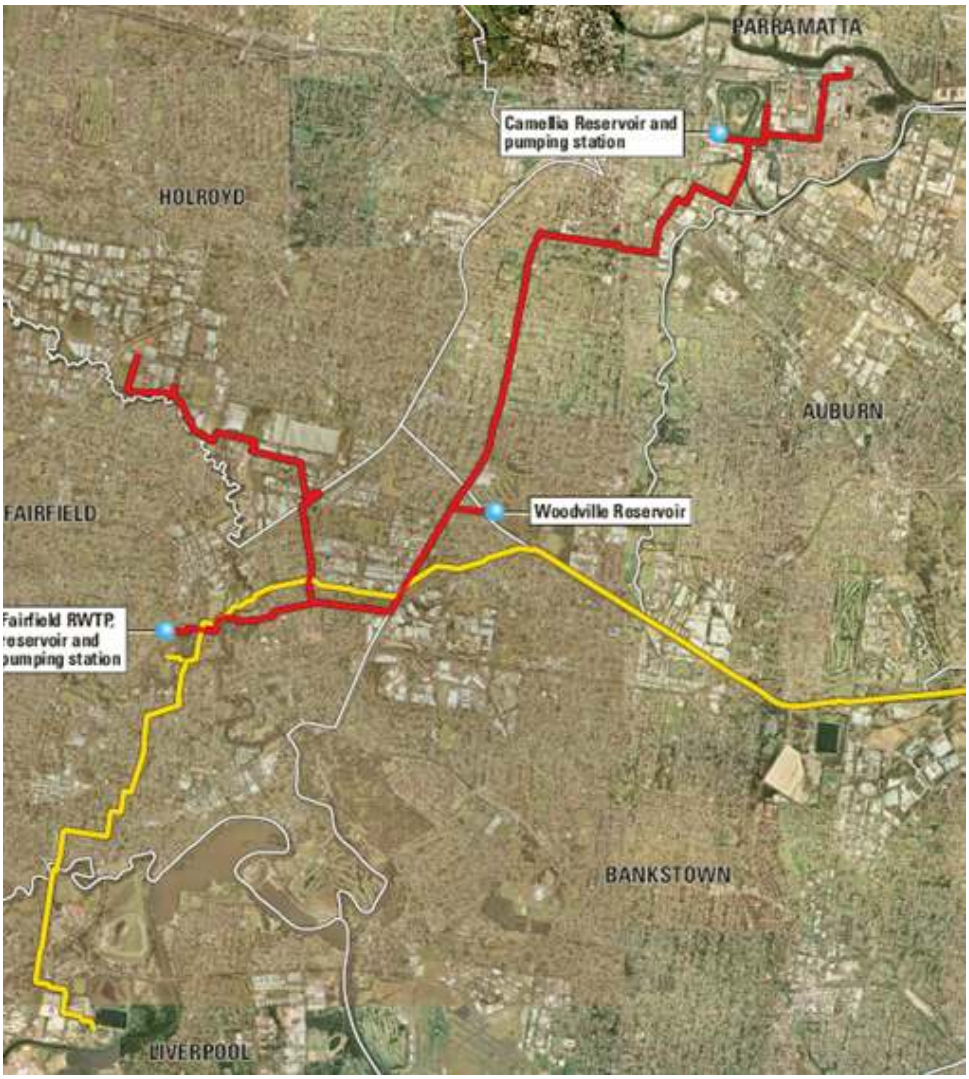
MAJOR PROJECT ASSESSMENT: Camellia and Rosehill Recycled Water Scheme



Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

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EXECUTIVE SUMMARY

On 3 August 2007, the NSW Department of Planning received a request from Jemena Asset Management Pty Ltd (formerly known as Alinta Asset Management Pty Ltd) on behalf of the project Proponent, Aquanet Sydney Pty Ltd, seeking the opinion of the Minister as to the application of the Major Projects SEPP to the proposed Camellia and Rosehill Recycled Water Scheme (formerly known as the Camellia Recycled Water Scheme). The project was determined to fulfil the criteria of a Part 3A of the New South Wales *Environmental Planning and Assessment Act 1979* (EP&A Act).

A Major Project Application and a preliminary environmental assessment report were submitted to the Department in September 2007. This provided information about the Project and its potential environmental impacts to enable the Department to issue formal requirements for a detailed Environmental Assessment of the Project under the provisions of Part 3A of the EP&A Act. An Environmental Assessment for the Project was submitted to the Department in January 2009.

The objective of the Project is to deliver recycled water to high volume users between Smithfield and Camellia, NSW and thereby reduce the demand on Sydney's drinking water supply. The proposed recycled water scheme consists of the construction and operation of a reverse osmosis recycled water treatment plant (RWTP) at Fairfield with a peak output of 20 megalitres / day of recycled water (expandable to 25 megaliters/day at a later stage), connection to an existing Liverpool to Ashfield sewer line and 20 kilometres of underground reticulation network to supply the recycled water to consumers, three above ground storage reservoirs, and two pumping stations along the line of the recycled water pipeline. The Project would be located in the Fairfield, Parramatta, Bankstown and Holroyd local government areas. The Project has a stated capital investment value of approximately $100 million.

Construction of the project will be conducted via a phased approach with a peak workforce of 300 construction personnel working across the Project for three to six months. Daily workforce numbers will vary between 10 and 200 personnel outside this peak period. Once the project is operational, approximately six fulltime staff would be employed plus up to three additional service providers per day to maintain the RWTP at Fairfield. The Woodville reservoir and Rosehill reservoir and pumping station will not be staffed.

The proposed Camellia and Rosehill Recycled Water Scheme would form a component of the NSW Government's 2006 Metropolitan Water Plan. The project would take approximately 2 years to build and is expected to be operational by 2011.

Aquanet Sydney Pty Ltd (Aquanet) is the Project Proponent. Veolia Water Australia Ltd (Veolia) as a contractor will construct, operate, maintain and own the proposed RWTP at Fairfield. Jemena Asset Management Pty Ltd, also as a contractor to Aquanet, will construct, operate, maintain and own the recycled water distribution network and associated facilities. Jemena is also responsible for securing project approval of the Camellia and Rosehill Recycled Water Scheme on behalf of Aquanet.

The Environmental Assessment was publicly exhibited by the Department from 14 January 2009 to 27 February 2009 and submissions invited in accordance with Section 75H of the Act. The Department received a total of nine submissions from government agencies and no submissions from individuals or private interests. Of the submissions, one indicated in principle support subject to specific issues being addressed and one considered the proposal to be unacceptable in its present form. The remaining seven submissions did not specifically state a position. The submissions were received from: the NSW Department of Environment and Climate Change; NSW Department of Water and Energy; NSW Department of Health, NSW Department of Primary Industries, the NSW Roads and Traffic Authority and Bankstown, Holroyd, Parramatta and Fairfield City Councils.

A Preferred Project Report dated 20 March 2009, including responses to all submissions, was submitted to the Department. This report amended the proposed project as follows:

- general changes to the layout and design of the proposed recycled water treatment plant in Fairfield; and,

- a change in the proposed route alignment in the area from the proposed water recycling plant to Taylor Street, Fairfield to avoid the impacts to the riparian corridor.

A further four submissions were received from three of the Councils and DECC following the Preferred Project Report. These reiterated issues previously raised.

The Department has assessed the Proponent's Environmental Assessment, Preferred Project Report and Statement of Commitments on the project and submissions received by public agencies on the Project. Based on its assessment, the Department is satisfied that the Proponent has provided a robust and conservative assessment of impacts. They can be managed and mitigated to achieve acceptable environmental standards, so as to not preclude the orderly and economic development of surrounding landuse.

The Department has drafted a recommended instrument of approval incorporating stringent and comprehensive environmental mitigation and management requirements and to serve to enhance commitments made by the Proponent in its Statement of Commitments.

On balance, the Department considers the project to be justified and in the public's interest and should be approved subject to the Department's recommended conditions of approval and the Proponent's Statement of Commitments.

CONTENTS

1. BACKGROUND

On 3 August 2007, the Department received a request from Jemena Asset Management Pty Ltd (formerly known as Alinta Asset Management Pty Ltd) on behalf of the Proponent, Aquanet Sydney Pty Ltd (Aquanet), seeking the opinion of the Minister as to the application of the Major Projects SEPP to the proposed Camellia and Rosehill Recycled Water Scheme (formerly known as the Camellia Recycled Water Scheme).

On the basis of the Project being development for the purpose of sewage and related wastewater treatment plants with a capital investment value exceeding $30 million (Schedule 1, Group 8, Clause 26), the Project was declared by the Director-General of the Department of Planning to be a Major Project under *State Environmental Planning Policy (Major Projects) 2005*. A Major Project Application was submitted to the Department in September 2007 and an Environmental Assessment was submitted in January 2009 under Part 3A of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). Following public consultation comprising an exhibition period and receipt of submissions on the Project, a Preferred Project Report dated 20 March 2009, including responses to all submissions, was submitted to the Department outlining amendments to the Project.

