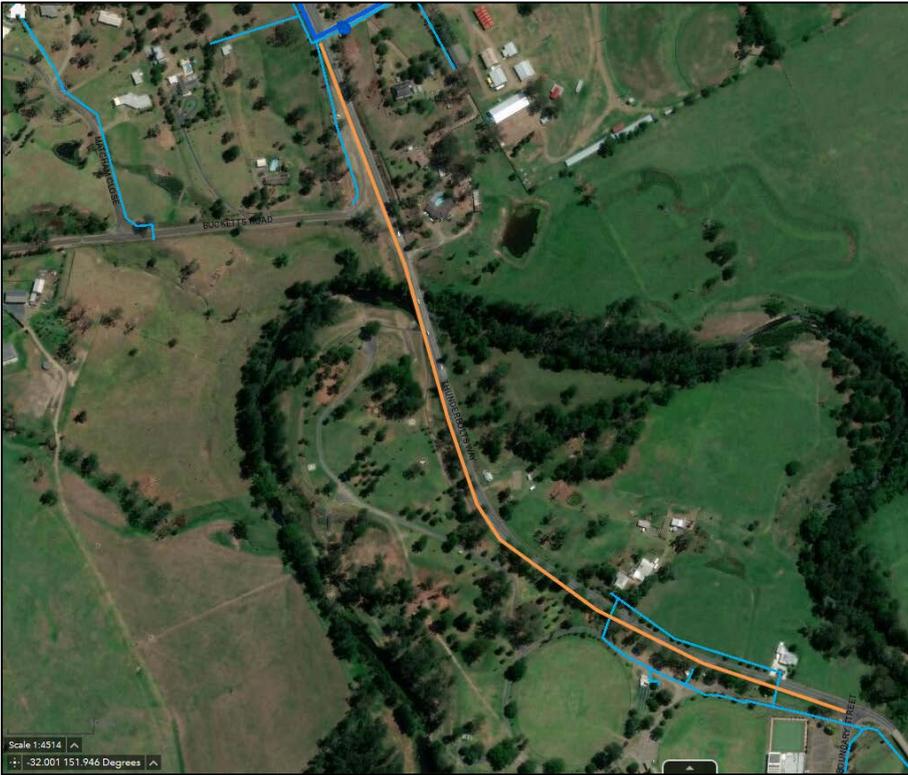


Figure 4: Overview of the proposed new rising main route



**Figure 5: Mains route - WTP to Thunderbolts Way via Showground Lane**



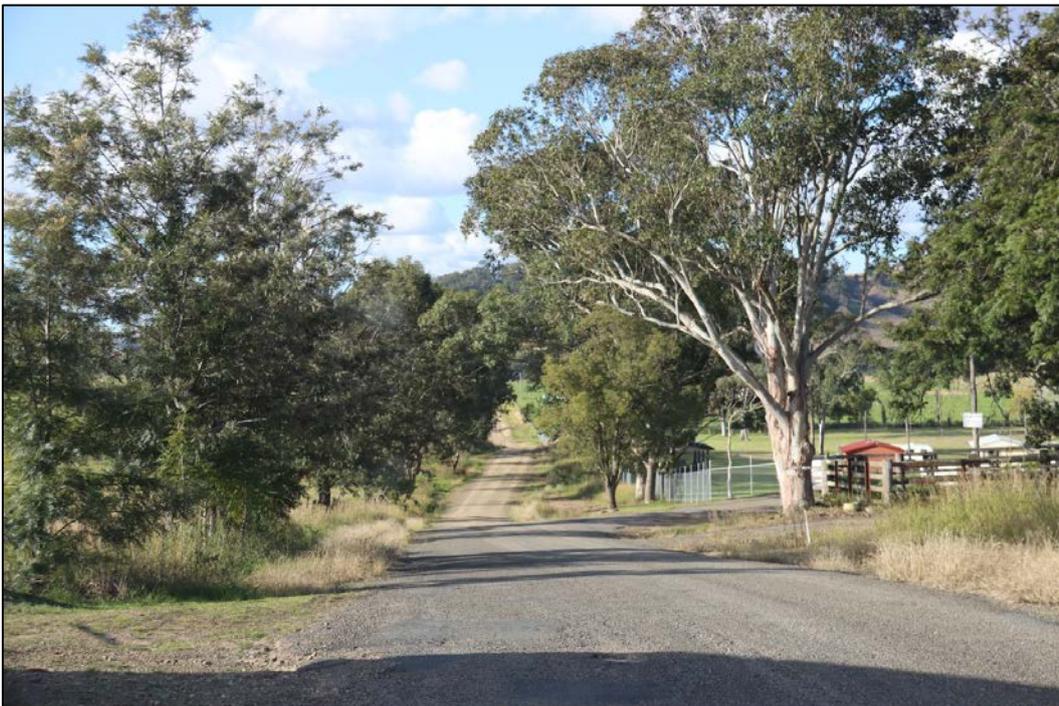
**Figure 6: Mains Route - Thunderbolts Way**



**Figure 7: Mains route - Boundary Street and Phillip Street**



**Figure 8: Mains route - Church Street and Cemetery Road**



**Plate 6: Showground Lane verge**



**Plate 7: Thunderbolts Road verge**



**Plate 8a: View of under-bore location on Thunderbolts Way (northern side of Gloucester River)**



**Plate 8b: View of under-bore location (southern side of Gloucester River)**



**Plate 9a: Boundary Street verge**



**Plate 9b: Significant Forest Red Gum on Boundary Street**



**Plate 10: Phillip Street verge**



**Plate 10: Church Street verge**



**Plate 11: Cemetery Road verge**

Site of assets to be de-commissioned:



Figure 9: Location of the existing reservoirs to be de-commissioned



**Plate 12: The Ravenshaw Street Reservoir to be de-commissioned**



**Plate 13: The Tyrell Street Reservoir to be de-commissioned and managed for heritage**

**Native vegetation and habitat:**



**Plate 14: Grey-crowned babbler nest in the Cemetery Road verge**



**Plate 15: Vegetation / habitat in the Babbler Reserve (outside the work area)**



**Plate 16: Vegetation / habitat in the Babbler Reserve (outside the work area)**



**Plate 17: Vegetation / habitat in the work area (new reservoir footprint)**



**Plate 18: Entrance to the site of the new reservoir construction area off Cemetery Road**



**Plate 19: Grey-crowned babbler in the Cemetery Road verge opposite the proposed reservoirs site – 4 August 2020**

## Section 4. Approvals, licences and permits

Item	Approvals, Licences and Permits required	Yes / No
4.1	<p><b>Is there a risk that the project / activity may have an impact on State listed threatened species?</b></p> <p>If so, Council must apply the test of significance. If this results in a decision that the activity will significantly affect threatened species, then either:</p> <ol style="list-style-type: none"> <li>1. a Species Impact Statement is required, or</li> <li>2. Council may 'opt in' to the Biodiversity Assessment Methodology/ Biodiversity Offsets Scheme.</li> </ol> <p><i>Relevant legislation: Part 5 Division 5.1 Environmental Planning and Assessment Act 1979, Fisheries Management Act 1994, Biodiversity Conservation Act 2016</i> <i>Relevant authorities: Department of Planning, Industry and Environment, Department of Primary Industries</i></p>	Yes <sup>1</sup>
4.2	<p><b>Does the project / activity need to consider koalas under the provisions of the Koala Habitat Protection SEPP?</b></p> <p>Note: Part 5 approvals are currently exempt from provisions of the Koala SEPP, but koala habitat should be considered in the design and protective safeguards.</p> <p><i>Relevant legislation: Koala Habitat Protection SEPP</i> <i>Relevant authorities: Department of Planning, Industry and Environment</i></p>	No
4.3	<p><b>Does the project / activity occur within or seek to clear vegetation from an area covered by a conservation instrument, covenant or instrument?</b></p> <p>If yes, then the permissibility of the project / activity needs to be validated and any relevant approvals/ consultations sought.</p> <p><i>Relevant legislation: Local Land Services Act 2013, Local Land Services Amendment Act 2016 Biodiversity Conservation Act 2016, Conveyancing Act 1919</i> <i>Relevant authorities: Hunter Local Land Services, Department of Planning, Industry and Environment</i></p>	No

Item	Approvals, Licences and Permits required	Yes / No
4.4	<p><b>Is the project / activity likely to have a significant impact on any of the following matters of National Environmental Significance?</b></p> <ul style="list-style-type: none"> <li>• Ramsar Wetlands</li> <li>• Commonwealth listed threatened species and ecological communities</li> <li>• Commonwealth migratory species protected under International Agreements</li> <li>• World Heritage Properties</li> <li>• National Heritage Places</li> <li>• Commonwealth land or marine areas</li> <li>• Nuclear actions</li> </ul> <p>Significant impact means an impact which is important, notable or of consequence, having regard to its context or intensity, the sensitivity, value or quality of the environment that is impacted, and the intensity, duration, magnitude and geographic extent of the impacts.</p> <p><i>Relevant legislation: Environment Protection and Biodiversity Conservation Act 1999</i> <i>Relevant authorities: Department of the Environment &amp; Energy</i></p>	No
4.5	<p><b>Is the project / activity located within or likely to affect:</b></p> <ul style="list-style-type: none"> <li>• Areas reserved or dedicated under the NP&amp;W Act 1974 (eg. National Park, Nature Reserve or State Conservation Area)</li> <li>• Land identified as wilderness under the <i>Wilderness Act 1987</i> or declared as wilderness under the NP&amp;W Act 1974 or as a Wild River</li> <li>• Land gazetted as an Aboriginal Place under the NP&amp;W Act</li> <li>• Land subject to a Conservation Agreement, Plan of Management or Joint Management Agreement under the NP&amp;W Act</li> </ul> <p><i>If yes, then separate approval is required from the Department of Planning, Industry and Environment.</i></p> <p><i>Relevant legislation: National Parks and Wildlife Act 1974, Wilderness Act 1987</i> <i>Relevant authorities: Department of Planning, Industry and Environment</i></p>	No
4.6	<p><b>Is the project / activity located within or likely to affect a:</b></p> <ul style="list-style-type: none"> <li>• Marine Park</li> <li>• Aquatic Reserve</li> </ul> <p><i>Relevant legislation: Marine Parks Act 1997, Fisheries Management Act 1994</i> <i>Relevant authorities: Department of Planning, Industry and Environment, Department of Primary Industries</i></p>	No

Item	Approvals, Licences and Permits required	Yes / No
4.7	<p><b>Will the project / activity involve the dredging or reclamation of land or waters, the interruption, disruption or blocking of fish passage or does it clear or harm marine vegetation, such as seagrass or mangroves?</b></p> <p>If yes, a Part 7 permit is required from DPI Fisheries – unless the work requires a licence from the Department of Industry Lands &amp; Water Division (who will refer it to the Department of Primary Industries).</p> <p><i>Relevant legislation: Fisheries Management Act 1994</i> <i>Relevant authorities: Department of Primary Industries, Department of Industry - Land &amp; Water Division</i></p>	No
4.8	<p><b>Does the project / activity require a "controlled activity" approval for work on waterfront land (within 40-metres from the edge of the bank of watercourses)?</b></p> <p>A controlled activity includes constructing a building or carrying out works, removing material or vegetation by excavation or any other means, depositing material on land or the carrying out of any other activity that affects the quantity or flow of water in a water source?</p> <p>Note: Section 38 of the <i>Water Management (General) Regulation 2011</i> provides for all public authorities (including Council) to be exempt from the need to hold a controlled activity approval. Some site work is proposed for waterfront land. Courtesy notification or consultation with NSW Department of Industry Water should be conducted for significant landform-disturbing works of waterfront land and crossings of watercourses or in navigable waterways. Email <a href="mailto:water.referrals@dpi.nsw.gov.au">water.referrals@dpi.nsw.gov.au</a>.</p> <p><i>Relevant legislation: Water Management Act 2000</i> <i>Relevant authorities: NSW Department of Industry Water</i></p>	No
4.9	<p><b>Will the project / activity involve works comprising a fixed or floating structure in or over navigable waters?</b></p> <p>If yes, then referral and approval is required from Roads and Maritime Services and consultation should be made with Department of Primary Industries</p> <p><i>Relevant legislation: Marine Services Act 1935</i> <i>Relevant authorities: Roads and Maritime Services, Department of Primary Industries</i></p>	No
4.10	<p><b>Is the project / activity located within or likely to affect the 'place' of a 'Heritage Item' identified on the Register of the National Estate, under the NSW Heritage Act, an environmental planning instrument or any other relevant heritage register?</b></p> <p>If yes, the NSW Heritage Council or Council Heritage advisor must be contacted for clarification of the necessary investigations/ actions.</p> <p><i>Relevant legislation: Heritage Act 1977, Gloucester Local Environmental Plan</i> <i>Relevant authorities: NSW Heritage Council, MidCoast Council</i></p>	No

