Water NSW
Requirements for protection of
Warragamba to Prospect Pipelines

DRAFT

General

The Warragamba to Prospect Pipelines and the adjacent land corridor is owned and managed by Water NSW[1]. The Warragamba to Prospect Pipelines are vital public infrastructure and their integrity and maintenance are critical to ensuring the supply of raw water. The Warragamba to Prospect Pipelines transfer raw bulk water from Warragamba Dam to Prospect Reservoir and water filtration plant

The land is classified as a "Controlled Area" under the provisions of the *Water NSW Act 2014* and the Water NSW Regulation 2013.

Water NSW has adopted the following guiding principles when considering development proposals within or adjacent to the Warragamba to Prospect Pipelines:

1. *The Upper Canal and Warragamba Pipelines corridors are essential public infrastructure whose key purpose is the supply of drinking water to the Greater Metropolitan Sydney region. Water supply infrastructure must always be safe and serviceable[2].*
   a. *Water NSW will not approve development proposed by external parties within the corridors unless:*
      i. *the development is for the purpose of essential infrastructure and services that cannot be feasibly located elsewhere; and*
      ii. *the proponent can ensure to the satisfaction of Water NSW that there will be no adverse impact on the Upper Canal and Warragamba Pipelines infrastructure. Infrastructure and services must not compromise Water NSW's future proposals for canal and pipeline infrastructure.*
   b. *Water NSW will not support development or planning proposals adjoining the corridors unless it can be shown that there will be no adverse impact on the Upper Canal and Warragamba Pipeline infrastructure.*

2. *Water quality and quantity within the Upper Canal and Warragamba Pipelines corridors must be maintained and protected.*
   a. *Water NSW will not approve infrastructure and services proposed by external providers within the corridors unless the providers can ensure to the satisfaction of Water NSW that there will be a neutral or beneficial effect on water quality and quantity.*
   b. *Water NSW will not support development or planning proposals adjoining the corridors unless it can be shown that there will be a neutral or beneficial effect on water quality and quantity.*

3. *Proponents of development or activities within or adjoining to the Upper Canal and Warragamba Pipelines corridors should bear any additional costs to Water NSW arising from requirements under the above principles. This may include, but not be limited to, costs for technical or specialist studies, additional security measures, additional stormwater management measures, construction requirements, the planning and registration of easements and financial compensation for access rights and easements.*

[1] *From the 1 January 2015, the Sydney Catchment Authority joined with State Water to form Water NSW, the new single organisation responsible for managing bulk water supply across the State*.
[2] Safe means no danger to users who are present, serviceable means available for its intended use.

Based on these principles, issues of concern to Water NSW relating to development adjacent to, or potentially affecting, the Warragamba to Prospect Pipelines include:

1. Protection of Water NSW infrastructure
2. Operation and maintenance of the Pipelines
3. Security and public safety
4. Incident Notification and Entry into Water NSW
5. Heritage
6. Land title, easement or licence agreement with Water NSW for new structures

Any proposal to construct, or upgrade, infrastructure within, or crossing the Warragamba to Prospect Pipelines must address the following issues to the satisfaction of Water NSW. As part of this process, Water NSW requests opportunity to provide comments on drafts of any environmental impact assessment (eg Review of Environmental Factors or Statement of Environmental Effects) and any detailed plans for all proposed construction work.

General information on issues affecting the Warragamba to Prospect Pipelines can be found in Water NSW's *Guidelines for development adjacent to the Upper Canal and Warragamba Pipelines* on Water NSW's website at http://www.sca.nsw.gov.au – Publications.

Specific Requirements

1. Protection of Water NSW Infrastructure

Damage during construction works

As a critical component of Sydney's water supply system, the proponent must ensure the Warragamba to Prospect Pipelines, including all support structures, are adequately protected from damage during the construction and operation of any structures or developments within, under or adjacent to the Pipelines corridor. Damage may also be indirect, resulting from vibration from construction activities such as pile driving or earthmoving activities.

Care must be exercised when excavating within 5 metres of the Warragamba to Prospect Pipelines, including all support structures, or other water supply infrastructure, as there is a risk that Water NSW's infrastructure may be disturbed or damaged. No excavation may be made within this 5m distance without prior analysis of structure stability with respect to the effects of the excavation.

Traffic barriers

Adequate traffic barriers and/or fencing must be designed and installed along any upgraded or new bridge, including the approach roads, to minimise the likelihood of vehicles affecting the Warragamba to Prospect Pipelines in the event of a vehicle accident. These barriers must be designed to the appropriate standard to restrain B-Double vehicles in consultation with Water NSW. Fences/screens should also be designed to prevent anything being thrown into the Pipeline corridor from the roadway.