The objective of the Project is to deliver recycled water to high volume users between Smithfield and Camellia, NSW and thereby reduce the demand on Sydney's drinking water supply. The Project also would form a component of the NSW Government's Metropolitan Water Plan, which identifies strategies to diversify supply and demand options, including an increase of water recycling.

The proposed Camellia and Rosehill Recycled Water Scheme consists of the construction and operation of a reverse osmosis recycled water treatment plant (RWTP) at Fairfield with a peak output of 20 megalitres / day of recycled water and 20 kilometres of underground reticulation network to supply the recycled water to consumers. The total output is expandable to 25 megaliters/day. The Project also comprises three above ground storage reservoirs, and pumping stations at two locations along the recycled water pipeline. The proposal would be located in the Fairfield, Parramatta, Bankstown and Holroyd local government areas. The proposal has a stated capital investment value of around $100 million.

Construction of the project will be conducted via a phased approach with a peak workforce of 300 construction personnel working across the Project for three to six months. Daily workforce numbers will vary between 10 and 200 personnel outside this peak period. Once the project is operational, approximately six fulltime staff would be employed plus up to three additional service providers per day to maintain the RWTP at Fairfield. The Woodville reservoir and Rosehill reservoir and pumping station will not be staffed.

The scheme would initially supply recycled water to specific customers between Smithfield and Camellia. The scheme would have sufficient capacity for possible future extensions to the Liverpool, Wetherill Park and Parramatta/Westmead areas.

Three main organisations are instrumentally involved in the Project: Aquanet Sydney Pty Ltd (Aquanet), a holly owned subsidiary of Singapore Power International (SPI) is the Project Proponent. Veolia Water Australia Ltd (Veolia) as a contractor will construct, operate and maintain the proposed RWTP at Fairfield and the plant will be owned by Veolia. Jemena Asset Management Pty Ltd (formerly known as Alinta LGA Limited) as a contractor to Aquanet will construct, operate, maintain and own the recycled water distribution network and associated facilities. Jemena is also responsible for securing project approval of the Camellia and Rosehill Recycled Water Scheme on behalf of Aquanet.

The Department has assessed the Proponent's Environmental Assessment, Preferred Project Report and Statement of Commitments on the project and submissions received by public agencies on the Project. All documents have been reviewed as part of this report.

1.1 Proposal Overview

The proposal comprises:

- Construction of a reverse osmosis recycled water treatment plant (RWTP) at Fairfield with a peak output of 20 megalitres per day of recycled water. Infrastructure will include a feed effluent storage tank, recycle water storage tank, pumping station and other equipment;
- Secondary effluent as feedstock for the RWTP to be sourced from the recently constructed Liverpool to Ashfield sewage pipeline;
- Approximately 20 kilometres of primary recycled water main in public roads and public reserves through four local government areas. Five kilometres of the water main is proposed to be inserted into an existing isolated Alinta gas main which is located along Woodville Road between Fairfield East and Granville. Pipebursting will be conducted in this location;
- Two storage reservoirs and a pumping station at Rosehill Gardens Racecourse on the north-east corner of Durham Street and Grand Avenue, Rosehill;
- An elevated storage reservoir at Woodville Golf Course on Barbers Road, Guildford.
- Supply of treated recycled water to specific customers between Smithfield and Camellia. Sufficient capacity in the water recycling plant to extend the distribution network to the Liverpool, Wetherill Park and Parramatta/Westmead areas to supply additional customers.

1.2 Existing Site

The Project comprises corridors and surface infrastructure sites located between Camellia and Rosehill in western Sydney, NSW. The proposed location of the proposed Camellia and Rosehill Recycled Water Scheme pipeline corridors and surface infrastructure are shown in Figure 1. The corridor comprises mixed developed industrial and residential areas, roads and open spaces through four local government areas including Bankstown, Fairfield, Holroyd and Parramatta. The Liverpool to Ashfield pipeline route, which is proposed to be connected to the recycled water pipeline is also shown in Figure 1. The RWTP, pumping station and storage tank are proposed to be located on a parcel of unused land adjacent to Sydney Water's Fairfield Storm Sewage Treatment Plant (SSTP). This affected land is owned by Sydney Water.

1.3 Surrounding Land Use

Specific surrounding land features associated with the key components of the Project include the following.

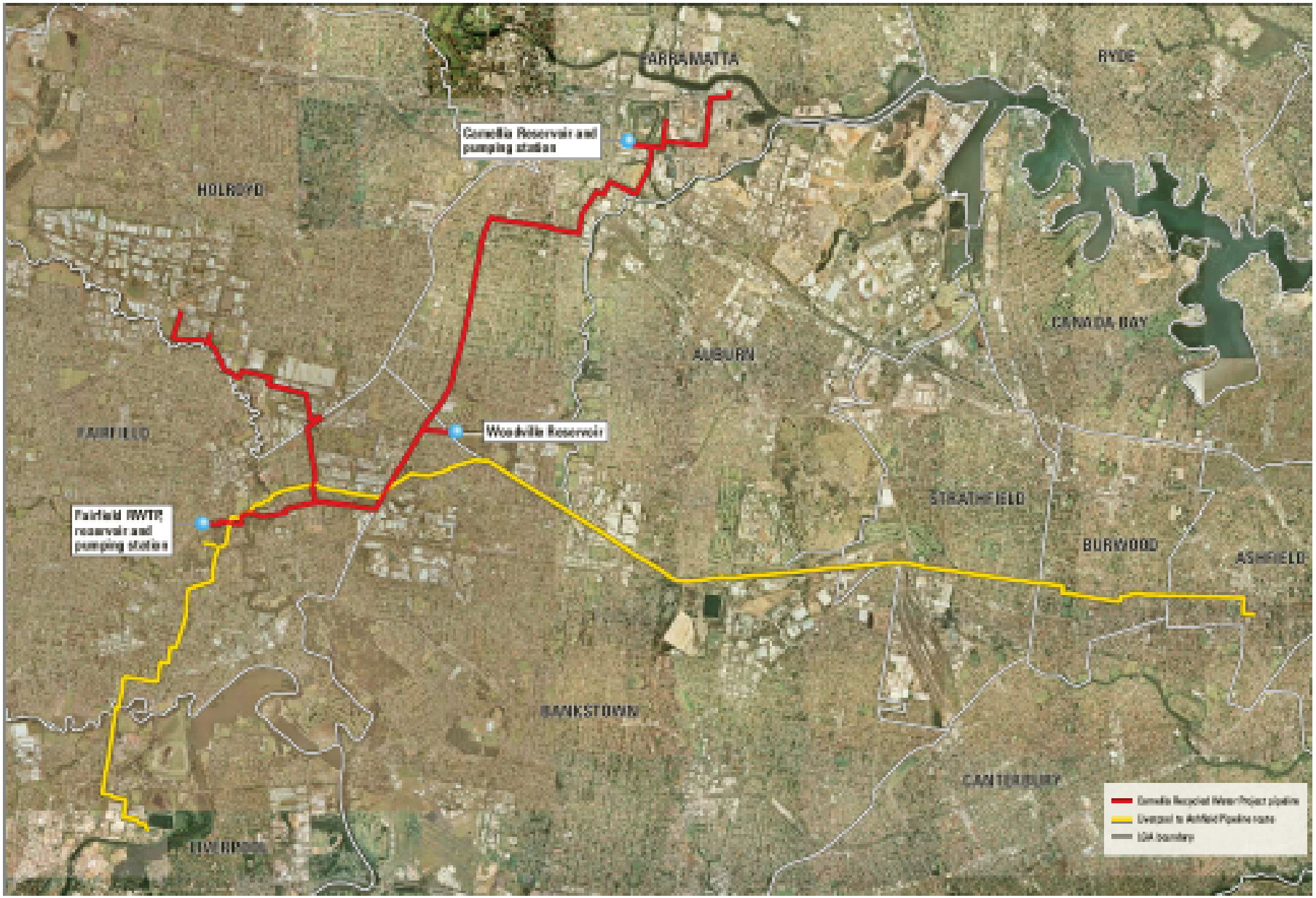
- Pipeline corridor: The proposed pipeline corridor comprises approximately 20 kilometres of primary recycled water main in public roads and public reserves and is generally surrounded by mixed developed industrial and residential areas of western Sydney, NSW. Five kilometres of the water main is proposed to be inserted into isolated Alinta gas mains along Woodville Road between Fairfield East and Granville.

- RWTP: Land uses in the vicinity of the proposed RWTP and pumping station in Fairfield include detached residential dwellings on the northern side of North Street, a railway corridor to the west of the site, and vacant land and the Fairfield SSTP to the east and south of the site.

- Woodville Reservoir: The reservoir is proposed to be located on the southern boundary of Woodville Golf Course, on the northern side of Barbers Road. The reservoir would be located between the golf course maintenance building and Sydney Water's water supply pipelines, which are located on the southern boundary of the golf course. Construction of the reservoir would require the removal of approximately 17 Casuarina trees. Surrounding land uses include a turf business, the water supply pipelines, and detached residential dwellings to the south and west.