Item	Approvals, Licences and Permits required	Yes / No
4.11	<p><b>Is the project / activity located within or likely to affect a place where a 'Relic' is likely to be discovered (e.g. Archaeological Zoning Plans)?</b></p> <p>If yes, the relevant authority must be contacted for clarification of the necessary investigations / actions.</p> <p><i>Relevant legislation: -</i> <i>Relevant authorities: MidCoast Council Heritage advisor</i></p>	No
4.12	<p><b>Is the project / activity likely to affect or impact an Aboriginal Object, Place or Site of Cultural Significance, access to wild resources important to Aboriginal people or affect an area subject to a pending or finalised Land Claim or Native Title claim or an Indigenous Protected Area?</b></p> <p>If yes, due diligence process must be followed which includes relevant website searches, professional advice and/or follow Council guidelines.</p> <p><i>Relevant legislation: National Parks and Wildlife Act 1974</i> <i>Relevant authorities: Local Aboriginal Land Councils, Department of Planning, Industry and Environment</i></p> <p>A search of the Aboriginal Heritage Information Management System (AHIMS) has been conducted and has identified two (2) Aboriginal sites in or near the reservoir site and reticulation and trunk main vicinity. These sites are not on the main alignment or proposed works areas for the reservoir construction. The AHIMS report is provided in Schedule 2.</p> <p>The due diligence procedure as outlined in the MidCoast Council ACH Guidelines 2018 will be followed during works. Prior to work commencing all contractors will be shown printed material showing photos of local Aboriginal objects. If Aboriginal objects are located during ground disturbance the stop work procedure will be followed. A copy of the due diligence checklist and stop work procedure is available in Schedule 2.</p> <p>No Aboriginal Land Claims are in the vicinity of the works area (Source: <i>Department of Industry - Crown Land, Dubbo, MidCoast LGA ALCs dated July 2018</i>).</p>	No
4.13	<p><b>Is the project located on land that is degraded or contaminated, or degraded or contaminated water (ground or surface)?</b></p> <p>If yes, then Department of Planning, Industry and Environment must be consulted and a Phase 1 Environmental Site Assessment must be completed.</p> <p><i>Relevant legislation: Contaminated Land Management Act 1997</i> <i>Relevant authorities: Department of Planning, Industry and Environment</i></p>	No

Item	Approvals, Licences and Permits required	Yes / No
4.14	<p><b>Is the project / activity located at a site at which naturally occurring asbestos or asbestos containing materials exist?</b></p> <p>If yes, then liaison with MidCoast Council Environmental Health staff, Department of Planning, Industry and Environment and SafeWork NSW is required to determine the appropriate course of action.</p> <p><i>Relevant legislation: -</i>  <i>Relevant authorities: SafeWork NSW, NSW Health, Environment Protection Authority</i></p>	Yes <sup>2</sup>
4.15	<p><b>Does the project / activity generate, handle, store, transport or dispose of:</b></p> <ul style="list-style-type: none"> <li>• Hazardous, industrial or Group A or "controlled" waste? If yes, then Department of Planning, Industry and Environment must be consulted to determine an appropriate course of investigation, action and approval.</li> <li>• Dangerous goods or "Controlled Chemicals"? If yes, then Department of Planning, Industry and Environment must be consulted to determine an appropriate course of investigation, action and approval.</li> <li>• Or otherwise cause land or water contamination? If yes, then Department of Planning, Industry and Environment must be consulted and a Phase 1 Environmental Site Assessment must be completed.</li> </ul> <p><i>Relevant legislation: -</i>  <i>Relevant authorities: Department of Planning, Industry and Environment, Environment Protection Authority, SafeWork NSW</i></p>	No
4.16	<p><b>Will the project / activity discharge "Trade Waste" to the sewer?</b></p> <p>If yes, then MidCoast Council Water Services must be consulted to determine the appropriate action, approval or licensing.</p> <p><i>Relevant legislation: -</i>  <i>Relevant authorities: MidCoast Council Water Services</i></p>	No
4.17	<p><b>Is the project / activity located within or likely to affect a State Forest or area subject to a Forest Agreement?</b></p> <p>If yes, then approval from NSW Forestry Corporation is required.</p> <p><i>Relevant legislation: Forestry Act 1916</i>  <i>Relevant authorities: NSW Forestry Corporation NSW</i></p>	No
4.18	<p><b>Is the project / activity located within or likely to affect Crown Land?</b></p> <p>If yes, approval and/ or an access licence may be required.</p> <p><i>Relevant legislation: Crown Lands Act 1989</i>  <i>Relevant authorities: Department of Industry - Land &amp; Water</i></p>	No

Item	Approvals, Licences and Permits required	Yes / No
4.19	<p><b>Is the project / activity located on a State classified road?</b></p> <p>If yes, then approval or access arrangements from the Roads and Maritime Services is required.</p> <p><i>Relevant legislation: -</i> <i>Relevant authorities: Roads and Maritime Services</i></p>	No
4.20	<p><b>Is the project / activity located on privately-owned land?</b></p> <p>If yes, then approval from the landholder is required.</p> <p><i>Relevant legislation: -</i> <i>Relevant authorities: relevant landowners</i></p> <p>The land subject to the works is owned by or within easements in favour of MidCoast Council.</p>	Yes <sup>3</sup>
4.21	<p><b>Is the project / activity located in the vicinity of buried utilities or above ground utilities?</b></p> <p>Consultation with the utility/ service provider is required i.e. DIAL BEFORE YOU DIG.</p> <p><i>Relevant legislation: Electricity Supply Act, Telecommunications Act</i> <i>Relevant authorities: Energy utilities, Telstra</i></p>	Yes <sup>4</sup>
4.22	<p><b>Will the project / activity conflict with or hinder the operation of a Bush Fire Management Plan or use flames during a Total Fire Ban?</b></p> <p>If yes, consultation with the Rural Fire Service or local Bushfire Management Committee is required.</p> <p><i>Relevant legislation: Rural Fires Act 1997</i> <i>Relevant authorities: Rural Fire Service</i></p>	No
4.23	<p><b>Is the project / activity located in areas of high-risk acid sulfate soils?</b></p> <p>If yes, the project / activity must not proceed in the absence of an ASS management plan.</p> <p><i>Relevant legislation: Local Environmental Plans</i> <i>Relevant authorities: MidCoast Council</i></p>	No
4.24	<p><b>Does the project / activity clear, harm or remove areas of remnant native vegetation, native vegetation or protected regrowth?</b></p> <p><i>Relevant legislation: Local Land Services Act 2013, Local Land Services Amendment Act 2016, Biodiversity Conservation Act 2016, Roads Act 1993</i> <i>Relevant authorities: Hunter Local Land Services, Department of Planning, Industry and Environment</i></p>	Yes <sup>5</sup>

Item	Approvals, Licences and Permits required	Yes / No
4.25	<p><b>Is the project / activity not permissible under the <i>Local Government Act 1993</i>?</b></p> <p>If yes, the project / activity cannot proceed as it is not legally permissible.</p> <p><b>Is the project / activity located on land identified as community land?</b></p> <p>If yes, the permissibility of the project / activity needs to be confirmed.</p> <p><i>Relevant legislation: Local Government Act 1993</i>  <i>Relevant authorities: MidCoast Council</i></p>	No
4.26	<p><b>Are there any other known Approvals, Licences or Permits that are required for the project / activity?</b></p> <p>If yes, such Approvals, Licences or Permits need to be sought.</p>	No

1. A threatened species assessment has been undertaken for the project to determine the type, nature and significance of impacts of the project / activity on threatened biodiversity. This is presented in s6 of this REF,
2. Some of the built assets that are to be decommissioned may contain asbestos. The 100mm existing main that is to be upgraded that is within the verge of The Bucketts Way, between Cemetery Road and Jacks Road is asbestos coated. Appropriate identification, handling and disposal of all asbestos material is required and will need to be managed through the development and application of specific waste management plans for each relevant activity. Review of MidCoast Council IntraMaps and the NSW Government Resources and Geoscience Database indicates no known potential regions of low, medium or high risk naturally occurring asbestos.
3. Part of the project / activity is located within an existing MidCoast Council easement. The landowner will be consulted on the works to be completed within the easement. .
4. The works will be located in the vicinity of underground and above ground utilities and appropriate avoidance, management or reinstatement of such services is required, in concert with the relevant authorities, and
5. The construction of the new reservoirs will clear native vegetation from an area of 68-metres by 34-metres (2,312m<sup>2</sup>) within the SP2 – Infrastructure zone of the Babbler Reserve area. For this REF, all vegetation in this zone is assumed to be removed, which is part of the wider remnant forest of the reserve. The clearing would affect the following trees (greater than 15cm trunk diameter):
  - Rough-barked Apple – 14 trees (trunk diameters of 15cm, 15cm, 15cm, 15cm, 15cm, 15cm, 15cm, 15cm, 15cm, 20cm, 20cm, 25cm and 25cm)
  - Grey Ironbark – 8 trees (trunk diameters of 15cm, 15cm, 15cm, 20cm, 30cm, 30cm, 30cm and 40cm)
  - Spotted Gum – 4 trees (trunk diameter 30cm, 40cm, 50cm and 50cm).

As such, the clearing for the new reservoirs will remove 26 trees, with trunk diameters ranging from 15 to 50cm and average trunk diameters of 22.6cm.

No hollow-bearing trees will be removed and none of the Forest Oaks present indicated feeding activity by Glossy Black-cockatoos. No Grey-crowned Babblers nests occur in the clearing area but are present in very close proximity. The habitat to be removed constitutes an area utilised by a local family of the Grey-crowned Babbler. None of the trees to be removed are local preferred koala food tree species. Some fallen timber occurs in the clearing area and there are some whitewash droppings which may indicate some perching use by Babblers. The clearing is permitted, with the approval conferred by the Part 5 Assessment process.

<b>Can the project proceed under Part 5</b>	<b>Yes</b>
<p><b>What statutory matters need to be further considered or approved following consideration in this section of the REF:</b></p> <ul style="list-style-type: none"> <li>• Appropriate waste management plans need to be developed for the handling and disposal of asbestos material in assets to be removed / demolished,</li> <li>• Consultation is required with the landholder of the private land through which the mains are proposed from the Gloucester WTP to Showground Lane within an existing MidCoast Council easement, and</li> <li>• Appropriate techniques are required to identify and protect or otherwise manage above and below ground utilities – eg. Dial before you dig</li> </ul>	

## Section 5. Environmental impact assessment

<b>PHYSICAL FACTORS</b>	<b>Is there a negative impact? Yes / No</b>	<b>If there is a negative impact, what are the impacts, what is the severity and how can the impacts be avoided or minimised?</b>	<b>Is the issue significant?  Is further assessment required?</b>
Disturbs the topography or above or below ground features including filling, excavation, dredging and tunnelling or involves the deposition of large quantities of spoil/ fill.	Yes	<p>Several aspects of the project / activity include landform modifications, including site levelling for footings and underground works at the new reservoir site, trenching and back-filling for the laying of new mains and works at decommissioning sites.</p> <p>These landform modification works are mainly confined to modified landscapes and are all minor works. Trenched areas will be backfilled and stabilised. Burden created by the under-bore will be adequately handled and disposed. Adequate sediment and erosion controls will be deployed.</p>	No
Affects a natural waterway, wetland or groundwater aquifer or the natural drainage pattern; affects the quality or quantity of water in the systems.	Yes	<p>There is some potential for the work to impact local water quality through sedimentation during the construction process. The works will excavate and expose soils and machinery fuels and oils may be spilled from construction machinery. These risks are minor and can be managed through effective sediment and erosion controls and pollution controls.</p> <p>The works do not affect water flows in any appreciable or meaningful way.</p>	No
Disturbs acid sulfate soil or contaminated land in a manner that may cause the liberation of pollutants and contaminants that may harm the environment.	No	-	No
Uses groundwater or surface water from a natural waterbody; stores water in a dam or artificial waterbody.	Yes	The project establishes a new storage facility for extracted riverine water for domestic supply. This water is obtained under appropriate existing licensing and does not substantially increase the extraction of water from the natural environment such that the riverine environment and dependent ecosystems are likely to be affected.	No
Changes the flood or tidal regimes or is potentially affected by flooding or tides.	No	-	No