Stability of embankments/cutting within the Pipeline corridor

Care shall be exercised when undertaking works to protect the stability of the earth embankments / cutting within the corridor. Water NSW requires access to all existing embankments for ongoing maintenance.

Drainage and stormwater management

Any development or construction activity and related works must be designed, constructed and operated in such a way that does not increase stormwater flows into the Pipelines corridor. This

means works should be designed so that post development stormwater flows are no greater than pre-development stormwater flows.

Any development downstream or downslope from the Pipelines corridor must not impede the flow of stormwater from any existing stormwater structures on Water NSW land. Water NSW occasionally dewaters the Pipelines during shutdown periods and these flows are directed into existing downstream drainage systems. Any development downstream of these Pipeline structures known as scour valves, must be capable of accommodating extra water. Water NSW can provide, on request, maps showing the location of its stormwater and scour systems along the Pipelines corridor.

Dilapidation survey
Depending on the nature of the proposed work, Water NSW may recommend a detailed dilapidation survey of the Warragamba to Prospect Pipelines corridor be undertaken prior to commencement of any works. Any such Dilapidation Report should be submitted to Water NSW for review at least four (4) weeks prior to works commencing.

Geotechnical assessment
Depending on the nature of the proposed work, Water NSW may recommend an assessment be undertaken of the geotechnical conditions and the materials in which construction or underboring is proposed. The geotechnical investigation shall consider the effect of the proposed installation on Water NSW's water supply infrastructure and shall be undertaken by a qualified geotechnical engineer.

The geotechnical investigation/ report shall include (but not be restricted to) the following:

- Boreholes or test pits at entry and exit points to a minimum depth of 1000mm below the base of the proposed excavation entry/ exit points;
- Site description and results of investigation;
- An accurately surveyed cross section along the underboring alignment showing current ground surface, water infrastructure levels/ positions, position of proposed underboring, any existing underground services, borehole or test pit information and correlation lines of subsurface layers between boreholes or test pits, and any other relevant information;
- Prediction of possible ground subsidence during the underboring and installation of any pipeline and/or casing, especially if non-cohesive soils are present;
- Recommendation for the most suitable installation method;
- Recommendation of the minimum cover between the base of the Pipelines support piers and the proposed underboring.
- An assessment as to whether a geotechnical engineer should be in attendance during construction to monitor any suspect ground conditions and ground movement.

Underground pipelines / services – carrier and encasing pipes
All underground pipelines shall be designed and constructed to withstand heavy road vehicle loads. In general, the need for an encasing pipe for underground pipelines shall be assessed on a case by case basis. Encasing pipes shall be provided for all pipelines conveying high voltage cables, pressure pipelines and pipelines carrying combustible liquids and flammable fluids.

Underground pipelines / services – service pits
Wherever possible pits and access chambers for non-water supply services shall be located outside the Water NSW corridor. Any pits within the Water NSW corridor shall be designed for heavy road vehicle loads. The minimum load shall be the R20 vehicle loading.

Underground pipelines / services – isolation
Consideration should be given to installing two isolating valves either side of the Water NSW boundary on pressure pipelines and pipelines carrying combustible liquids and flammable fluids to facilitate the isolation of the gas main in the event that Water NSW has to undertake significant work within the corridor.

Documentation – Design Stage
Documentation complying with AS 1100.401" Technical drawing - Part 401: Engineering survey and engineering survey design drawing" is to be provided by the proponent or in-house party as part of the planning and design process.

General requirements include a site survey and scaled plans and cross-sections detailing:

- Proposed location in plan view, relative to the Water NSW boundary and water supply infrastructure;
- Proposed reduced levels of the crossing, relative to the ground and water supply infrastructure;
- Angle of the crossing;
- Details of the proposed type and construction of the crossing;
- Location of proposed valves, pits, masts/poles and other fixtures and fittings;
- Details of markers or other protection devices to be installed;
- Details of other adjacent services as determined from the Services Search.

Water NSW requests the opportunity to review and comment on the final design details four (4) weeks prior to that works commencing, to allow for checking of design and related works procedures and revisions as required.

Documentation – Work-as-Executed Plans
Work-as-executed plans shall be prepared and submitted by the Applicant or in-house party on the completion of all new service installations and changes to existing services. Any variations to the approved plans must be clearly marked, particularly with respect to any change in location, changes in depth of services below ground or direction of services.

2. Operation and maintenance of the Pipelines

Works within the water supply corridor
Any structure and any related works must be designed, constructed and operated in such a way that does not restrict Water NSW from operating and maintaining the Pipelines. This includes not restricting vehicle or machinery access to or along the existing management roadway within the Pipelines corridor.