- Camellia Reservoir and pumping station: Land uses in the vicinity of the Camellia Reservoir, at Rosehill Racecourse, and the pumping station are industrial. There are no residential receivers in the vicinity.

Figure 1 – Proposed Rosehill Recycled Water Scheme and Surrounding Land Use (Alinta, August 2007)



1.4 Sensitive Receivers

The nearest receivers to the site, as shown on the map in Figure 1, include waterways and residential areas as follows:

Waterways
Pipeline crossings of waterways would be constructed by horizontal directional drilling and therefore impacts to aquatic habitats would be unlikely, however, many of the waterways are surrounded by native vegetation which may potentially be affected including:

- Parramatta River and tributaries near the northern end of pipeline corridor;
- Duck Creek surrounded by Mangroves and Saltmarsh. Coastal Saltmarsh is listed as an endangered ecological community under the *Threatened Species Conservation Act* (TSC) and both Mangroves and Saltmarsh are protected under the *NSW Fisheries Management Act 1994*
- Prospect Creek is surrounded by River-flat Eucalypt Forest which is listed as endangered under the TSC Act;
- The proposed pipeline traverses six waterways, as detailed in Section 2.2 and Table 1.

Residents

Residential receivers include:

- Residents on the northern side of North Street and western side of Railway Parade, in the vicinity of the proposed RWTP and pumping station at Fairfield;
- Residents to the south and west of Woodville Golf Course in the vicinity of the Woodville Reservoir
- Residents located in close proximity to the proposed pipeline corridor, potentially affected by trenching activities through nature strips, local streets, open spaces and footpaths. Further details are provided in Appendix C of the Environmental Assessment.

2. PROPOSED DEVELOPMENT

2.1 Project Description

The proposed Camellia and Rosehill Recycled Water Scheme comprises a RWTP located in Fairfield with a feed effluent storage tank and pumping station, a connection to the Liverpool to Ashfield pipeline and a distribution system including:

- an elevated surface reservoir at Woodville Golf Course on Barbers Road at Guildford;
- two surface reservoirs and a pumping station at Rosehill Gardens Racecourse at Rosehill; and
- approximately 20 kilometres of pipeline.

The components of the proposal are described below.

Liverpool to Ashfield Pipeline

The Liverpool to Ashfield Pipeline is part of the South Western Sydney Sewerage Scheme, constructed in 2008, and provides additional wastewater transfer capacity for the growing population of south-western Sydney. Secondary effluent is expected to be available in the pipeline no earlier than July 2010. When the Camellia and Rosehill Recycled Water Scheme commences operation, the Liverpool to Ashfield Pipeline would supply secondary treated effluent feedstock to the proposed RWTP at Fairfield.

Recycled Water Treatment Plant

A RWTP, pumping station and storage tank are proposed to be located on a parcel of unused land adjacent to Sydney Water's Fairfield Storm Sewage Treatment Plant (SSTP). The affected land is owned by Sydney Water.

During the Environmental Assessment, soil contamination was identified at the proposed RWTP site (Coffey Environments 2007), comprising asbestos likely to be associated with past roof tiling manufacturing activities. No evidence of chemical contamination or groundwater inflows was observed in any of the test pits, although a layer of ash containing elevated polycyclic aromatic hydrocarbons (PAHs) was detected. Depth was greater than approximately 1 metre and the concentrations of PAHs and other potential contaminants were below health investigation levels for commercial/industrial land use.

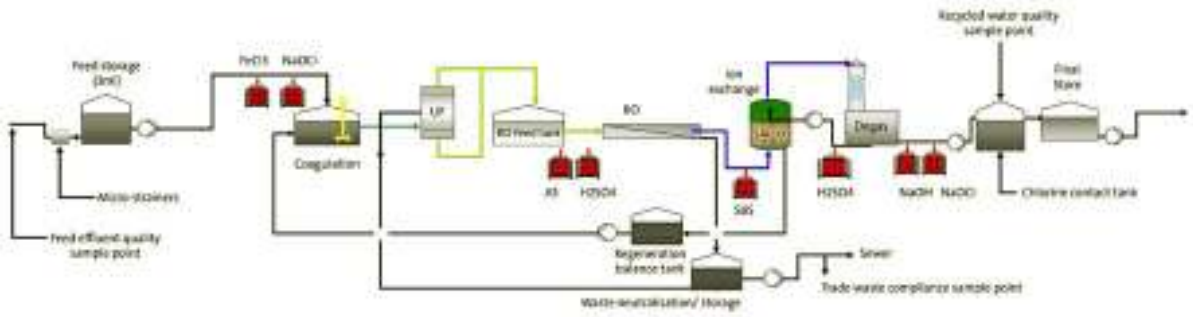
Remediation or management of contamination of the RWTP site is proposed in conjunction with the development of the proposal. A fill management plan would be prepared in accordance with legislative requirements and relevant DECC guidelines. Any excavation and off-site disposal of soil from the RWTP site would occur in accordance with the NSW Environment Protection Authority's (1999) Environmental Guidelines: Assessment Classification & Management of Liquid and Non-liquid Waste. Further details are provided in Section 5 of this report.

The RWTP would have an initial treated water output of 20 ML/day and sufficient capacity to expand to an output of 25 ML/day to meet expected future demand for recycled water. Waste streams generated by the RWTP would include:

- microstrainer backwash water;
- ultrafiltration backwash water, chemical enhanced backwash and 'clean in process' waste; and
- reverse osmosis concentrate.

It is proposed that these process wastes be discharged to the sewerage system. The RWTP would operate 24-hours per day. A pilot plant investigation would be undertaken for at least five months prior to the design and construction of the RWTP. Figure 2 shows a schematic of the proposed RWTP.

Figure 2: Schematic of the RWTP



The feedstock to the RWTP would comprise a blend of secondary treated effluent from Glenfield and Liverpool STPs which will be transferred to the RWTP via the Liverpool to Ashfield Pipeline. The RWTP includes a 3 ML feed storage tank to assist in managing variations in feed effluent quantity and quality. This tank would provide several hours storage of feed effluent at the design recycled water production rate of 20 ML/day.

The RWTP plant design incorporates a mechanism to divert recycled water that does not meet Sydney Water's quality specifications. Such poor quality recycled water would be immediately diverted to a wastewater pit for discharge to the sewerage system (with the process waste). As the sewerage system has a limited capacity, the RWTP would immediately be reduced to the minimum operating rate. Provided that effluent water quality returns to normal within a few hours, it is likely that customers would not be impacted as the pipeline network has sufficient capacity to cater for this duration of downtime.

Fairfield pumping station

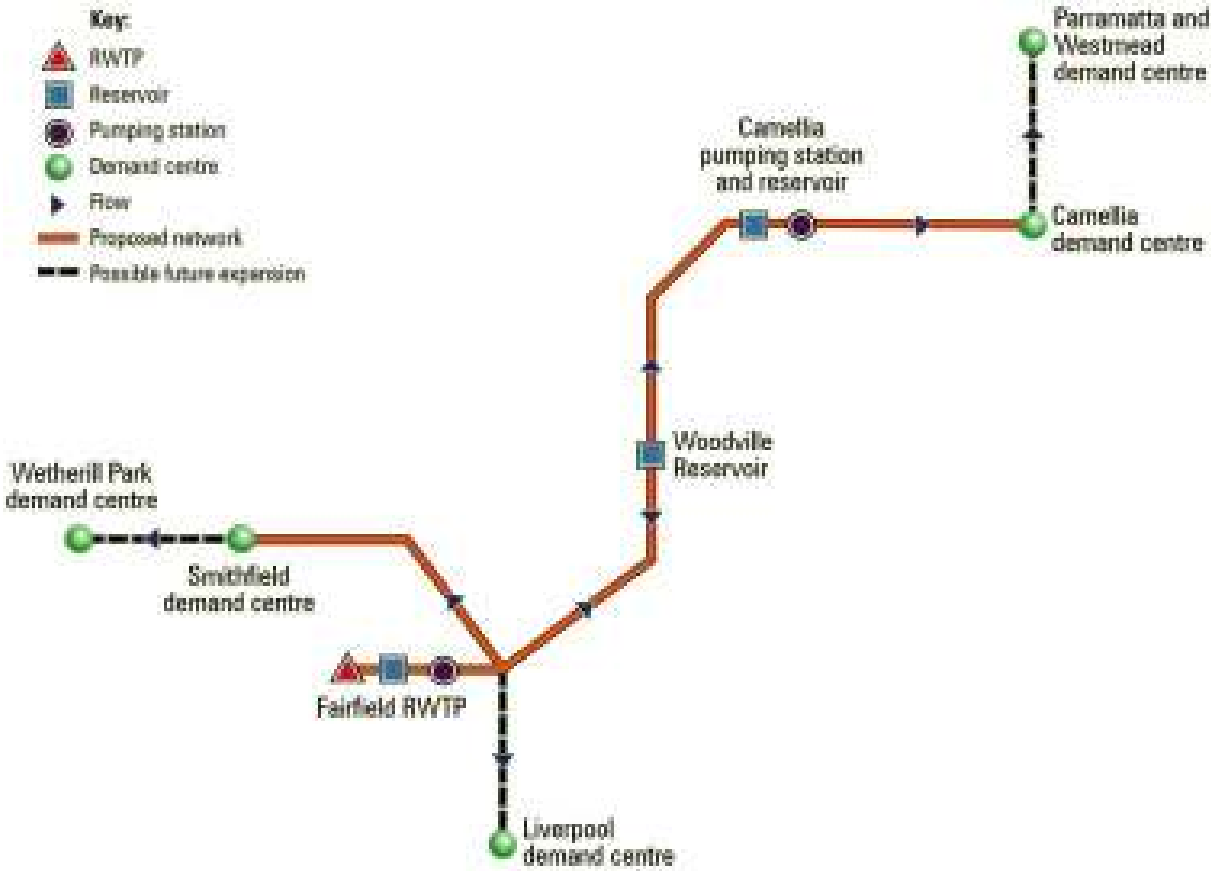
The proposed Fairfield pumping station would have a pumping capacity of 28 ML/day. Variable speed pumps are proposed in a duty/duty/standby arrangement.