<b>PHYSICAL FACTORS</b>	<b>Is there a negative impact?</b>  <b>Yes / No</b>	<b>If there is a negative impact, what are the impacts, what is the severity and how can the impacts be avoided or minimised?</b>	<b>Is the issue significant?</b>  <b>Is further assessment required?</b>
Directly or indirectly pollutes or contaminates watercourses, wetlands, drains or groundwater.	Yes	There is some potential for the work to impact local gullies, creeks and eventually the receiving Gloucester River through sedimentation during the construction process. The works will excavate and expose soils and machinery fuels and oils may be spilled from construction machinery. These risks are minor and can be managed through effective sediment and erosion controls and pollution controls	No
Uses, stores, disposes or transports hazardous substances or chemicals that may accumulate in the environment (flammable, explosive, toxic, radioactive, carcinogenic or mutagenic substances).	Yes	A building for chlorine dosing of the waters in the new reservoirs is proposed. This will be appropriately secure and will be designed to protect the environment as required (eg. bunding, etc.)	No
Generates or disposes of gaseous, liquid or solid waste (industrial, medical or domestic waste, sewage, sludge or effluent, spoil or overburden); generates or disposes hazardous waste.	Yes	The work involves the demolition and decommissioning of existing aged assets, including the Ravenshaw Street reservoir and existing under-sized and ageing mains. As such, a considerable volume of demolition / building waste will be produced. This waste can contain products containing asbestos. Demolition and / or waste management plans will be prepared prior to the decommissioning works, which will evaluate the quantity and types of waste to be generated, outline its safe handling and management and direct its appropriate re-use or disposal. Re-use and recycling of materials will be undertaken where possible. All wastes will be lawfully and safely handled and disposed.	No
Generates greenhouse gas emissions or leads to the release of chemicals which may affect the ozone layer or are precursors to photochemical smog.	Yes	There will be minor greenhouse gas emissions from machinery associated with the project and from the minor clearing of remnant native vegetation (containing sequestered carbon). The short duration of the construction will mean that such emissions are negligible. The work does not release significant volumes of sequestered carbon because only small areas of existing trees are to be removed. The booster pump to elevate the potable water will not release significant volumes of greenhouse gases (as part of electricity generated to power the pump) and be subject to regular maintenance (as per supplier instructions) to ensure it functions as designed.	No

PHYSICAL FACTORS	Is there a negative impact? Yes / No	If there is a negative impact, what are the impacts, what is the severity and how can the impacts be avoided or minimised?	Is the issue significant?  Is further assessment required?
Generates or emits dust, fumes or odours, particularly in the proximity of residential areas or other land-uses likely to be susceptible to impact.	Yes	<p>There will be generation of dust and possibly exhaust fumes and odours during the construction process. Protective safeguards will be deployed to avoid nuisance or other impacts associated with wind-blown dust, fumes or odours during construction.</p> <p>There will be dust from the demolition process, including cement dusts. These will be minimised and managed with operational controls.</p> <p>No dust generation, odours or fumes will be emitted during operation of the booster pump, which will be electric and not diesel or petrol-powered.</p>	No
Generates noise, particularly in the proximity of residential areas or other land-uses likely to be susceptible to impact.	Yes	<p>There will be generation of noise during the works process, including demolition. All activities will be restricted to normal working hours and plant and equipment will comply with the applicable legislation.</p> <p>Pumps will be housed inside a brick building once operational and will be distant from sensitive receptors.</p>	No
Generates noise outside standard working hours that may affect surrounding landholders and uses.	No	-	No
Generates vibration, blasts, electromagnetic fields or radiation, particularly in the proximity of residential areas or other land-uses likely to be susceptible to impact.	Yes	Vibration associated with machinery working on site will be experienced during construction and demolition. Nuisance or negative impacts of vibration will be monitored and measures will be identified and deployed to avoid vibration at harmful or nuisance levels. Pumps will be housed inside a brick building once operational and vibration impact is deemed negligible during operation.	No
Any other physical matters	No	-	No

<b>BIOLOGICAL FACTORS</b>	<b>Is there a negative impact?</b> <b>Yes / No</b>	<b>If there is a negative impact, what are the impacts, what is the severity and how can the impacts be avoided or minimised?</b>	<b>Is the issue significant?</b>  <b>Is further assessment required?</b>
Clears or modifies native vegetation (including trees, shrubs, grasses, herbs and aquatic vegetation)	Yes	<p>The construction of the new reservoir will clear native vegetation from 2,312m<sup>2</sup> of land and remove 26 trees with a trunk diameter ranging from 15cm to 50cm. The clearing has been minimised and is confined to the SP2 – Infrastructure zoned part of the Cemetery Road site. This zone is demarcated / different from the E2 zone of the remainder of the Reserve and such expansion of the water facilities was envisaged in the planning scheme.</p> <p>No trees or native vegetation requires removal for the mains installation or reservoir decommissioning work.</p> <p>The clearing does not affect known hollow-bearing trees, threatened species food trees, Grey-crowned Babbler nests or other highly significant features. The negative residual effects of the clearing will be offset through local plantings and enhanced Reserve management such that biodiversity is protected.</p>	No
Displaces or disturbs fauna (terrestrial or aquatic) or their habitats	Yes	<p>The work will remove an area of dry forest / woodland habitat of 2,312m<sup>2</sup>. The extent of this loss is unavoidable in order to meet project objectives. Clearing protocols, such as supervision, will be implemented and residual impacts will be offset through plantings and enhancement of habitat.</p>	No
Fragments or blocks wildlife movement corridors	No	-	No
Introduces priority weeds, vermin, feral species or diseases or releases genetically modified organisms	Yes	<p>There are minor risks associated with the introduction of weed propagules in the movement of construction equipment. This is to be managed by the adoption of protocols and follow-up weed control and management.</p>	No
Undertakes activity which affects revegetation or replenishment of native species following disturbance	No	-	No

<b>BIOLOGICAL FACTORS</b>	<b>Is there a negative impact? Yes / No</b>	<b>If there is a negative impact, what are the impacts, what is the severity and how can the impacts be avoided or minimised?</b>	<b>Is the issue significant?  Is further assessment required?</b>
Introduces high bushfire risk factors or changes the fire regime	No	-	No
Any other biological issues	No	-	No

<b>RESOURCE FACTORS</b>	<b>Is there a negative impact? Yes / No</b>	<b>If there is a negative impact, what are the impacts, what is the severity and how can the impacts be avoided or minimised?</b>	<b>Is the issue significant?  Is further assessment required?</b>
Uses or results in the use of community services or infrastructure including roads, power, water, drainage, waste management, education, medical, social services	Yes	It is unavoidable that the project will result in the use of community infrastructure as well as power and water. Local roads may experience elevated activity and construction traffic. Traffic control management plans will be prepared where required. This project will result in the substantial and beneficial upgrade of community water networks and services. This includes enhanced water storage and pressure to residents, including sensitive receptors, such as the local hospital. Measures to ensure community access to water during the construction work will be ensured.	No
Substantially uses or results in the significant use of natural resources including water (ground or surface), fuels, timber, extractive material, minerals, prime agricultural land, especially those that are likely to become in short supply in the future.	No	-	No
Affects future potential of commercial deposits of minerals or extractive material or areas important for fishing, agriculture or forestry	No	-	No

<b>RESOURCE FACTORS</b>	<b>Is there a negative impact? Yes / No</b>	<b>If there is a negative impact, what are the impacts, what is the severity and how can the impacts be avoided or minimised?</b>	<b>Is the issue significant?  Is further assessment required?</b>
Changes the demographics of an area	No	-	No
Changes the transport requirements of an area	No	-	No
Creates a new route alignment for the provision of infrastructure (eg. rail, roads, power)	No	-	No
Any other resource issues	No	-	No

<b>COMMUNITY FACTORS</b>	<b>Is there a negative impact? Yes / No</b>	<b>If there is a negative impact, what are the impacts, what is the severity and how can the impacts be avoided or minimised?</b>	<b>Is the issue significant?  Is further assessment required?</b>
Generates significant population movements including influx or departure of workforce	Yes	There is likely to be generation of construction traffic during the work, but this will be short term and unlikely to be significantly disruptive to the local community.	No
Changes the workforce or industry structure of the area/ region; affects employment opportunities	No	-	No
Affects areas of high population densities or established development patterns	No	-	No

<b>COMMUNITY FACTORS</b>	<b>Is there a negative impact? Yes / No</b>	<b>If there is a negative impact, what are the impacts, what is the severity and how can the impacts be avoided or minimised?</b>	<b>Is the issue significant?  Is further assessment required?</b>
Affects or restricts local transport patterns	Yes	There is likely to be generation of construction traffic during the work, but this will be short term and unlikely to be significantly disruptive to local transport patterns. Traffic management plans will be prepared and implemented, as required.	No

COMMUNITY FACTORS	Is there a negative impact? Yes / No	If there is a negative impact, what are the impacts, what is the severity and how can the impacts be avoided or minimised?	Is the issue significant?  Is further assessment required?
<p>Affects an area, building or item of aesthetic, anthropological, archaeological, architectural, historic, Aboriginal, cultural, scientific, recreational, or social significance or other special value for present or future generations; or access to any such areas</p>	<p>Yes</p>	<p>The works affects part of the Cemetery Road Council Reserve (Babbler Reserve) which is a special and valuable area for the community for biological purposes (grey-crowned babbler preservation). However, the biodiversity impacts are strictly minimised and confined to the area identified and zoned for infrastructure purposes (SP2 zone).</p> <p>The work includes construction of a new rising main through roadside areas, which may be used by the community for social or recreational purposes (such as walking, cycling, etc). Disruption will be controlled and minimised and operate only during the short construction period only.</p> <p>No known areas or items of Aboriginal cultural heritage would be modified or affected for the project / activity and the best practice guidelines for Aboriginal cultural heritage will be implemented.</p> <p>The works are located near to the Gloucester Cemetery and special provisions will need to be identified and deployed to ensure that the work does not disrupt funeral services, burials and remembrances.</p> <p>The Tyrell Street Reservoir is a local heritage item and while it will be de-commissioned it will be retained and managed for its heritage values. This will actually enhance its promotion and use for these heritage values.</p> <p>Other local heritage items in the vicinity of the work sites will not be impacted.</p> <p>A visual impact assessment has been provided in Schedule 3 of this REF. The tallest of the two new reservoirs will be painted pale eucalypt green in colour and is largely screened by existing trees. The visual impact assessment concluded that significant aesthetic impacts will not result from the project / activity.</p>	<p>No</p>

COMMUNITY FACTORS	Is there a negative impact? Yes / No	If there is a negative impact, what are the impacts, what is the severity and how can the impacts be avoided or minimised?	Is the issue significant?  Is further assessment required?
Affects the visual or scenic landscape	Yes	<p>There will be clearing of the required vegetation to facilitate the construction of the new reservoirs. The clearing will be kept to the minimum required to facilitate the construction, whilst maintaining the existing vegetation screening currently located at the site. There is already a 1.5ML reservoir located on site which is visible from residential properties. Although there will be an impact to the visual landscape by the addition of the new reservoirs, this location is already used for this purpose with surrounding residents living nearby and within sight distance of the existing concrete Cemetery Road reservoir. A significant visual impact arising from the new reservoirs is not anticipated due to the above factors. A visual impact assessment has been provided in Schedule 3 of this REF.</p> <p>The existing Ravenshaw Street reservoir will be decommissioned and removed, with the land to be rezoned and used for an alternative purpose. This will be determined by Council as part of the development of a new MidCoast Local Environmental Plan and appropriate consultation with the community. It is deemed this purpose will improve the visual/scenic landscape of the parcel of land.</p> <p>The visual landscape of the alignment of the new trunk rising main will be impacted only during construction. Once the main is installed, the work footprint will be stabilised and reinstated as per its' current amenity. Existing significant street trees will be preserved.</p>	No
Affects sunlight or views of another property	Yes	<p>There is potential that the reservoirs will be visible from nearby properties. Given that there is already an existing concrete reservoir at the project location within potential view of properties, combined with the screening due to the vegetation on site and the management technique to be implemented comprising minimal clearing, the impact is deemed inconsequential. A visual impact assessment has been provided in Schedule 3 of this REF.</p>	No

<b>COMMUNITY FACTORS</b>	<b>Is there a negative impact? Yes / No</b>	<b>If there is a negative impact, what are the impacts, what is the severity and how can the impacts be avoided or minimised?</b>	<b>Is the issue significant?  Is further assessment required?</b>
Affects the amenity of publicly owned land	Yes	Please refer to the discussion of local amenity above. No unreasonable or significant amenity impacts are predicted.	No
Changes land use from the surrounding uses as a result of the activity; forms a barrier to movement within the community or access to existing properties; leads to a loss of housing	No	-	No
Generates a significant volume of traffic	No	-	No
Generates nuisance or health or safety risks	Yes	As a construction works project, there are nuisance and public and work health and safety risks. These will be appropriately managed according to work health and safety legislation, procedures and guidelines. All asbestos materials will be identified, handled and appropriately disposed to protect worker and community health. Appropriate safe work method statements or similar and risk management will be implemented.	No
Creates a potential financial loss to members of the community	No	-	No
Any other impacts on a community	No	-	No

<b>CUMULATIVE FACTORS</b>	<b>Is there a negative impact? Yes / No</b>	<b>If there is a negative impact, what are the impacts, what is the severity and how can the impacts be avoided or minimised?</b>	<b>Is the issue significant?  Is further assessment required?</b>
Causes a cumulative environmental effect with other existing or likely future activities	No	-	No

Reduces the range of beneficial uses of the environment or the ability of the environment to provide ecosystem service values	No	-	No
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Projects with outstanding significant issues require further assessment or the revising of that project / activity to reduce the scale of environmental risks or threats. Where the project is modified, a revised REF must be prepared.