Vehicular access points into Water NSW land
Water NSW requires safe 24 hour access into the Pipeline corridor for operational, security and emergency purposes. Water NSW operational vehicles and contractors, primarily 4WD operational and security vehicles, traverse the length of the corridor, in both directions, on a daily basis. This means vehicles need to regularly cross public arterial roads, such as Mamre Road and Old Wallgrove Road, in both directions, going from one section of the pipeline corridor to the other.

Weekly traffic includes trucks with trailers and tractors with implements. Traffic for major works or in emergency situations may include heavy articulated trucks and large capacity cranes.

Exit/entry points must to be designed to comply with RMS road safety standards and enable Water NSW and contractor vehicles to safety enter or exit the Pipeline corridor from all roads crossing the corridor. The design vehicle is a single unit truck/bus (12.5 m). The entry/exit gates need to be set back far enough from the road edge to allow a long vehicle, eg truck and trailer, to completely turn off the roadway and stop to open the gate.

Vehicular access within Water NSW land

Water NSW requires vehicular access into all sections of the Pipelines corridor, including land between the Pipelines and the external property boundaries. The required vertical clearance for vehicular access under new or upgraded structures, such as bridges, is 4.6 m, which would allow passage of heavy maintenance vehicles such as concrete agitators, excavators and dump trucks.

3. Security and Public Safety

Security and preventing illegal access is critical along the Pipelines corridor. Water NSW requires security to be maintained during the construction works. There is a need to secure the Warragamba to Prospect Pipelines from trespassers and public pollution. If any of the fencing requires replacement, or upgrading, then this should be done to Water NSW's requirements and with all reasonable costs met by the proponent.

Security fencing

On completion of any new development adjacent to Water NSW land, or bridge construction or upgrade works, Water NSW requests that security fencing be installed along the Water NSW boundaries or the approaches to the bridge and at the Canal corridor entry points. All replacement fencing should also be 2.3 metre chain line security fencing or better, unless otherwise agreed to by Water NSW. Water NSW's standard for security fencing is to the requirements of AS1725 2010, that is, 1.8 metre chain link panels with galvanised top and bottom rails, plus 3 top strand barbed wire and the width of each panel should not exceed 3 metres. If visual impact is a concern, the fence can be black coated.

4. Incident Notification and Entry into Water NSW

Incident Notification

In order to ensure appropriate protection and management of the water supply infrastructure and timely response to incidents, Water NSW requires notification of any incident, accident, spill or fire within, or potentially affecting the Pipeline corridor. All incidents must be reported on Water NSW's Incident Notification Number 1800 061 069 (24 hour service) as a matter of urgency. This enables Water NSW to respond in a timely, consistent and appropriate manner.

Entry into Water NSW lands

Access to Water NSW lands is strictly prohibited, except as allowed by an access consent issued under clause 9 of the Sydney Water Catchment Management Regulation 2008. The proponent of any works within or under the Pipelines corridor, or any of its contractors, may only enter Water NSW land in accordance with an access consent issued under this regulation.

The proponent will need to submit an on-line application for access consent covering the investigation and construction period. The application can be found at:
http://www.sca.nsw.gov.au/catchment/manage/special-areas/access/applying

Please note Water NSW may take up to 28 days after receiving an application to make a decision and therefore allow for this time when choosing the 'date of access from' on the application form.

Each employee or contractor must complete a Water NSW approved induction prior to entry to the Pipelines corridor, unless accompanied by Water NSW personnel. Each employee or contractor must have in their possession an appropriate identification card at all times while in the Pipelines corridor.

5. *Heritage*

The Warragamba to Prospect Pipelines have been assessed a having state heritage significance, but are not currently listed on the State Heritage Register. Relevant heritage information on the Pipelines can be provided on request by Water NSW.

The design, construction and operation of structures should prevent, or at least minimise, impacts on the heritage significance of the Pipelines. Water NSW recommends that the proponent of works that potentially affect the Pipelines consult with the relevant local Council and the Office of Environment and Heritage, and seek expert advice on the appropriate level of approval and documentation required to address heritage impacts.

6. *Land Title, Easement or Licence Agreement with Water NSW for new structures*

Water NSW require the proponents of any infrastructure proposed within, or crossing Water NSW lands to establish an easement or enter into a licence agreement with Water NSW. This will include a standard market value annual fee.

For some road / bridge proposals, Water NSW understands that the Roads & Maritime Services (RMS) will resume or acquire various lands, including Water NSW land. Water NSW's preference is for any such resumption to be done after construction has been completed, so that boundaries can be based on the as-built works.

Water NSW
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