Distribution system

The recycled water distribution system would comprise two key zones based on the demand centres of Smithfield and Camellia. Recycled water would be pumped from the RWTP to a proposed elevated reservoir at Woodville Golf Course (Woodville Reservoir) and directly to the Smithfield demand centre. Recycled water would gravitate from the Woodville Reservoir to the proposed Camellia Reservoirs at Rosehill Gardens Racecourse. The storage within the distribution system is sufficient to meet the peak daily demand for the identified customers over three consecutive days without the need for top-up with potable water.

A schematic of the distribution system is shown in Figure 3.

Figure 3: Distribution system overview



Woodville reservoir

The Woodville reservoir would comprise a single, cylindrical storage tank of approximately 16 metres diameter and 3.6 metres height. The tank would have a storage capacity of approximately 0.7 ML and would be mounted on a supporting structure. The base of the tank would be approximately 5 metres above ground level, resulting in the top of the tank being approximately 8.6 metres above ground level. Pumping from the pumping station at the RWTP would be controlled by the water level in the Woodville Reservoir and pressure levels measured at a foundation customer site. The Woodville reservoir would maintain supply to the Smithfield demand centre when the pumps at the RWTP are not operating.

Camellia reservoir and pumping station

A surface reservoir, the Camellia reservoir, and a pumping station are proposed in the south-western corner of the Rosehill Gardens Racecourse at Rosehill. The affected area of the racecourse is a grassed drainage area. Rosehill Gardens Racecourse is owned by the Sydney Turf Club. The Camellia Reservoir would comprise two, cylindrical storage tanks of approximately 25.4 metres diameter and 6 metres height. Each tank would have a storage capacity of approximately 3 ML.

2.2 Construction methodology

The following features of the construction methodology were highlighted in the Environmental Assessment:

- The pipeline is proposed to be constructed in sections to minimise disruptions and impacts to traffic and local residents and businesses;
- Construction works would be limited to public roads and public reserves;
- Construction of the pipeline would occur at an average lay rate of approximately 30 metres per day with variation up to almost 75 metres per day, depending on each pipeline section and environmental constraints of the location;

- Mitigation measures to minimise construction traffic and access, noise and other environmental impacts during construction are proposed.

Appendix C in the Environmental Assessment provides full details of surrounding land uses and construction method along the pipeline.

Existing isolated Alinta gas mains along Woodville Road between Fairfield East and Granville and underneath the railway corridor at Clyde Railway Station will be used for construction of the pipeline. This is expected to reduce the amount of surface disturbance compared to trenching in terms of traffic impacts, surface land use impacts and reduced generation of spoil.

Woodville Road, Fairfield East to Granville - Pipebursting

Along Woodville Road, an existing 12-inch disused isolated Alinta gas main would be 'pipeburst' by a hydraulic or pneumatic nose cone to enable a larger pipe to be inserted. Pipebursting of the isolated gas main under Woodville Road would be undertaken in sections. Access pits would be excavated at both ends of each section. A pipebursting trial conducted on a section of the isolated gas main under Woodville Road by Alinta during the Project development phase found pipebursting to be a suitable technology in this section.

Risks involved in pipebursting include:

- The potential for heaving of the ground surface above the pipebursting works.
- The potential for pipebursting to provide a pathway for impurities within the isolated gas main reaching the ground below.

Residual impurities may be present in the isolated gas main due to the past use of town gas comprising methane and impurities such as ethane, propane, light hydrocarbons, dust, and other substances. Isolated gas mains that date from the town gas era can retain a film of impurities along their internal surfaces that can also collect at low points in the gas distribution network. The isolated gas main under Woodville Road includes several syphons located at low points along the main.

Alinta has surveyed the condition of some sections of the isolated gas main under Woodville Road by camera and the sections of the gas main surveyed were found to be generally dry and dusty. Sludge was observed at the syphons. Where possible, this sludge would be removed prior to the proposed pipebursting works. The potential for the proposed pipebursting works to provide a pathway for impurities to be transferred to the ground around the gas main is further detailed in Section 5 on Contamination.

Clyde Railway Station - Insertion

At Clyde Railway Station, the proposed pipeline would be inserted directly into an existing isolated Alinta gas main. The proposed construction methodology would not affect the existing ground conditions along the line of the existing main.

Road and railway crossings - Boring

Boring is proposed where the pipeline crosses arterial roads and at railway crossings at Yennora Railway Station and on Grand Avenue, Rosehill. Proposed boring methods include thrust, case and stitch boring. Each section of boring would require excavation of a bore and receiving pit.

Waterway crossings

At some waterway crossings, the pipeline is proposed to be constructed by horizontal directional drilling and pipe bridges. This will avoid direct impacts to ecologically sensitive areas. The proposed pipeline would traverse six waterways as detailed in the following table.

Table 1 – Waterway Crossings

Location	Proposed construction method	Approximate length (m)
St Elmo's Drain, Fairfield SSTP site, Fairfield	Trenching	25
Prospect Creek – Fairfield Park	Horizontal directional drilling	125
Burns Creek – Tangerine Street, Fairfield East	Horizontal directional drilling	49
Duck Creek – Woodville Road, Merrylands	Pipe bridge	8
Duck Creek - Elizabeth Street, Granville	Pipe bridge	14
Duck Creek – Elizabeth Street near Blaxcell Street, Granville	Thrust boring	20
Duck Creek – Shirley Street	Horizontal directional drilling	152

Pipe bridges are proposed where the proposed pipeline intersects with water supply pipelines and at crossings of drainage channels.

Other sections - Trenching

Trenching is proposed along all other sections of the proposed distribution system. Trenching works would occur on a 'block-by-block' basis with blocks being closed to traffic and detours implemented. Excavated spoil would generally be removed by truck loads for off-site temporary storage or directly to a waste disposal facility. Trenching, laying of the pipeline and backfilling of the trench would all occur on the same day so that local residents of the affected block would have vehicular access to their properties outside of construction work hours. Emergency vehicle access would be maintained at all times. Where trenching of the pipeline is proposed on a section of the alignment adjoining industrial, business or educational land uses, night-time or weekend works and works during school holiday periods would be considered to minimise disruption to these land uses. Construction work method statements prepared by the construction contractors and a Construction Environmental Management Plan would contain measures to manage and minimise construction impacts.

2.3 Preferred Project Report

A number of changes to the Project were proposed as described in the Preferred Project Report dated March 2009. The changes relate to the design and layout of the Fairfield RWTP and the proposed alignment of the distribution pipeline. These changes are shown in Figure 4 and 5 and are as follows:

Fairfield RWTP

Transformer voltage and location change

The electricity provider for the proposed RWTP at Fairfield indicated that the proposed high voltage power supply for the plant would not be acceptable and also transformers must be directly accessible from the existing road network without accessing the plant. Therefore a low voltage system has been adopted and the plant redesigned accordingly. The plant design has been revised to accommodate the requirements of the energy provider. The original proposal included a high voltage transformer located immediately east of the main filtration building in the south eastern portion of the site. The revised design now includes three low voltage transformers (2 x 1250kVA and 1 x 500kVA) located on the western boundary of the site off East Parade. The revised transformer location and configuration is outlined in the revised plant design plans shown in Figure 4 below.

Pumping station relocation

As a result of the transformer relocation and the drop in voltage, the pumping station also required relocation. The pumping station was originally proposed for the south eastern corner of the site. A new position close to the new transformer location on the western boundary of the site has been adopted with consideration of impacts on residences along the northern side of North Street. The revised location between the recycled water storage tank and the main filtration building directly adjacent to the transformer is shown in Figure 4. This provides visual screening and noise attenuation for the adjacent residents along North Street. Additional noise modelling has been undertaken to quantify any potential impacts and is provided in the Preferred Project Report.