This project has **nil (0)** outstanding significant risks. The project / activity can be positively determined.

## Section 6. s228 Factors Analysis

Clause 228 (2) of the *Environmental Planning and Assessment Regulation 2000* outlines the factors to be taken into account when considering the impact of an activity on the environment under Division 5.1 of the *Environmental Planning and Assessment Act 1979*, which are addressed in the table below.

Impacts are classified as follows:

- Negative:** means that the activity has an overall detrimental effect on the environment.
- Nil:** means that there is neither a detrimental nor beneficial effect on the environment by the activity.
- Positive:** means that the overall effect on the environment is beneficial.

Factor	Impact
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Factor	Impact
<p><i>a. Any environmental impact on a community?</i></p> <p>Section 5 of this REF explores the range, types and severity of environmental impacts of the project / activity. The REF has identified short-term impacts during construction associated with:</p> <ul style="list-style-type: none"> <li>• Impacts on landforms,</li> <li>• Impacts to local water quality from sediments and other pollutants,</li> <li>• Generates waste (including asbestos waste),</li> <li>• Generates greenhouse gas emissions,</li> <li>• Generates dust, fumes or odours,</li> <li>• Generates noise,</li> <li>• Generates vibrations,</li> <li>• Creates a risk of introduction of weeds and plant pathogens,</li> <li>• Uses local roads, power, water, drains and waste management services,</li> <li>• Generates workforce movements,</li> <li>• Affects local transport patterns,</li> <li>• Potentially disrupts cemetery activities,</li> <li>• Changes the amenity of roadside areas, and</li> <li>• Generates nuisance and / or health and safety risks to workers and the community</li> </ul> <p>It has also identified permanent impacts associated with:</p> <ul style="list-style-type: none"> <li>• Impacts on landforms,</li> <li>• Handles chemicals (chlorine) that may pollute the environment,</li> <li>• Clears an area of native vegetation and wildlife habitat, and</li> <li>• Changes the visual landscape of the Cemetery Road subject site.</li> </ul> <p>The REF concludes that environmental impacts are within acceptable limits, satisfactorily minimised or compensated or otherwise unavoidable in order to deliver the intended water supply network improvements. There are environmental impacts, but these are minor and acceptable. Protective safeguards will be deployed.</p>	<p>Negative (minor)</p>
<p><i>b. Any transformation of a locality?</i></p> <p>This project / activity does not transform the locality.</p>	<p>Nil</p>

Factor	Impact
<p><i>c. Any environmental impact on the ecosystems of the locality?</i></p> <p>The construction of the new reservoir will clear native vegetation from 2,312m<sup>2</sup> of land and remove 26 trees with a trunk diameter ranging from 15cm to 50cm. The clearing has been minimised and is confined to the SP2 – Infrastructure zoned part of the Cemetery Road site. This zone is demarcated / different from the E2 zone of the remainder of the Reserve and such expansion of the water facilities was envisaged in the planning scheme.</p> <p>No trees or native vegetation requires removal for the mains installation or reservoir decommissioning work.</p> <p>The clearing does not affect known hollow-bearing trees, threatened species food trees, Grey-crowned Babbler nests or other highly significant features. The negative residual effects of the clearing will be offset through local plantings and enhanced Reserve management such that biodiversity is protected.</p> <p>The clearing of certain ecosystems is relatively small in total area and will be offset by compensatory measures, such as replanting and ecosystem health improvements in the Babbler Reserve.</p>	<p>Negative (minor)</p>
<p><i>d. Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?</i></p> <p>This REF has identified that there will be some minor, temporary disruptions to recreational activities (walking, cycling) in the community at the site of each work. This is very minor and short-term only. Similarly, during the construction, there will be impacts to the visual amenity of each work site, but the landform will be restored to the same or better visual standard post-construction through site stabilisation and landscaping. The environmental impacts of the work have been discussed above.</p> <p>A visual impact assessment has been conducted in this REF, which indicates that the lasting impacts of the new reservoir structures is minimal, particularly to sensitive receptors. This is due to the positive influence of existing trees on screening, the use of a natural colour for the taller of the new reserve structures, the general remoteness of the Cemetery Road subject site and the fact that the site contains an existing reservoir and communication tower. The project / activity does not introduce a new visual impact that is inappropriate or unreasonable.</p>	<p>Negative (minor), temporary during construction</p> <p>Negative (minor) permanent in the long term</p>

Factor	Impact
<p><i>e. Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?</i></p> <p>The impacts of the project / activity on aesthetics (visual amenity) is discussed above.</p> <p>The project / activity does affect a local heritage item, namely Tyrell Street Reservoir. However, the de-commissioning of this reservoir and its subsequent retention allows the asset to be better utilised for heritage conservation and promotion.</p> <p>The project / activity would not impact on any known Aboriginal heritage items and appropriate controls / safeguards would be implemented for unexpected finds management.</p>	<p>Nil</p>
<p><i>f. Any impact on the habitat of protected fauna (within the meaning of the National Parks and Wildlife Act 1974)?</i></p> <p>The clearing of 2,312m<sup>2</sup> of native vegetation will marginally reduce the area of habitat available to populations of native fauna. The actual clearing process may be associated with risks of physical harm and injury to fauna present in the clearing area (although no known nesting sites, hollow-bearing trees or other significant wildlife habitats will be impacted). Clearing has been strictly minimised and will be offset in accordance with MidCoast Council's offsetting procedures (planting of trees and shrubs, enhancement of local bushland). This will provide neutral or enhanced habitat outcomes for native fauna over time.</p>	<p>Negative (minor)</p>
<p><i>g. Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?</i></p> <p>The project is not expected to endanger the local presence of any native animal or plant, or other form of life.</p>	<p>Nil</p>
<p><i>h. Any long-term effects on the environment?</i></p> <p>There are not expected to be any significant or unreasonable long-term effects on the environment.</p>	<p>Nil</p>

Factor	Impact
<p><i>i. Any degradation of the quality of the environment?</i></p> <p>There is potential for temporary degradation of the quality of the environment during construction and demolition through landform, soil, biodiversity, air quality, water quality, aesthetic / visual landscape and traffic / access impacts. These impacts would be managed through the implementation of mitigation measures detailed in this REF. Significant or unreasonable impacts will be avoided.</p>	<p>Negative (minor), temporary</p> <p>Nil in the long term</p>
<p><i>j. Any risk to the safety of the environment?</i></p> <p>The project / activity would pose minimal risk to the safety of the environment during construction and demolition. These risks will be appropriately managed via the adopted risk management framework of Council and its contractors and by following safe work methods, at all times.</p>	<p>Negative (minor)</p>
<p><i>k. Any reduction in the range of beneficial uses of the environment?</i></p> <p>There are no expected reductions in the beneficial uses of the environment.</p>	<p>Nil</p>
<p><i>l. Any pollution of the environment?</i></p> <p>The project / activity would result in minor temporary air, vibration and noise pollution from plant and machinery as well as water pollution risks (sedimentation during construction; chlorine handling during operation). Management of pollution risk would be carried out in accordance with the management measures detailed in this REF.</p>	<p>Negative (minor)</p>
<p><i>m. Any environmental problems associated with the disposal of waste?</i></p> <p>The project / activity would involve the removal and disposal of waste including demolition waste and spoil, which would be adequately managed in accordance with the procedures outlined in this REF. All asbestos materials generated from the project / activity will be handled and disposed appropriately to ensure human and environmental health is protected. Waste would be reused or recycled, wherever possible.</p>	<p>Negative (minor), temporary</p>
<p><i>n. Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?</i></p> <p>All resources required for the project / activity are readily available and are not in short supply. Resource use will be minimised and sustainably sourced materials will be procured where available.</p>	<p>Nil</p>

Factor	Impact
<p><i>o. Any cumulative environmental effect with other existing or likely future activities?</i></p> <p>This REF has considered the issue of cumulative impacts. While the project / activity marginally contributes to the ongoing, incremental loss of native vegetation in this locality, offset measures are proposed to negate this pressure. The project / activity contributes to the progressive changing of the visual landscape of Gloucester but not in any significant or obtrusive manner. No other cumulative effects of the project / activity are envisaged.</p>	<p>Negative (minor)</p>
<p><i>p. Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?</i></p> <p>Gloucester is not located within a coastal area.</p>	<p>Nil</p>

## Section 7. Flora and Fauna Assessment

A search of the BioNet records for the study locality has identified the recorded sightings of twenty-six (26) listed species (see list below), comprising twelve (12) species of mammals, no (0) species of frog, no (0) species of reptile, nine (9) species of birds and five (5) species of plants.

Threatened Species	Scientific Name	Number of Local Records
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	2
Brush-tailed Phascogale	<i>Phascogale tapoatafa</i>	4
Koala	<i>Phascolarctos cinereus</i>	24
Squirrel Glider	<i>Petaurus norfolcensis</i>	2
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	7
Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	1
Eastern Coastal Free-tailed Bat	<i>Micronomus norfolkensis</i>	3
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	1
Southern Myotis	<i>Myotis macropus</i>	1
Greater Broad-nosed-bat	<i>Scoteanax rueppellii</i>	1
Little Bent-winged Bat	<i>Miniopterus australis</i>	1
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	1
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	17
Spotted Harrier	<i>Circus assimilis</i>	1
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	1
Wompoo Fruit-dove	<i>Ptilinopus magnificus</i>	1
Glossy Black-Cockatoo	<i>Calyptorhynchus lathami</i>	1
Powerful Owl	<i>Ninox strenua</i>	1
White-throated Needletail <sup>EPBC only</sup>	<i>Hirundapus caudacutus</i>	1
Brown Treecreeper	<i>Climacteris picumnus victoriae</i>	1
Grey-crowned Babbler	<i>Pomatostomus temporalis temporalis</i>	24
Trailing Woodruff	<i>Asperula asthenes</i>	1
White-flowered Wax-plant	<i>Cynanchum elegans</i>	1
Slaty Red Gum	<i>Eucalyptus glaucina</i>	1
Craven Grey Box	<i>Eucalyptus largeana</i>	3
Scant Pomaderris	<i>Pomaderris queenslandica</i>	2

Data from the BioNet BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions.

Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1Å°; ^^ rounded to 0.01Å°). Report generated on 08/07/2020.