Pumping station enclosure

The original pumping station was proposed to be housed inside an open sided structure. However potential exceedance of night-time operational noise design goals and the revised location significantly closer to potential

residential noise receivers along North Street and Railway Parade has necessitated a fully enclosed and acoustically designed structure around the pumps to attenuate pump noise. This change has also been taken into account in the additional modelling.

Plant layout refinement

Relocation of the transformers and the pumping station has necessitated a change to the plant layout in order to maintain sufficient clearance between the various plant components. Specifically the configurations and dimensions of structures have changed. To reduce energy requirements the heights of the recycled water storage tank, feed balance tank and detention tank have been reduced. To maintain storage volumes, the diameters of the tanks have increased accordingly.

The revised layout potentially affects the visual amenity of the site. In general, the heights of all the tanks, buildings and other structures proposed at the Fairfield RWTP have been reduced in the revised design, and the overall silhouette of the plant will be more compact. Revised section and elevation plans are provided in the Preferred Project Report. A summary of revised heights and height changes is provided in Table 2 below.

Table 2 Height changes at the Fairfield water recycling plant

Item	Original Height (m AHD)	Revised Height (m AHD)	Change (m)
Recycled Water Storage Tank	17.15	15.06	-3.09
Feed Balance Tank	17.35	14.73	-2.62
Detention Tank	16.93	14.92	-2.01
Filtration (Reverse Osmosis) Building	17.10	17.10	0.0
Degasser	17.51	15.93	-1.58
Flocculation Tank	17.15	13.5	-3.65
Reverse Osmosis Balance Tank	16.9	13.63	-3.27
Reverse Osmosis Permeate Collection Tank	13.85	11.95	-1.9

Further information from the Proponent indicated that access ladders with 1.2 meter high safety rails will be fitted to each tank. The total heights of each tank with safety ladders and rails have been considered in the conditions of approval.

As a result of this layout revision less room is available along the northern boundary of the site for an earth embankment to mitigate plant operational noise (as described in Section 5.2.7 of the Environmental Assessment). Also revised photomontages showing new heights are provided in the Preferred Project Report.

Distribution pipeline

Route change North Street

The proposed alignment of the distribution pipeline has been revised to avoid a stand of significant native vegetation associated with the riparian zone along a unformed drainage line running south from North Street (St Elmo's Drain) before intersecting with Taylor Street, Fairfield.

The revised proposal adopts an alignment directly north out of the proposed plant site into the North Street road corridor. The distribution pipeline would then be constructed entirely within the road corridor of North Street in an easterly direction. The pipeline would be installed underneath the box culvert that conveys stormwater underneath North Street via a cased thrust bore. The revised alignment is shown in Figure 5.

The revised alignment avoids potential impacts to significant trees and vegetation in this area. Removal of a number of existing smaller trees and shrubs along the proposed site boundary may be required at the location where the distribution pipeline would leave the plant site. However, the crossing location will be chosen to avoid impacts to the significant eucalypts currently located along the boundary line.

Figure 4: Original Plant Layout

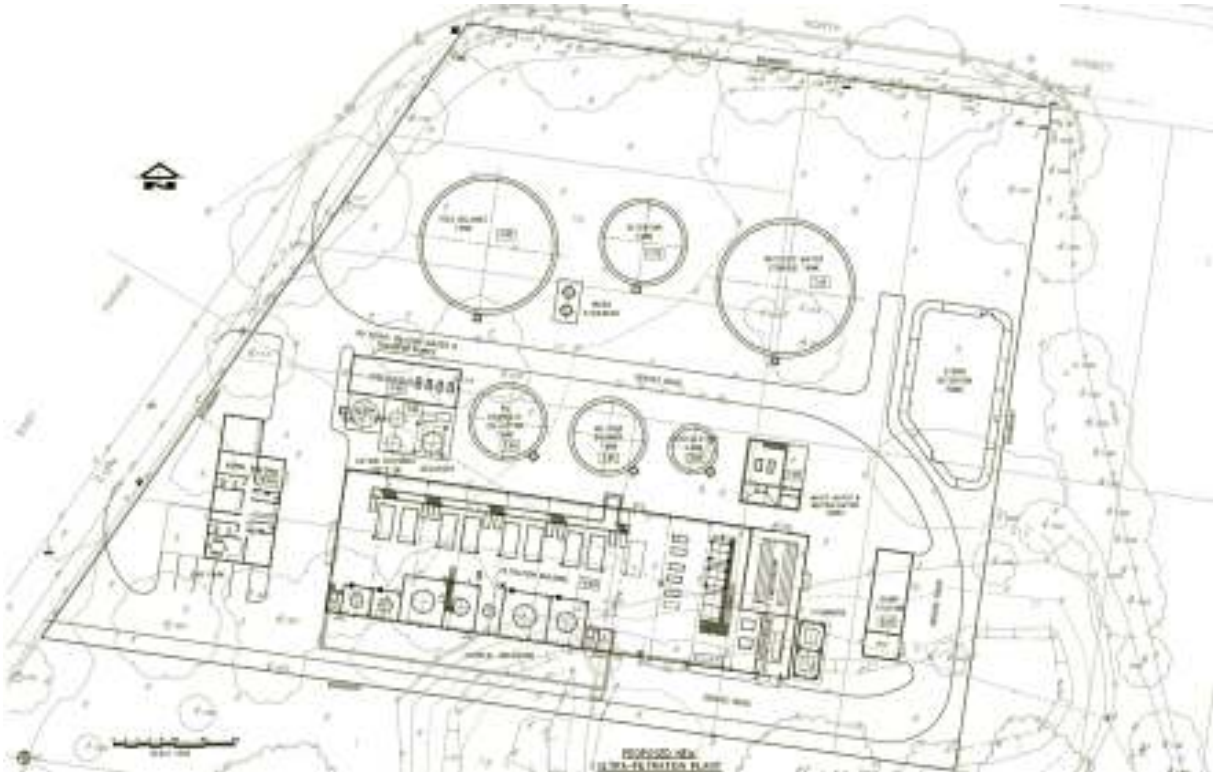


Figure 5: Revised Plant Layout

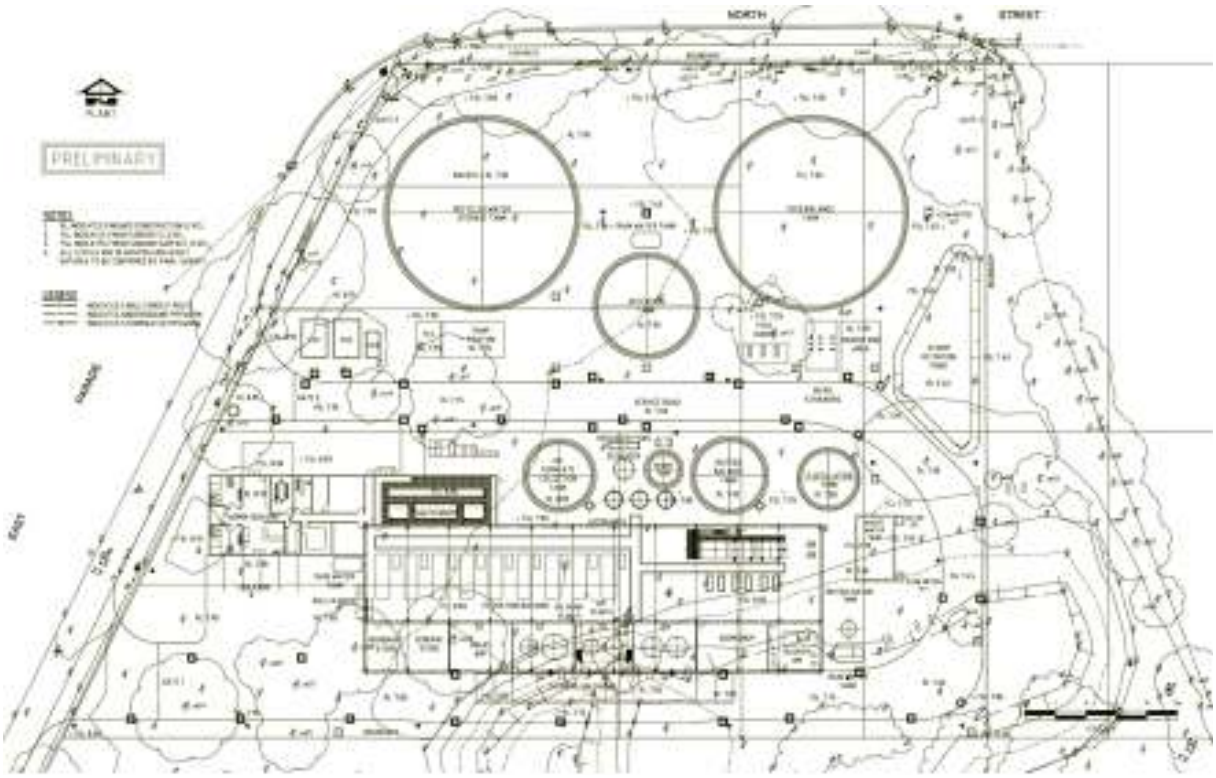


Figure 6: Revised distribution pipeline alignment on North Street, Fairfield

2.4 Project Need

The need for the Project is consistent with the aim of the Metropolitan Water Plan which is to provide a secure supply of water that can meet the long term needs of Sydney. The Metropolitan Water Plan sets out the NSW Government's objective of providing a secure supply of water that can meet the long-term needs of Sydney, ensuring that water supplies are adequate during drought, and minimising costs to the community and the environment. The Plan recognises recycled water as delivering multiple benefits including reducing demand on the potable water system and benefits for riverine aquatic habitats by reducing the level of nutrients discharged by wastewater treatment plants. Also, because recycled water supply is not dependent on rainfall, it can reduce the impact of future droughts by reducing pressure on rain-fed storages (NSW Government 2006).

The Metropolitan Water Plan contains initiatives to increase the current level of recycled water use fourfold, from 15 billion litres per year to over 70 billion litres per year. The Camellia and Rosehill Recycled Water Scheme is recognised within the Plan as the first of a number of projects with strong prospects of increasing the use of recycled water within Sydney.

The following benefits would accrue from the project if it was implemented:

- A reduction in potable water demand by high volume industrial water users;
- An increase in the security and reliability of existing drinking water supplies;
- Enhancement of the benefits associated with the NSW Government's investment in the Liverpool Ashfield Pipeline;
- Deferring investment in additional water supply and sewerage infrastructure;
- Enabling the future fulfilment of the NSW Government's target reductions in potable water use and target volumes of recycled water supply;

The Environmental Assessment states that there are few feasible alternatives comparable to the Project.

2.5 Project Alternatives

Various options were considered during the preparation of a concept design for the Project. The basic parameters that guided the design philosophy of the Project were as follows:

- sourcing of feed water from the Liverpool to Ashfield Pipeline;
- potential to utilise vacant land at the Fairfield SSTP;
- supplying recycled water to large industrial and irrigation customers in the demand areas of Camellia and Smithfield;
- availability of public roads and public open spaces for network construction;
- avoiding major roads and intersections.

Project alternatives considered by the Proponent included the following:

- placement of the RWTP at Woodville Golf Course, at Camellia or adjacent to the Liverpool STP. These alternatives were determined to be inferior to the selected location of the RWTP based on cost, access and environmental impacts;
- placement of sections of the distribution pipeline within the railway corridor to reduce impacts to traffic, however, there would potentially be impacts to rail operations from this alternative;
- in considering alternatives for the alignment of the proposed distribution system, the Proponent focussed on the potential to utilise existing isolated Alinta gas mains in the area including along Woodville Road between Fairfield East and Granville and underneath the railway corridor at Clyde Railway Station, instead of construction of a new pipeline corridor in this area;
- installing sufficient pumping capacity at the proposed Fairfield pumping station to avoid the need for storage reservoirs and pumping stations elsewhere in the distribution system. A disadvantage of this option is the lack of storage in the distribution system to temporarily maintain recycled water supply in the event of pump failure.

The proposed Project is therefore justified and Project alternatives have been considered by the Proponent.

3. STATUTORY CONTEXT

3.1 Major Project

The Project is declared to be a Major Project under *State Environmental Planning Policy (Major Projects) 2005* because it is development for the purpose of sewage and related wastewater treatment plants that has a capital investment value of more than $30 million (Schedule 1, Group 8, Clause 26). Clause 75B(3) of the EP&A Act provides that if Part 3A of the Act only applies to part of a project, then all related development shall be assessed as a single project under Part 3A. The Project is therefore subject to Part 3A of the EP&A Act, and the Minister for Planning is the approval authority.

3.2 Permissibility

The proposal is located in the Bankstown, Fairfield, Holroyd and Parramatta local government areas. The proposal is permissible with consent in all four local government areas, based on the relevant provisions of the local environmental planning instruments for these four local government areas.

The four Local Environmental Plans (LEP) for the local government areas have been reviewed as part of the Environmental Assessment. In all four cases, based on definitions within each LEP, a utility installation including a building or place used in pursuance of any Commonwealth or State Act for the purposes of the provision of sewerage services or the supply of water in permissible with consent in all land use zones in each local government area.

3.3 Environmental Planning Instruments

The four relevant LEPs are:

- Bankstown Local Environmental Plan 2001
- Fairfield Local Environmental Plan 1994
- Holroyd Local Environmental Plan 1991
- Parramatta Local Environmental Plan 2001

State Environmental Planning Policy 33 (SEPP 33) requires the consent authority to consider the merits of proposed activities including the location of the development and the way in which it is proposed to be carried out. A Preliminary Hazard Assessment (PHA) was prepared by the Proponent and reviewed by the Department's Major Hazards Unit. Based on this information, the Project is not considered to be a hazardous or offensive development.

SEPP 55 relates to remediation of contaminated land and has been considered by the Department for construction and operation of the RWTP.

3.4 Minister's Approval Power

As detailed in Section 3.1, Schedule 1, Group 8, Clause 26 of the State Environmental Planning Policy (Major Projects) 2005 describes development for the purpose of sewage and related wastewater treatment plants that have a capital investment value of more than $30 million as development to which Part 3A of the EP&A Act applies. The capital investment value of the proposed RWTP is approximately $50 million and the whole scheme has a capital investment value of $100 million, and hence satisfies this criterion.

Clause 75B(3) of the EP&A Act provides that if Part 3A of the Act only applies to part of a project, then all related development shall be assessed as a single project under Part 3A. The Director General has formed the opinion that the proposal is development of a kind described in Schedule 1, Group 8, Clause 26 of the State Environmental Planning Policy (Major Projects), and, therefore, declared it to be a project to which Part 3A of the EP&A Act applies.

A planning focus meeting regarding the proposal and site visit was held on 28 August 2007, chaired by the Department. The planning focus meeting was attended by representatives of the project team, Sydney Water

Corporation, the four local Councils and NSW Government agencies including the Department of Environment and Climate Change, NSW Roads and Traffic Authority and RailCorp.

The NSW Department of Health and Department of Water and Energy were also invited, but were unable to attend.

Following the planning focus meeting, the Director General Requirements for the proposal were issued on 4 October 2007. An Environmental Assessment was prepared in accordance with the Director General Requirements and submitted on 30 November 2008 to the Department. Following an adequacy review and subsequent revision, the Environmental Assessment was finalised.

The Environmental Assessment was publicly exhibited by the Department from 14 January 2009 to 27 February 2009 and submissions invited in accordance with Section 75H of the Act. The Environmental Assessment was also made publicly available on the Department's website. The Department of Planning received nine submissions from NSW Government agencies and local Councils in response to the Environmental Assessment. The Proponent provides responses to issues raised in the submissions and minor amendments to the Project description in a Preferred Project Report, received by the Department on 20 March 2009.

The Department has met all its legal obligations so that the Minister can make a determination regarding the project.

3.5 Nature of the Recommended Approval

The Proponent is seeking approval for the Camellia and Rosehill Recycled Water Scheme (the Project) described in the Environmental Assessment and Preferred Project Report, which includes the following components:

- a connection to the Liverpool to Ashfield pipeline (LAP) – the source of feed effluent for the water recycling process
- construction and operation of a RWTP at North Street, Fairfield, including a feed effluent storage tank, recycled water storage tank, pumping station and other equipment, with an amended design layout
- construction and operation of a distribution system including:
  - an elevated surface reservoir at Woodville Golf Course on Barbers Road, Guildford;
  - two surface reservoirs and one pumping station on the north-eastern corner of Durham Street and Grand Avenue, Rosehill;
  - approximately 20 kilometres of distribution pipeline.

The Department is satisfied that the environmental investigations and consultation undertaken by the Proponent have considered all potential environmental issues and demonstrated that the Camellia and Rosehill Recycled Water Scheme would be beneficial in accordance with the Metropolitan Water Plan in NSW and within acceptable environmental limits. Consequently, the Department recommends project approval for the Camellia and Rosehilll Recycled Water Scheme.

An instrument of project approval has been prepared, establishing stringent environmental standards, mitigation measures, environmental controls and monitoring requirements that the Proponent must meet during the construction and operation of the Project.

4. CONSULTATION AND ISSUES RAISED

4.1 Public Submissions

The Department received a total of nine public submissions on the Project and no submissions from individuals or private interests. Of the submissions, one indicated in principle support subject to specific issues being addressed and one considered the proposal to be unacceptable in its present form. The remaining seven submissions did not specifically state a position. Eight of the agencies raised issues for the Department's consideration. The key issues identified in the submissions are summarised in Table 4.