In addition to the above, the following threatened species have a potential occurrence in the subject site based on consideration of their natural range and availability of habitat on site that matches the species' habitat preferences:

- Eastern False Pipistrelle *Falsistrellus tasmaniensis*
- Little Lorikeet *Glossopsitta pusilla*
- Varied Sitella *Daphoenositta chrysoptera*
- Dusky Woodswallow *Artamus cyanopterus*
- Leafless Tongue Orchid *Cryptostylis hunteriana*

Two Endangered Ecological Communities (EEC) are identified in the area of the project / activity, namely:

- River-flat Eucalypt Forest on Coastal Floodplains
- Lowland Rainforest

In considering the project / activity, a preliminary assessment of the type, nature and significance of impacts on local or potential threatened biodiversity (and thus an analysis of the need for assessment via the 5-part test) has been undertaken and this is presented below:

Threatened Biodiversity	Preliminary analysis of likelihood of occurrence and impacts
Spotted-tailed Quoll	This species is not reasonably expected due to the isolation and small-size of the reserve. It requires large areas of habitat in expansive home ranges. It is not considered a potential subject species and is not subject to a 5-part test.
Brush-tailed Phascogale	This species may occur as suitable habitat is present in the Babbler Reserve and there are local records from similar environs. It is considered a potential subject species.
Koala	The Reserve does contain some locally preferred food tree species, but these are not extensive and there are no local records in proximity to the site in recent times. Local koalas appear to be more confined on the Mograni and Bucketts Ranges and their footslopes. It is not a potential subject species.
Squirrel Glider	This species may occur as suitable habitat is present in the Babbler Reserve and there are local records from similar environs. It is considered a potential subject species.
Grey-headed Flying-fox	The Babbler Reserve and street trees provide a feeding resource for this species in the locality, but there is no evidence to suggest that these areas are significant foraging area, when compared to the extent of available habitat. It is not a potential subject species.
Yellow-bellied Sheath-tail-bat	This species may roost in the Babbler Reserve in some of the trees with hollows and forage in and near the site of the works. It is a potential subject species.
Eastern False Pipistrelle	This species may roost in the Babbler Reserve in some of the trees with hollows and forage in and near the site of the works. It is a potential subject species.

Threatened Biodiversity	Preliminary analysis of likelihood of occurrence and impacts
Eastern Coastal Freetail-bat	This species may roost in the Babbler Reserve in some of the trees with hollows and forage in and near the site of the works. It is a potential subject species.
Large-eared Pied Bat	This species generally roosts in caves, mines and tunnels, which are not present in the area of the project / activity. It is not a potential subject species.
Southern Myotis	This species has some potential to roost in structures associated with the existing reservoirs and may forage in areas of habitat in which work is located. It is a potential subject species.
Greater Broadnosed-bat	This species may roost in the Babbler Reserve in some of the trees with hollows and forage in and near the site of the works. It is a potential subject species.
Little Bentwing-bat	This species has some potential to roost in structures associated with the existing reservoirs and may forage in areas of habitat in which work is located. It is a potential subject species.
Large Bentwing-bat	This species has some potential to roost in structures associated with the existing reservoirs and may forage in areas of habitat in which work is located. It is a potential subject species.
Black-necked Stork	Suitable habitat for this species will not be impacted by any aspect of the project / activity. It is not considered a potential subject species.
Spotted Harrier	It requires large areas of habitat in expansive ranges. It is not considered a potential subject species and is not subject to a 5-part test.
White-bellied Sea-Eagle	This species is not expected to rely on the habitats of the project / activity. It is not a potential subject species.
Little Lorikeet	The woodland habitats of the Reserve provide suitable habitat. It is considered a potential subject species.
Wompoo Fruit-dove	No rainforests or extensive bands of fruit-bearing plants occur in the area of the project. It is not a potential subject species.
Glossy Black-Cockatoo	No large hollows suitable for breeding and no evidence of feeding of this species was observed despite targeted searches. It is not a potential subject species.
Powerful Owl	It requires large areas of habitat in expansive home ranges. It is not considered a potential subject species and is not subject to a 5-part test.
White-throated Needletail	This species is not likely to be impacted by the activities associated with the proposal. It is not a potential subject species.
Brown Treecreeper	The woodland habitats of the Reserve provide suitable habitat. It is considered a potential subject species.

Threatened Biodiversity	Preliminary analysis of likelihood of occurrence and impacts
Varied Sitella	The woodland habitats of the Reserve provide suitable habitat. It is considered a potential subject species.
Grey-crowned Babbler	This species was recorded on site and important habitat occurs on and near the area of the project / activity. It is subject to a 5-part test.
Dusky Woodswallow	This species is not likely to be impacted by the activities associated with the proposal. It is not a potential subject species.
<i>Asperula asthenes</i>	Suitable habitat for this species do not occur in the area of the proposed works. It is not a potential subject species.
<i>Cynanchum elegans</i>	No dry rainforest habitat, for which this species prefers, is impacted by any aspect of the proposed work. It is not a potential subject species.
<i>Cryptostylis hunteriana</i>	There are no local records of this species and the area of habitat is considered sub-optimal. It is not a potential subject species.
<i>Eucalyptus glaucina</i>	This species was not identified despite targeted searches. It is not considered a potential subject species.
<i>Eucalyptus largeana</i>	This species was not identified despite targeted searches. It is not considered a potential subject species.
<i>Pomaderris queenslandica</i>	Potentially suitable habitat for this species does not occur. It is not a potential subject species.
Riverflat Eucalypt Floodplain Forest	The only occurrences of this type in the area of the project / activity is along the riparian zone of the Gloucester River, which is to be preserved through the application of an under-bore. It is not a candidate ecosystem type for this assessment.
Lowland Rainforest	Minor occurrences of this type flank a drainage line in the private property near the existing Gloucester WTP. This occurrence is not impacted by the work. It is not a candidate ecosystem type for this assessment.

The following thirteen (13) threatened fauna species have been identified as requiring further analysis via the 5-part test of significance:

- **Hollow-dependent arboreal mammals:**
  - brush-tailed phascogale
  - squirrel glider
  
- **Microchiropteran bats that roost in tree hollows:**
  - yellow-bellied sheath-tail-bat
  - eastern false pipistrelle
  - eastern coastal freetail-bat
  - greater broad-nosed-bat
  
- **Microchiropteran bats that roost in tunnels and caves:**
  - southern myotis
  - large bentwing-bat
  - little bentwing-bat
  
- **Woodland birds:**
  - little lorikeet
  - brown treecreeper
  - varied sittella
  
- **Grey-crowned Babbler**

The 5-part tests are documented below:

Factors	Comments	SIS Required
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Factors	Comments	SIS Required
<p><i>(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction</i></p>	<p>The proposed activity is not expected to harm the lifecycles of local threatened species such that the species is at risk of local extinction.</p> <p>The project / activity removes only 2,312m<sup>2</sup> of dry grassy woodland / forest in an area zoned SP2 Infrastructure and removes only 26 separate trees. Trees to be removed are not hollow-bearing or over-mature specimens.</p> <p>Whilst the clearing work does marginally reduce the area of habitat for lifecycle purposes, it is not considered a significant area of local habitat when compared to the available resources. Compensatory plantings and habitat enhancement is proposed to further offset residual impacts.</p> <p>Further, the works do not alter foraging and roosting opportunities for any of the potential subject species, which will be expected to continue to use the wider area for lifecycle purposes. The work does not significantly alter behavioural patterns of local threatened species.</p> <p>No hollow-bearing trees or known nesting sites or other significant habitats are being removed. The works also do not alter current human usage patterns of this area; and thus do not cause or worsen disturbance effects on native wildlife. No threatened flora species occupy the area of clearing that is proposed, based on the results of a targeted field inspection.</p> <p>The grey-crowned babbler is considered most at risk from life cycle impacts, but avoidance and operational controls to avoid nesting activities as well as habitat enhancements to offset losses, means that this species is expected to persist in the locality post-completion of the construction and during the operation of the activity.</p> <p>As such, no local threatened species are likely to be threatened with extinction as a consequence of this proposal.</p>	<p>No</p>

Factors	Comments	SIS Required
<p><i>(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:</i></p> <p><i>(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or</i></p> <p><i>(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,</i></p>	<p>The works are not located in any area of endangered ecological communities and will not indirectly impact any areas of endangered ecological communities.</p>	<p>No</p>

Factors	Comments	SIS Required
<p><i>(c) in relation to the habitat of a threatened species or ecological community:</i></p> <p><i>(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and</i></p> <p><i>(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and</i></p> <p><i>(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,</i></p>	<p>No hollow-bearing trees are impacted by the work, which means that denning opportunities for hollow-dependent bats and birds will be maintained. The loss of 2,312m<sup>2</sup> of foraging habitat would be inconsequential for microchiropteran bats, the squirrel glider and brush-tailed phascogale, and the woodland birds, especially as the residual habitats and surrounding areas will be enhanced and restored through plantings, additions of habitat furniture and other actions (nesting box installation, etc).</p> <p>Operational controls will ensure that roosts of tunnel-dwelling bats are identified and appropriately managed during any decommissioning works.</p> <p>No threatened plants occupy the area of clearing, as identified on the basis of field inspection and review of available documents.</p> <p>The works do not cause isolation or fragmentation of wildlife habitats.</p> <p>The grey-crowned babbler will lose 2,312m<sup>2</sup> of existing habitat, including 26 trees, and former nests occur in close proximity to the work suggesting that there may be some disturbance impacts in habitats of this species. It is anticipated that the work will not deplete an area of habitat of such significance that the long-term survival of the grey-crowned babbler is compromised. However, it very important that the habitat of this species locally is further secured and enhanced as an offset measure.</p> <p>No threatened species or EEC will become at risk of local extinction due to loss of habitat associated with the project / activity.</p>	No
<p><i>(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),</i></p>	<p>The area is not declared as an area of outstanding biodiversity value.</p>	No

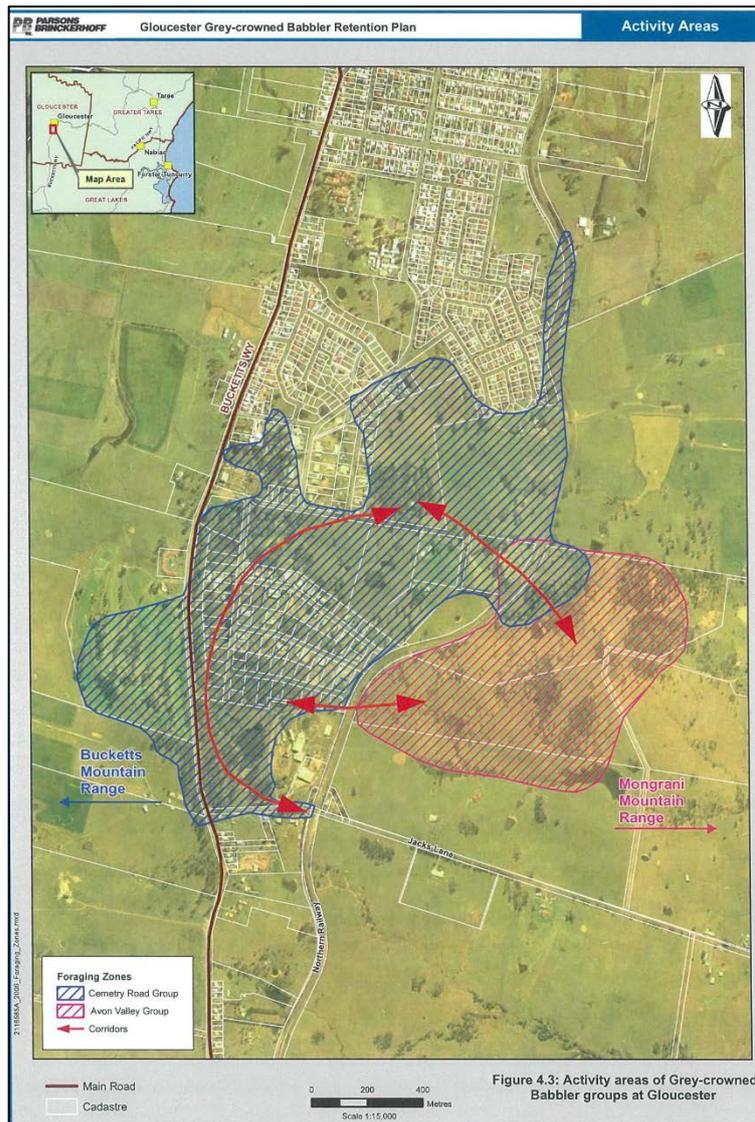
Factors	Comments	SIS Required
<i>(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.</i>	<p>The works do not substantially increase the impact of any key threatening process.</p> <p>Clearing of native vegetation is very minimal and is proposed to be compensated through revegetation and habitat enhancement work. Over time, this should ensure that there is a neutral or beneficial impact on the extent of native vegetation and habitat in the locality.</p>	No

Consequently, this investigation has concluded that the works would not result in a significant impact on threatened species, communities, populations or their habitats. A Species Impact Statement (SIS) is not deemed required.

The clearing of native vegetation for the work does not exceed the threshold for entry into the biodiversity offsets scheme pursuant to the Biodiversity Assessment Methodology. Formal offsets are therefore not required.