Table 4: Issues Raised by Public Submissions

Issue		Number of submissions
Traffic	• construction traffic impacts on parking and pedestrian access along the distribution pipeline; • traffic impacts in Rosehill and Camellia; • heavy vehicle movements in school zones.	4
Noise	• elevated construction and operational noise; • operational noise of RWTP impact on local residents; • vibration impacts from pipebursting on residents.	4
Flora and Fauna	• potential vegetation removal (riparian forest and remnant vegetation); • damage and removal of street trees due to open trenching; • restoration of drainage channels as movement corridors for fauna.	4
Flooding	• RWTP site affected by flooding; • Council-owned culvert will require relocation.	1
Landuse	• construction impacts to roads, other Council assets & sensitive land uses (eg Childcare centre); • on-site parking to be provided for construction staff.	3
Contamination	• potentially contaminated soil during pipebursting; • asbestos and ash deposits present at RWTP site; • potential contamination due to trenching in specific areas. Preliminary contamination assessment required; • Remedial Action Plan required; • ground water unlikely to be encountered during construction; • check DECC Contaminated Sites Register for proposed sites; • waste classification for disposal of any contaminated waste; • fuel storage environmental management controls.	5
Visual	• impact to properties close to Reservoir due to storage tank; • impact to residents on North Street.	2
Air Quality	• dust generation during construction; • odour and chlorine release from RWTP; • odour from potentially contaminated soils and Acid Sulphate Soils.	4
Soil and water	• sediment and erosion control; • soil and water contamination (known and unknown) and remediation; • potential impact on local creek near chemical storage; • works in riparian zones consistent with *Guidelines for Controlled Activities*; • disposal of water from trench dewatering.	7
Heritage	• Aboriginal heritage management.	1
Sustainability	• energy consumption of RWTP; • collection and use of rainwater.	2
Consultation	• community engagement and complaints management; • investigate alternate pipeline installation methods to open trenching;	4

	• consult with bus companies due to impact on bus services; • consult with Council's Tree Preservation Officers for tree removal.	
Planning	• compliance with *Hazardous Industry and Infrastructure SEPPs* and *GMREP 2*; • Proposal required to be licensed under the *Water Industries Competition Act 2006* and potentially stormwater retention ponds under *NSW Farm Dams Policy*; • Preparation of environmental management sub-plans.	5

Nine submissions were received from public authorities: the NSW Department of Environment and Climate Change; NSW, Department of Primary Industries, NSW Department of Water and Energy; NSW Department of Health, NSW Roads and Traffic Authority, and Fairfield City Council, Bankstown City Council, Holroyd City Council and Parramatta City Council. Of these, the Department of Primary Industries indicated in principle support subject to specific issues being addressed and Holroyd City Council considered the proposal to be unacceptable in its present form. One submission (Department of Health) did not raise any issues. The remaining six submissions did not specifically state a position, however raised issues for the Department's consideration.

4.2 Issues Raised in Submissions from Public Authorities

The following summarises the issues that were raised in submissions from public authorities.

Department of Environment and Climate Change (DECC)

- The project is not a scheduled activity under the *Protection of the Environment Operations Act 1997* and therefore will not require licensing during construction or operation;
- Operational noise of Fairfield RWTP not to exceed 40dBA LAeq, 15min at the potentially most affected sensitive noise receiver;
- Impact on green and golden bell frogs should be minimised by restoring drainage channels following pipeline installation as they are movement corridors;
- Aboriginal heritage management procedures should relics be discovered;
- Sediment and erosion controls;
- Groundwater contamination unlikely to be encountered during construction phase;
- Need to consider the feedwater to waste stream ratio for the RWTP;
- Dust generation management controls;
- Rainwater collection for reuse should be conducted as a sustainability initiative;
- Environmental management.

Department of Primary Industries (DPI)

- Supports the proposed works provided that erosion and sediment controls, riparian vegetation harm minimisation and water quality measures in the proposed Statement of Commitments are implemented.

Department of Water and Energy (DWE)

- Proposal required to be licensed under the *Water Industries Competition Act 2006*;
- Potential licensing requirements of stormwater retention pond at Fairfield water recycling plant in relation to *NSW Farm Dams Policy*;
- Works within 40m of waterways must be consistent with *Guidelines for Controlled Activities*;
- Disposal of water from trench dewatering;
- Trenching and pipeline installation conducted in accordance with relevant guidelines;
- Environmental management.

Department of Health

- No issues raised.

NSW Roads and Traffic Authority

- No issues raised;
- Requested to be informed of road work prior to works commencing.

Fairfield City Council

- Overland flooding, primarily due to plant being located above a Council-owned 1200mm stormwater culvert. The required relocation of the culvert will need to be considered by the Proponent;
- Operational noise impact to residents 150m from the RWTP on North Street;
- Visual impact on North Street due to construction of storage tanks;
- Energy consumption of RWTP;
- Planning controls to determine compliance with *Hazardous Industry* and *Infrastructure SEPPs* and the provisions of *GMREP 2* (Georges River Catchment);
- Odour impacts;
- Potential chlorine release from the RWTP in the event of a malfunction;
- Damage and removal of native vegetation due to pipeline construction through North Street and Fairfield Park;
- Heavy vehicle damage to local roads during construction & operation of the plant;
- Contamination: site is affected by asbestos and ash deposits that require management during construction;
- Local traffic impact during construction of pipeline including parking, pedestrian impact, access to properties and bus routes;
- Road safety issues at two schools during construction;
- Chemical storage and potential pollution of local creek.

Bankstown City Council

- Construction impacts on Childcare Centre on Barbers Road, specifically due to trenching along Barbers Road and activities associated with construction of Woodville Reservoir;
- Construction noise, particularly during night time pipebursting on Woodville Road and construction of Woodville Reservoir over a 5 month period;
- Damage to local roads due to heavy construction vehicles and use of alternate routes to minimise traffic and potential damage to road surfaces;
- Preparation of Traffic Management Plan required including construction vehicle access routes. Specifically, poor visibility due to "blind-corners" on Roger Bowman Lane and current poor road condition of Middleton Road makes them unsuitable for access;
- Preparation of Noise Management Plan;
- Dust generation;
- Potentially contaminated soil during pipebursting; additional contamination assessment required and mitigation/remediation strategy for managing contamination, prior to commencement of works;
- Access to recycled water for the Villawood Industrial Precinct;
- Visual impact for properties close to the Reservoir due to 3.6m high storage tank. Additional vegetation screening recommended.

Holroyd City Council

- Vegetation clearing required for pipeline construction in Prospect Creek reserve area understated in the Environmental Assessment. The proposed clearing also would remove remnant vegetation from within the reserve which is considered unacceptable;
- Trenching is generally not supported by Council and alternate methods such as under boring need to be investigated. Alternative methods not provided in the Environmental Assessment;
- Damage or removal of street trees due to open trenching that would damage roots. Number of trees and proposed replanting not provided in the Environmental Assessment;
- Impact on vehicular and pedestrian access and egress to properties adjoining work along pipeline corridor. Consultation with affected property owners required;

- Pedestrian impact and loss of parking at Yennora railway station – alternative construction method requested;
- Impact on newly constructed Loftus Road, Yennora. Impact to this road should be minimised;
- Potential local contamination due to trenching activities adjacent to "Alcoa" site in Yennora. Preliminary contamination assessment required which may be followed by a Phase 2 Contamination Assessment and preparation of a Remedial Action Plan;
- No erosion or sediment control plans submitted for trenching works near Prospect Creek Recreation Reserve. Plans required due to close proximity to Prospect Creek prior to commencement of works;
- Vegetation impacts in Prospect Creek Recreation Reserve understated: five stands of regionally significant vegetation communities & diverse wildlife habitat identified;
- Impact on access paths in Prospect Creek Recreation Reserve due to construction not identified in the Environmental Assessment;
- Traffic management plan required prior to commencement of works and including provision of on-site parking for construction staff and consultation with bus companies due to impact on bus services.

Parramatta City Council

- Contamination and remediation: additional information requested regarding inclusion of groundwater in contamination assessment and requirement for a Remedial Action Plan for Council review;
- Review DECC Contaminated Sites Register to determine whether proposed Rosehill Reservoir site is listed;
- Waste classification required for appropriate disposal of any classified waste material;
- Use of fill material, if any, requires soil validation reports etc;
- Dust and erosion controls;
- Environmental management procedures for fuel storage in site compounds, particularly close to waterways;
- Traffic impacts in Rosehill, questions raised regarding estimated heavy vehicle movements and potential disturbance to the freight line in Camellia;
- Removal of trees at Woodville Golf Course to include consultation with Council's Tree Preservation Officers;
- Construction noise impact on residents in the Ermington area, approximately 700m from the Rosehill site;
- Vibration impacts due to pipebursting activities on residential properties. Clarification requested;
- Elevated operational noise impact at Rosehill reservoir and pumping station;
- Hazards and risks of fuel and chemical storage;
- Odour from potentially contaminated soils not assessed. Acid Sulphate Soils may produce sulphurous odours and require management procedures;
- Environmental management.

4.3 Submissions Report

Upon review of the submissions received, the Department directed the Proponent to prepare a Submissions Report. In addition, the Proponent put forward proposed modifications to the Project and assessment of the potential environmental impacts of these modifications. As such a Preferred Project Report was prepared and submitted to the Department, including responses to agency submissions, dated 19 March 2009.

The Preferred Project Report (including response to submissions and finalised Statement of Commitments) was made publicly available on the Department's website and a copy provided for comment to the Department of Environment and Climate Change (DECC) and agencies who provided submissions. Further submissions to the Preferred Project Report were received from DECC, Fairfield City Council, Parramatta City Council and Bankstown City Council. The Department of Water & Energy raised no further issues.