In this REF, reference is given to the *Grey-crowned Babbler Retention Plan*, prepared by Parsons Brinkerhoff on behalf of Gloucester Shire Council, October 2005. The grey-crowned babbler is a significant local threatened species and the Retention Plan has been adopted by the then Gloucester Shire Council. A consideration of the project / activity in relation to this Plan has been conducted:

- The Cemetery Road environs and the Babbler Reserve are known to be important sites / habitat for grey-crowned babblers in the Gloucester locality. Two (2) family groups were identified in the southern half of the Gloucester township, with one of the family groups consisting of about 14 individuals and known as the "*Cemetery Road group*".
- A plan of the location of the ranges of the two (2) family groups of grey-crowned babblers in south Gloucester is provided below. This image shows that the Cemetery Road group is centred on the site of the proposed new reservoirs in the Babbler Reserve. There is a known cluster of nests in the road verge of Cemetery Road, just east from the new reservoirs site, on the northern side of the road.



- The threatening processes currently operating at Gloucester for the grey-crowned babbler included: habitat loss and fragmentation, habitat degradation (particularly the removal of coarse woody debris and weed invasion) and mortality from predation and collisions.
- The conservation actions identified in the Plan for the grey-crowned babbler included:
  - *Protect remnant vegetation north of Cemetery Road adjacent to the water tower,*
  - *Protect remnant habitats on private land,*
  - *Maintain important remnant habitats, including weed controls and ecological fire regimes,*
  - *Provide buffers around important habitats,*
  - *Retain of large trees (>60cm trunk diameter),*
  - *Prohibit firewood collection from public reserves and other important remnants,*
  - *Undertake weed control activities on public remnants and roadside reserves,*
  - *Maintain roadside environments to enhance the habitat value to grey-crowned babblers,*
  - *Create a roadside vegetation management plan, which identifies significant babbler habitat in roadside environments,*
  - *Support the no-cat zones in residential areas with trapping,*

- *Increase the width of the roadside public verges and vegetation on Cemetery Road and Wuakivory Road to at least 20-metres through purchase and dedication. Fence and protect reclaimed land,*
- *Create a 20 to 30-metre wide linear habitat corridor along both sides of the railway line within open space land at the cemetery (west wide) and private land zoned E2 (east side),*
- *Increase the width of the corridor south of the industrial area and extend it to the west to join The Bucketts Way,*
- *Increase the width of the roadside reserve / vegetation along The Bucketts Way,*
- *Provide incentives to private landholders to fence buffer strips next to existing habitats,*
- *Implement speed reduction measures on Cemetery Road, Tate Street and Jacks Lane,*
- *Erect road signs with this species image / outline for driver awareness,*
- *Raise awareness of the grey-crowned babbler through education and communications,*
- *Promote babbler habitat friendly land use practices to local landholders,*
- *Continue to educate school children on this species,*
- *Create an education brochure,*
- *Erect educational signs in prominent areas,*
- *Scientifically study the sub-regional relationships between the Gloucester / Monkerai, Krumbach / Dyers Crossing and Stroud / Dungog / Clarencetown populations,*
- *Provide support for monitoring and research for the grey-crowned babbler populations in and around Gloucester (and seek appropriate external funds),*
- *Protect habitat to the east of the north coast rail line through the planning scheme,*
- *Extend the no-cat zone to all new subdivisions in and near babbler habitat,*
- *Implement a tree preservation scheme for Gloucester,*
- *Incorporate landscaping / streetscaping into new subdivisions through DCP controls and other mechanisms,*
- *Ensure appropriate development controls and development application decision-making, and*
- *Monitor the implementation of the Retention Plan.*

The proposal does not fully comply with the Retention Plan in that it proposes a minor removal of 2,312m<sup>2</sup> of native vegetation (26 trees) from an SP2 – Infrastructure zoned area in the Cemetery Road reserve. This impact has been deemed to be non-significant in relation to the local populations of this species through the statutory assessment process. The residual impacts can be negated and offset through compensatory measures deployed during the project, which could implement key measures outlined in the Retention Plan.

An assessment under the EPBC Act was also conducted. The six matters of national environmental significance are discussed below:

<b>Nuclear actions</b>	The project is not a nuclear action.
<b>Commonwealth marine environment</b>	The project would not directly or indirectly affect Commonwealth marine environment.
<b>Nationally threatened species</b>	The works would not significantly impact any nationally threatened species. This has been demonstrated in the Assessment of Significance above.
<b>Ramsar wetlands</b>	No Ramsar wetlands occur in relevant proximity to the work.
<b>International migratory species</b>	The works would not affect international migratory species or their habitat.

<b>World heritage area</b>	The study area is not located within a designated world heritage area.
<b>National heritage areas</b>	No nationally listed heritage areas would be affected by the works.
<b>A water resource in relation to coal seam gas or large coal mining development</b>	The project / activity is not a coal seam gas or coal mining project.

The project / activity would not significantly impact on any matter of national environmental significance. Referral to the Commonwealth Environment Minister is not required.

An aquatic habitat assessment has been deemed as not being required for this REF as no significant fish habitats would be directly or indirectly affected by the construction.

## Section 8. Review of Environmental Factors summary

The proposed activity is lawful and permissible.

The proposed activity is not considered to result in a significant or unreasonable environmental impact.

A Species Impact Statement, referral to the Commonwealth Environment Minister or a Part 7 Controlled Activity Approval is not required for the project.

The project can be determined under Part 5 of the *Environmental Planning and Assessment Act 1979*.

An Aboriginal Heritage Impact Permit will not be sought for the project. An unexpected finds protocol must however be deployed.

All of the protective safeguards identified in this REF comprise lawful conditions and must be fully adopted.

## Section 9. Determination

### Person who prepares the Review of Environmental Factors

I certify to the best of my knowledge that:

- I am suitably qualified and competent to complete this REF, and
- I have completed the environmental assessment in this REF report which meets the requirements of Part 5 Division 5.1 of the EP&A Act 1979, and Clause 228 of the EP&A Regulation 2000, and Part 4 & Part 7 of the Biodiversity Conservation Act 2016 and Part 7A of the Fisheries Management Act 1994 and other relevant legislation and guidelines.

My conclusion as to the likely environmental impact of the project is that the project is appropriate and reasonable, and:

- The environmental impacts are likely to be low or avoided; and
- Further environment impact assessment is not deemed required; and
- I have consulted relevant Council staff on pertinent aspects of the project / activity; and
- I am satisfied that, subject to the inclusion of the protective safeguards, the project will not have a significant impact on the environment during both the construction and operation phases.

<b>Name</b>	<b>Rachael Abberton</b> 	<b>Date</b>	<b>7 August 2020</b>
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### Reviewing Officer – Council officer who reviews the REF

I certify on behalf of MidCoast Council that:

- I am of the opinion that based on the completed REF, my knowledge of the project and the recommendations of the REF, the assessment has been adequately completed, the project has minor and predictable impacts, the conclusion as to the likely environmental impact of the project is reasonable and the project can proceed subject to the relevant control measures and conditions in any approvals, licences or permits and Schedule 1 of this REF.

<b>Name</b>	<b>Mat Bell</b> 	<b>Date</b>	<b>7 August 2020</b>
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### Determining Officer – Council officer who verifies the REF

I certify on behalf of MidCoast Council that:

- I am of the opinion that acting on the advice of the REF author and reviewer, and based on the completed REF, my knowledge of the project and the recommendations of the REF, the assessment has been adequately completed, the project has minor and predictable impacts, the conclusion as to the likely environmental impact of the project is reasonable and the project can proceed subject to the relevant control measures and conditions in any approvals, licences or permits and Schedule 1 of this REF.

<b>Name</b>	<b>Robert Scott</b> 	<b>Date</b>	<b>20 November 2020</b>
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- NSW Government Resources and Geoscience- Naturally occurring asbestos, accessed 24/07/2020 <https://www.resourcesandgeoscience.nsw.gov.au/miners-and-explorers/safety-and-health/topics/NOA>

## Schedule 1. Environmental Safeguards (for Construction EMP)

This form must be reviewed and signed prior to the commencement of any works. These Officers endorse the adoption of the following protective safeguards and will seek to actively implement these safeguards and measures in the field during the project / activity:

### Signed by Project Manager

Name (please print)	Signature	Date
		/ /

### Signed by Site Works Foreman:

Name (please print)	Signature	Date
		/ /

The following actions shall form part of a Construction Environmental Management Plan for the project / activity.

A signed master copy of these actions is to be held as a controlled copy by the Project Manager to ensure that all environmental responsibilities are implemented as required.

Copies of this form must be carried by all relevant personnel during relevant applicable stages of the project / activity.

**Protective Safeguards – to be included in Detailed Design Phase**

**Specific environmental considerations for Detailed Design**

The Detailed Design phase of the project / activity must respond to the following environmental considerations:

Mains installation from Gloucester WTP to the Cemetery Road new reservoir site:

- 1**
- a) The route surveying will identify trees, drainage features and buried services along the mains installation alignment. Design shall avoid native trees and street trees and their tree protection zones, where possible. Prescriptions shall be applied to works in tree protection zones of trees to be retained, such as hand-excavations only and arboricultural supervision and direction of works in order to protect structural tree roots. Prescriptions shall be applied to all crossings of drainage lines and watercourses to protect water flows and water quality,
  - b) The new main shall be confined to the area of the existing easement across the private property lots (Lot 20 DP862766 and Lot 400 DP980328),
  - c) The new main shall be designed along Showground Lane to avoid or otherwise protect occurrences of native trees, particularly all forest red gum and grey box trees, where possible,
  - d) The new main shall be located in the western road verge of Thunderbolts Way,
  - e) The under-bore of the Gloucester River shall commence on the northern side of the river to the north of Bucketts Road to preserve the riparian zone, protect water quality and protect significant roadside trees,
  - f) The new main shall be located along Boundary Street in a manner that avoids and protects from any harm a significant Forest Red Gum tree at 401409 6458504 (outside the tennis courts). To the south of this tree, the new main should be located in the western verge of Boundary Street,
  - g) The new main shall be located in the southern verge of Phillip Street,
  - h) The new main shall be located in the western verge of Church Street and be located at or near the edge of seal of the existing road footprint so as to protect existing street trees,
  - i) The new main shall be located along Cemetery Road where possible in such a manner that no (0) roadside trees are removed or harmed for the installation. This may require the main to be installed at or near the edge of the existing travel lane or shoulder.

Site facilities at the Cemetery Road new reservoir site:

- a) An existing cleared area of approximately 2,500m<sup>2</sup> in the south-eastern corner of the Reserve can be used for temporary site facilities, lay down area, etc on the basis that this area is fully restored and revegetated with native dry grassy woodland at the completion of the work.

**Protective Safeguards – to be included in Detailed Design Phase**

- b) A large site compound shall be identified on suitable adjoining land only in a manner that preserves existing native trees,

New reservoirs:

- a) The 27-metre tall new reservoir and the roof of the 16-metre tall reservoir shall be “pale eucalypt” colour or similar.
- b) All vegetation in the road reserve of Cemetery Road at the frontage of the works area must be retained as screening for the new reservoir installations and for grey-crowned babbler habitat.
- c) Clearing of native vegetation for the new reservoirs must be confined to that area enclosed between the existing fence to the east and south and the existing track to the west and east, such that not more than 26 trees and 2,312m<sup>2</sup> of native vegetation is removed.

Access to the reservoirs site at Cemetery Road:

- a) A revised access-way arrangement will be designed for the Cemetery Road reservoirs site. This will utilise the eastern existing access ramp to an internal road that follows the path of the gravel track and ends near the lattice communication tower in a terminus / turning circle. The eastern-most existing access ramp is intended to be closed, stabilised and landscaped at the completion of the works.

Tyrell Street reservoir:

- a) The de-commissioning of the Tyrell Street reservoir shall be conducted in such a manner that the heritage values of this structure and its curtilage are retained and enhanced.

<b>Protective Safeguards – Prior to Any Relevant Works Commencing</b>		<b>Project manager – Action completed</b>	<b>Site works supervisor – Action completed</b>
		<b>Yes / No</b>	<b>Yes / No</b>
<b>2</b>	<p><b>Erosion and Sediment Control Plans</b></p> <p>A specific sediment and erosion control plan shall be prepared for each separate component of the project / activity. ESC measures are to comply with:</p> <ul style="list-style-type: none"> <li>• <i>MidCoast Council Erosion and Sediment Control (ESC) Field Guide</i>, 5th Edition 2018,</li> <li>• <i>Managing Urban Stormwater: Soils and Construction</i> (blue book) Landcom, 4th edition, March 2004, and</li> <li>• <i>Best Practice Erosion and Sediment Control</i> (BPESC) document ('white book'), International Erosion Control Association Australasia (IECA) 2008.</li> </ul> <p>All ESC measures must be installed prior to the commencement of any relevant work and then adequately maintained and audited.</p>		
<b>3</b>	<p><b>Traffic Management Plans</b></p> <p>A traffic management plan shall be prepared for each separate component of the project / activity and shall seek to minimise disruption to local traffic and protect the safety of motorists and other road users during the works. The Traffic Management Plans shall reference information in:</p> <ul style="list-style-type: none"> <li>• <i>Traffic Management Guide: Construction Work</i> and other applicable guidance material from SafeWork Australia (see: <a href="https://www.safeworkaustralia.gov.au/collection/workplace-traffic-management-guidance-material">https://www.safeworkaustralia.gov.au/collection/workplace-traffic-management-guidance-material</a>)</li> </ul>		
<b>4</b>	<p><b>Waste Management Plans</b></p> <p>For each demolition or materials recovery project, an investigation shall be conducted of the type, nature and volume of waste material to be generated (including asbestos) and a waste management plan shall be prepared to guide the handling and disposal of all wastes. Where asbestos is known or expected to occur, appropriate asbestos handling and disposal procedures will be documented, including all WH&amp;S requirements.</p>		
<b>5</b>	<p><b>Heritage Advice</b></p> <p>Heritage advice shall be provided by Council's Heritage Adviser to the immediate and long-term management of the Tyrell Street Reservoir and to works in the vicinity of the other nearby local heritage items, comprising:</p> <ul style="list-style-type: none"> <li>• The Gloucester Showground precinct,</li> <li>• St Clements Historic Park at the corner of Church Street and</li> </ul>		

	<b>Protective Safeguards – Prior to Any Relevant Works Commencing</b>	<b>Project manager – Action completed</b>	<b>Site works supervisor – Action completed</b>
		<b>Yes / No</b>	<b>Yes / No</b>
	Oak Street, <ul style="list-style-type: none"> <li>• John Mackenzie’s grave in Gloucester Cemetery, and</li> <li>• Second Hillcrest Hospital at 16 Tyrell Street.</li> </ul>		
<b>6</b>	<p><b>Ecological Advice – Babbler enhancement measures</b></p> <p>Ecological advice shall be provided by Council’s Senior Ecologist or other qualified consultant on the measures designed to compensate and offset the impacts of the project / activity on the grey-crowned babbler and other threatened species, which shall include (but not be limited to):</p> <ul style="list-style-type: none"> <li>• Replanting of currently cleared portions of the Babbler Reserve with endemic native forest / woodland vegetation,</li> <li>• Handling and management of felled timber and mulch,</li> <li>• Consideration of babbler nesting activities,</li> <li>• Replacement of existing signage,</li> <li>• Installation of new fencing and bollards to control access to the eastern portions of the Babbler Reserve,</li> <li>• Waste collection / removal,</li> <li>• Additions of land to the Babbler Reserve to offset habitat losses for construction, and</li> <li>• Other measures</li> </ul> <p>The outcomes of the ecological advice shall be implemented as part of the project.</p> <p>Habitat offset measures shall recognise and refer to Council’s Offsetting Procedures guideline.</p>		
<b>7</b>	<p><b>Operational Procedure to Minimise Disruption to Cemetery Services</b></p> <p>Cemetery Services advice shall be provided by Council’s Cemeteries Officer to processes and procedures that are to be deployed to minimise the impact of the work on cemetery operations, including burials and funerals.</p>		
<b>8</b>	<p><b>Project Management Documentation</b></p> <p>All required risk assessments, WH&amp;S documentations and construction and operational environmental management plans must be prepared by suitably qualified persons.</p> <p>Any complaints or comments on the project can be directed through the MidCoast Council Customer Service Line.</p>		



<b>Protective Safeguards – During Work</b>		<b>Project manager – Action completed</b>	<b>Site works supervisor – Action completed</b>
		<b>Yes / No</b>	<b>Yes / No</b>
<b>9</b>	<b>Public safety and general disruption and disturbance</b>		
9a	<p>Working hours shall be restricted to comply with EPA and Council regulations.</p> <p>All site works shall be conducted within defined work hours:</p> <p>Monday to Friday – 6:00am – 6:00pm            Saturdays- 8:00am – 1:00pm            No work permitted on Sundays or Public Holidays</p>		
9b	Project activities must be confined at all times to areas of work identified in this REF.		
9c	All general waste generated by construction employees, shall be securely stored and then removed from site and disposed as appropriate. All worksites are to be left tidy and rubbish free each day prior to leaving the work area.		
9d	In accordance with WorkCover, all plant and equipment used in construction work shall comply with the relevant Australian Standards and manufacturer specifications.		
9e	Dust generation shall be visually monitored and managed by spraying earthworks formations, stockpiles and road with water or other approved suitable liquids as approved by Council.		
9f	All active work sites shall be enclosed by suitable site fencing to exclude access by all unauthorised persons.		
9g	Appropriate parking, site sheds, site facilities, stockpiling and handling sites and lay-down areas shall be provided.		
<b>10</b>	<b>Erosion and sediment control (ESC)</b>		

	<b>Protective Safeguards – During Work</b>	<b>Project manager – Action completed</b>	<b>Site works supervisor – Action completed</b>
		<b>Yes / No</b>	<b>Yes / No</b>
10a	<p>The approved Erosion and Sediment Control plans shall be implemented as per the details of each plan and erosion and sediment controls shall always be implemented, including but not limited to:</p> <ul style="list-style-type: none"> <li>• Vehicle entry and exit points shall be stabilised to avoid tracking of dirt and mud onto road surfaces.</li> <li>• All ESC measures shall be visually monitored and maintained or upgraded as required.</li> <li>• All ESC measures shall be maintained after each rainfall event to ensure their ongoing functionality.</li> <li>• Surfaces shall be stabilised as quickly as practicable and/or at end of day.</li> </ul>		
<b>11</b>	<b>Work, including machinery working on the site</b>		
11a	<p>With regards to the timing/ scheduling of the works: The physical works shall be timed, where possible, to avoid inclement weather (rain and high winds), and The works shall be completed as expediently as possible.</p>		
11b	<p>Work activities that have the potential to cause excessive dust emissions shall be ceased or be modified during high wind conditions.</p>		
11c	<p>Wash down and disinfect all machinery prior to transport to the work site to reduce risks associated with the spread of weeds and plant diseases.</p>		
11d	<p>All machinery shall be serviced and functioning efficiently and all seals and gaskets shall be inspected prior to commencement of the work to minimise the risks of a fuel or oil spills. All relevant machinery and vehicles shall display a flashing rotating light.</p>		
11e	<p>Prior to work, the exhaust of all construction machinery shall be inspected for smoke emission. If the machinery is producing extensive smoke, it shall be appropriately serviced prior to commencing work on the site.</p>		
11f	<p>Ensure spill containment equipment is available , in readiness for deployment when required.</p>		
11g	<p>Machinery shall be re-fuelled within a suitably-bunded area and precautions shall be taken to avoid spills and accidents.</p>		
11h	<p>Any fuel, oil or chemical spills shall be reported to the relevant</p>		

	<b>Protective Safeguards – During Work</b>	<b>Project manager – Action completed</b>	<b>Site works supervisor – Action completed</b>
		<b>Yes / No</b>	<b>Yes / No</b>
	authorities and appropriately managed.		
<b>12</b>	<b>Protection of Aboriginal objects &amp; places and standard stop work procedure</b>		
12a	Due diligence shall be exercised with regards to all landform modification works undertaken by all staff, contractors and volunteers.		
12b	<p>If an object that is reasonably suspected to be an Aboriginal item or object is detected in a work area, then:</p> <ul style="list-style-type: none"> <li>• Stop work immediately and contact your field supervisor and/or project officer,</li> <li>• Field supervisor to contact Council’s environmental officer on 6592 5370 or 6592 5482. Council’s environmental officer to contact the Department of Planning, Industry and Environment on 131 555. The Department of Planning, Industry and Environment will notify the LALC. The Department of Planning, Industry and Environment who will advise on a course of action.</li> <li>• Recommence work when Department of Planning, Industry and Environment has approved a course of action.</li> </ul>		
12c	Provide printed examples of local Aboriginal objects to all new staff and contractors.		
12d	Ensure all staff on site are aware of the stop work procedure if potential Aboriginal objects are found.		
<b>13</b>	<b>Worker Induction and WH&amp;S</b>		
<b>13a</b>	Every person onsite including subcontractors shall be given an induction briefing prior to commencement. The induction shall cover risks and hazards, the environmental aspects that are significant to the site and the penalties for non-compliance with the approval conditions for the work.		
<b>13b</b>	Personnel shall wear appropriate PPE where required.		
<b>14</b>	<b>Biodiversity protection</b>		
14a	<p>Compounds, works facilities and stockpiles shall be established in pre-approved locations in previously cleared and disturbed areas and not within areas of remnant native vegetation.</p> <p>Perimeter fencing shall be installed where suitable to exclude personnel and machinery from native vegetation to be retained.</p>		

	<b>Protective Safeguards – During Work</b>	<b>Project manager – Action completed</b>	<b>Site works supervisor – Action completed</b>
		<b>Yes / No</b>	<b>Yes / No</b>
	Define the limits of the work prior to clearing works and observe the marked limits. Not more than twenty-six (26) native trees shall be removed for the work from an area of 2,312m <sup>2</sup> of native vegetation. All offsetting and compensatory habitat enhancement actions shall be installed.		
14b	A micro-bat survey and inspection shall be conducted prior to the demolition of the Ravenshaw Street Reservoir to survey for the presence of bats. If a colony is detected, a bat management plan shall be prepared to guide the demolition works to ensure that bats are not harmed by any aspect of the work.		
<b>15</b>	<b>All required management plans to be implemented</b>		
15a	All of the pre-construction management plans and procedures shall be fully implemented as per the details in those plans		

	<b>Protective Safeguards – Upon Completion of Works</b>	<b>Project manager – Action completed</b>	<b>Site works supervisor – Action completed</b>
		<b>Yes / No</b>	<b>Yes / No</b>
<b>16</b>	<b>Erosion and sediment control (ESC)</b>		
16a	All ESC measures shall be removed after site has been stabilised and the works areas shall be stabilised and landscaped, as required.		

## Schedule 2. AHIMS Search and Aboriginal Cultural Heritage Assessment

MidCoast Council  
Breese Parade  
Forster New South Wales 2428  
Attention: Rachael Abberton

Date: 16 January 2020

Email: rachael.abberton@midcoast.nsw.gov.au

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lat. Long From : -32.026, 151.959 - Lat. Long To : -32.0236, 151.9628 with a Buffer of 50 meters, conducted by Rachael Abberton on 16 January 2020.**

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

<b>0</b>	<b>Aboriginal sites are recorded in or near the above location.</b>
<b>0</b>	<b>Aboriginal places have been declared in or near the above location. *</b>

MidCoast Council  
Breese Parade  
Forster New South Wales 2428  
Attention: Rachael Abberton

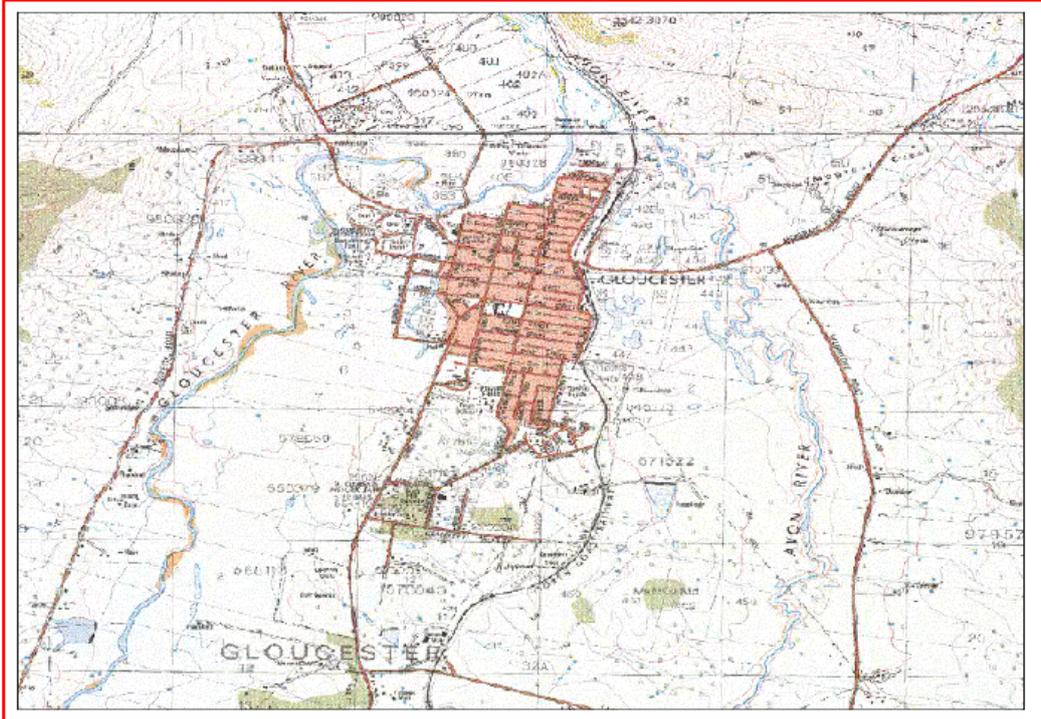
Date: 28 February 2020

Email: rachael.abberton@midcoast.nsw.gov.au

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lat, Long From : -32.0319, 151.9336 - Lat, Long To : -31.9959, 151.9907 with a Buffer of 50 meters, conducted by Rachael Abberton on 28 February 2020.**

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

<b>2</b>	<b>Aboriginal sites are recorded in or near the above location.</b>
<b>0</b>	<b>Aboriginal places have been declared in or near the above location. *</b>

**If your search shows Aboriginal sites or places what should you do?**

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette](http://www.nsw.gov.au/gazette) (<http://www.nsw.gov.au/gazette>) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

**Important information about your AHIMS search**

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

## Aboriginal Cultural Heritage Summary Checklist

Prepared in accordance with the Department of Planning, Industry and Environment *Aboriginal Cultural Heritage consultation requirements for proponents 2010* and the *Aboriginal Cultural Heritage Guidelines, 2015*

**Table: Summary Aboriginal Heritage Checklist**

Summary Aboriginal Heritage Checklist				
Reference			Yes	No
Stage 1 Section 4.1.1	1	Is the activity within an already disturbed area? [The Department of Planning, Industry and Environment DDCOP states ... land is disturbed if it has been the subject of human activity that has changed the land's surface being changes that remain clear and observable.] If an activity is wholly within a previously disturbed area (i.e. soils have been significantly disturbed or soil deposits that could have contained Aboriginal objects have been removed) and will not cause disturbance beyond what has already occurred, proceed to Proceed with CAUTION & training section. <b>If 'No' proceed to 2.</b> If 'Yes' proceed to 8.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<i>Comment: The site of the new reservoirs is not an already disturbed area.</i>		
Stage 1 Section 4.1.2	2	Is the project exempt from NPW Act or NPW Regulation? If Director General's Requirements (DGRs) have been issued the DGRs should be followed and any conditions of approval. Other exempt activities are listed in Section 4.1.2. <b>If 'No' proceed to 3.</b> If 'Yes' proceed to 8.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<i>Comment: The project is not exempt from regulation.</i>		
Stage 1 Section 4.1.3	3	Will the activity involve harm that is trivial or negligible? Or is it a designated 'low impact activity'? You do not need to undertake a due diligence assessment if the activity being undertaken is one specifically defined as a 'low impact activity' under the DDCOP or if harm is likely to be 'trivial or negligible'. These are listed in Section 4.1.3 <b>If 'No' proceed to 4.</b> If 'Yes' proceed to 8.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<i>Comment: The activity of land clearing and landform modification for aspects of the work is not harm that is considered trivial or negligible.</i>		
Stage 2 Section 4.2.1	4	Will there be ground disturbance or land clearance? Activities include vehicle access, stock piling, excavation, vegetation clearing. If 'No' proceed to 8. <b>If 'Yes' proceed to 5.</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<b>Summary Aboriginal Heritage Checklist</b>				
<b>Reference</b>			<b>Yes</b>	<b>No</b>
		<i>Comment: The project / activity involves ground disturbance and clearing.</i>		
Stage 2 Section 4.2.2	5	<p>Are there any sources of information that suggest Aboriginal sites might be present? Has the AHIMS search revealed any known Aboriginal sites? Is the proposed activity within one of the following landscape features:</p> <ul style="list-style-type: none"> <li>• within 200m of waters, or</li> <li>• located within a sand dune system, or</li> <li>• located on a ridge top, ridge line or headland, or</li> <li>• located within 200m below or above a cliff face, or</li> <li>• within 20m of or in a cave, rock shelter, or a cave mouth?</li> </ul> <p>Are there any other sources of information suggesting Aboriginal objects are likely? <b>If 'No' to all proceed to 8.</b> If 'Yes' to any proceed to 6.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<i>Comment: There are no known Aboriginal sites in the subject site for this project / activity however some aspects of the project / activity are located in landscapes that have higher relative potential to accommodate Aboriginal use or occupation sites (near watercourses, on ridge-tops). Much of the subject site for works is heavily modified and disturbed landforms.</i>		
Stage 2 Section 4.2.3	6	<p>Can you avoid harm to the known object(s) or disturbance to the above-listed landscape feature(s)? If 'No' proceed to 7. If 'Yes' proceed to 8.</p>	<input type="checkbox"/>	<input type="checkbox"/>
		<i>Comment: N/A</i>		
Stage 3 Section 4.2.4  Stage 4	7	<p>Due diligence assessment report required. Does the report conclude to proceed with caution as there is low potential for harm to known or potential Aboriginal objects? If 'No' proceed with AHIP application. If 'Yes' proceed to 8.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<i>Comment: Council's due diligence procedure concludes there is low potential for harm to potential Aboriginal objects. Project safeguards to identify and appropriately manage Aboriginal objects and sites (if encountered) will be deployed during the work.</i>		
Stage 2 Section 4.3	8	<p><b>Proceed with CAUTION.</b> After following the above steps, it is reasonable to conclude that there are no known Aboriginal objects or a low probability of objects occurring in the area of the proposed activity. Retain copies of all investigations for future reference. Instigate training for ground staff, sub-consultants and volunteers. If Aboriginal objects are located during ground disturbance follow stop work procedure.</p>		

Summary Aboriginal Heritage Checklist			
Reference		Yes	No
	<i>Comment: The due diligence procedure will be followed prior to work and will be followed during works. All staff who will work on site have received ACH training. Prior to work commencing all contractors will be shown printed material showing photos of local Aboriginal objects. If Aboriginal objects are located during ground disturbance the stop work procedure will be followed.</i>		

### Stop work procedures

The table below provides MidCoast Council's Standard Stop Work procedure for identification of Aboriginal objects or places during any Council activities.

**Table: Standard Stop Work Procedure for Aboriginal objects or places**

<b>STOP WORK</b>	Immediately
<b>CONTACT</b>	Contact your field supervisor and/or project officer Field supervisor then contacts Council's Environmental Officer, Sharon Rose 6592 5370 or Tanya Cross 6592 5248 Council's Environmental Officer then contacts the Department of Planning, Industry and Environment Cultural Heritage Officer 131 555 Newcastle regional office – Peter Saad
<b>NOTIFY</b>	The Department of Planning, Industry and Environment officer notifies the Purfleet Taree Local Aboriginal Land Council
<b>ASSESS</b>	Department of Planning, Industry and Environment will advise on a course of action based on the significance of the resource, which Council and the relevant LALC will follow: Protect and avoid; or Record and protect; or Investigate, excavate, record and preserve
<b>APPLY</b>	To Department of Planning, Industry and Environment for an AHIP if necessary
<b>RECOMMENCE</b>	When Department of Planning, Industry and Environment has approved a course of action

The Table below provides a summary of the Department of Planning, Industry and Environment stop work procedure that must be followed with relevant contact numbers if an Aboriginal burial or suspected human skeletal remains are identified.

**Table: Department of Planning, Industry and Environment stop work procedure for Aboriginal Burials and Suspected human Skeletal Remains**

<b>1.</b>	Should human, or potential human skeletal material be identified, any works in the vicinity <sup>#</sup> of the location must cease immediately.
<b>2.</b>	The Department of Planning, Industry and Environment, NSW Police, an archaeologist, and the relevant Local Aboriginal Land Council must be notified immediately.
<b>3.</b>	Field Officer immediately contacts the Department of Planning, Industry and Environment Line: 131 555.
<b>4.</b>	Field officer then contacts Council's Environmental Officer, Sharon Rose 6592 5370 or Tanya Cross 6592 5248. Council's Environmental Officer then contacts the Department of Planning, Industry and Environment Cultural Heritage Officer Peter Saad on 49273167 at the Newcastle regional office.

# Within vicinity – all works must stop in an area to ensure there is no indirect or direct harm to the identified Aboriginal objects or places or human or possible human skeletal remains.

Reference material for the identification of human remains is provided below:

Department of Environment and Conservation NSW 2006. *Manual for the Identification of Aboriginal Remains*. DEC: Sydney

Heritage Office 1998. *Skeletal Remains: Guidelines for Management of Human Skeletal Remains*.  
<http://www.environment.nsw.gov.au/heritage/publications/index.htm#skeletal>)

### Schedule 3. Visual impact analysis

Below is an artists impression of the finished structures at the Cemetery Road site:



A visual impact analysis has been undertaken for various view-points in the Gloucester locality. This is presented below.

Various photographs were taken of view-points with the existing 40-metre communication tower as reference.

The proposed elevated service reservoir is 27-metres tall (about  $\frac{2}{3}^{\text{rd}}$  as tall as the communication tower) and the proposed ground level service reservoir is 16-metres tall (about  $\frac{2}{5}^{\text{th}}$  as tall as the communication tower).



**View to north-east to subject site from 16 Tate Street**

The top 2/3<sup>rd</sup> of the communication tower is visible. This suggests that the proposed two reservoirs will be effectively screened by the existing trees and will not be visible from this vantage point. This vantage point is within an industrial estate and is not a significant or sensitive receptor.

There is not a significant visual impact from this location.



**View to north from Campbell Street**

The top ½ of the communication tower is visible. This suggests that the proposed elevated reservoir will be visible but the ground level service reservoir will be screened by the existing trees and will not be visible from this vantage point.

While the elevated service reservoir will be partly visible from this vantage point it is within an industrial estate and is not a significant or sensitive receptor. The reservoir will be a neutral (natural) colour, which will reduce obtrusiveness.

There is not a significant visual impact from this location.



**View to north-east to subject site from Jacks Road / The Bucketts Way intersection**

The top 2/3<sup>rd</sup> of the communication tower is visible. This suggests that the proposed two reservoirs will be effectively screened by the existing trees and will not be visible from this vantage point. This vantage point is not a significant or sensitive receptor because of the amount of roadside screening vegetation.

There is not a significant visual impact from this location.



**View to north-east to subject site from Jacks Road – east of Railway**

The top 2/3<sup>rd</sup> of the communication tower is visible. This suggests that the proposed two reservoirs will be effectively screened by the existing trees and will not be visible from this vantage point. This vantage point is within rural landscape and is not a moderately-sensitive receptor.

There is not a significant visual impact from this location.



### **View to north to subject site from Moonlight Circuit locations**

The top 2/3<sup>rd</sup> of the communication tower is visible. This suggests that the proposed two reservoirs will be effectively screened by the existing trees and will not be visible from this vantage point. This vantage point is within a rural residential estate and is a moderately-sensitive receptor.

There is not a significant visual impact from this location.



**View to east to subject site from Cemetery Road / Chuch Street intersection**

The top ½ of the communication tower is visible. This suggests that the proposed elevated reservoir will be visible but the ground level service reservoir will be screened by the existing trees and will not be visible from this vantage point.

While the elevated service reservoir will be partly visible from this vantage point it is within an industrial estate and is not a significant or sensitive receptor (industrial area). The reservoir will be a neutral (natural) colour, which will reduce obtrusiveness.

There is not a significant visual impact from this location.



**View to south to subject site from Lavers Street**

The top 2/3<sup>rd</sup> of the communication tower is visible. This suggests that the proposed two reservoirs will be effectively screened by the existing trees and will not be visible from this vantage point. This vantage point is within an residential estate and is a moderately-sensitive receptor.

There is not a significant visual impact from this location.