The DECC confirmed that it was satisfied that submissions had been addressed adequately. It requested that concerns relating to operational noise are incorporated into the Conditions of Approval. It also requested involvement in the review of the Noise and Vibration Management Plan to be completed as part of the CEMP to ensure construction noise issues are adequately addressed. Further, DECC drew attention to the flooding issue that was raised by Fairfield City Council and to ensure the Conditions of Approval cover this issue.

The remaining submissions are summarised as follows:

- Fairfield City Council stated that the Proponent adequately addressed some but not all of the issues and Council re-iterated these outstanding issues;
- Bankstown City Council raised significant concerns on the proposal in terms of traffic and noise which it states are not adequately addressed in the Preferred Project Report and also raises issues on air quality, risk for pipe bursting activities, sleep disturbance assessment and access to recycled water and visual impact of the Woodville Reservoir;
- Parramatta City Council stated that the following issues are not adequately addressed in the Preferred Project Report: SEPP33 and assessment of the project by the Department's Major Hazards Unit (which has been conducted), review of the Remedial Action Plan (RAP) and other contamination reports by DECC's Contaminated Sites Section, impact on road network, operational noise compliance monitoring at the Rosehill site, tree removal at Woodville Golf Course as part of the Landscape Plan.

The Department has considered the submissions to the Preferred Project Report in formulating recommended conditions of approval for the project.

4.4 Department's Consideration

The Department's consideration of issues raised in public and agency submissions is summarised in Table 5.

Table 5: Department's consideration of issues raised in Submissions

Issue	Department's Consideration
Traffic and Access	Section 5.1
Noise and Vibration	Section 5.2
Riparian ecology	Section 5.3
Flooding	Section 5.4
Contamination	Section 5.5
Consultation	Section 4
Visual amenity	The main area of visual impact raised in submissions is to residents along North Street due to the RWTP. Conditions of approval include height limits on tanks fitted with access ladders and safety rails at the RWTP. Landscaping involving planting of screening native plants will be developed in consultation with Fairfield Council and form part of the Project Landscaping Management Plan. Such management measures are considered appropriate and this issue is not considered further.
Section 94 contributions	The Proposal has the potential to impact /increase the demand for local infrastructure and services, with respect to the local road network (construction related haulage including movement of oversize plant and operational traffic) and reduce demand on the potable water supply network. The project approval and the recommended conditions of approval include requirements for the Proponent to bear the cost of any damage that may result to the local road network from the traffic and transportation impacts of the proposal. Furthermore, the Proponent will be required to enter into an agreement with Councils (including appropriate fee arrangements) to enable ongoing maintenance of the pipeline. The Department is satisfied that these requirements will ensure that the Proponent bears full responsibility for any increase in demand to local infrastructure and services associated with the project, such as to not warrant additional Section 94 contribution levies in this regard.
Greenhouse gas and sustainability	The Proponent's assessment has demonstrated that the greenhouse gas impacts associated with energy use of the RWTP would be minimised. Energy would be consumed during the construction and operation phases of the Project by the use of equipment and vehicles. Use of renewable

	energy sources has been considered by the Proponent but is not considered to be economically viable. Energy savings would be facilitated elsewhere in the wastewater and potable water supply networks by reducing the need for pumping and treatment of potable and wastewater flows. During construction, standard management and mitigation measures would be implemented to ensure the efficient use of energy (and other resources), including operating equipment in the most efficient manner possible, switching off idle equipment, and regularly maintaining equipment to ensure operation at optimal efficiency. However the Revised Statement of Commitments does not provide these measures. The Department recommends these commitments are included in the Conditions, such as a commitment by the Proponent to invest in greenhouse gas abatement and sustainable energy generation strategies through participation in the *Australian Government's Greenhouse Challenge (Plus) Program* and the *Generator Efficiency Standards Program*, to minimise greenhouse gas generation at an organisation level.
Hazards	The project was assessed by the Department's Major Hazards Unit. The project is considered under SEPP 33 to be a potentially hazardous industry due to the storage and use of bulk chemicals at the RWTP. Based on review of the Preliminary Hazards Assessment (PHA) in the Environmental Assessment and submissions from public agencies, it is considered that the PHA adequately assessed risk associated with the project and there is no need for further risk assessment. Conditions of approval include implementation of mitigation measures proposed in the PHA and preparation of a Safety Management System by the Proponent.
Odour and dust generation	The Department is satisfied that these matters have been adequately addressed in the Proponent's Preferred Project Report and / or Revised Statement of Commitments and have been included in the Conditions were relevant.
Sedimentation and erosion	
Onsite water management (including water re-use initiatives, wastewater management and sewage disposal)	
Waste generation and management	
Heritage	
Planning	

5. ASSESSMENT OF ENVIRONMENTAL IMPACTS

After consideration of the Environmental Assessment, submissions, Preferred Project Report and Statement of Commitment, the Department has identified the following key environmental issues associated with the proposal:

- Traffic and Access;
- Noise and Vibration;
- Riparian Ecology;
- Flooding;
- Contamination.

All other issues are considered to be adequately addressed by the Proponent's Statement of Commitments.

5.1 Traffic and Access

Issue

Within the Environmental Assessment, the Proponent identified traffic as a key environmental issue in relation to the Project. The areas affected by the Project in Western Sydney are serviced by 19 traffic routes, 60 bus services and two railway stations (Yennora station and Clyde station). The traffic routes have been identified as follows:

- Woodville Road, a state traffic route, is a major arterial road linking three motorways (M2, M4 and M5) and other arterial roads (Hume, Great Western and Cumberland Highways);
- Fairfield Street and Ellis Parade with Railway Street are regional traffic routes
- 16 additional local roads will be affected by the Project
- A total of 60 bus services, comprising seven routes, operate in the Project area during the morning peak period and are operated by Veolia Transport.

Construction impacts of the pipeline corridor and the RWTP have been identified as follows as a result of trenching, pipebursting and construction activities:

- indirect impact - additional traffic volume due to truck and plant movements associated primarily with excavation and haulage of spoil from trenching and delivery of construction materials. Major roads would be used for heavy vehicle traffic, where possible. Access between construction sites and zones along the pipeline corridor would use local roads as required. Based on haulage of excavated material volume, the maximum daily movement of vehicles was determined in the Environmental Assessment to be 60 one-way truck movements per day, spread over the course of the construction hours;
- direct impacts - from excavation works including trenching and pipebursting activities requiring temporary road and lane closures, restricted property access during work hours, lane closures and reduced vehicular speeds resulting in traffic congestion. Property access impacts would be limited to 1– 2 days duration during construction hours as work moves along the roadway and property access would be reinstated each day outside of construction hours. Trenching in industrial, business or educational areas would be conducted a night-time or weekends to minimise disruption.
- other impacts – disruption to pedestrian access/use of adjacent facilities and disruption of pedestrian (zebra) crossings, bicycles using roads, temporary loss of kerbside parking spaces and minor parking demand for construction staff, re-routing of bus services and relation of bus stops in the area of the RWTP

Substantial traffic / access impacts are predicted in the Environmental Assessment in the following locations:

- Trenching works under the westbound carriageway of Parramatta Road.
- Trenching across Wentworth Street, Granville where no detour roads are available
- Pipebursting proposed along Woodville Road that would require up to two lanes around proposed pit locations.

- Trenching and trust boring in the area of Yennora railway station will disrupt pedestrian access and require temporary closure of parking spaces. Likewise, access to Clyde railway station will be disrupted due to trenching work on station approaches and pipe insertion works into an existing, isolated Jemena gas main under the railway corridor at this location.

During operation of the RWTP, traffic impacts would include: minor traffic generated by staff during business hours, delivery of chemicals estimated to be approximately four deliveries per week at the RWTP and maintenance vehicles. It is estimated in the Environmental Assessment that operation of the RWTP will result in addition of 190 truck movements per year.

Other surface infrastructure (Woodville reservoir and Rosehill Reservoir and pumping station) would not be staffed and therefore operational traffic is expected to be limited to maintenance, monitoring and servicing requirements.

Traffic impact issues were raised by all four Councils in the submissions received, primarily concerning disruption to local traffic, parking, pedestrian movement, property access and bus routes in their own locality.

In the Preferred Project Report, the Proponent provided responses to these issues including:
- All damage to road pavements and traffic management devices will be repaired by the Proponent;
- Traffic management plans will be prepared to minimise traffic and access impacts;
- Road Occupancy Licences will be obtained from the relevant road authority as required;
- Mitigation measures may include: night-time and/or weekend work, staged work around school zones, detours, use of additional traffic signage and traffic controllers, partial road closures, reduced speed limits and alternative construction methods;
- Consultation will be conducted with all affected bus companies and Councils prior to the commencement of any work that may impact bus services including re-routing if required. Consultation will also be conducted with the child care centre located on Barbers Road to develop appropriate controls to manage potential impacts.
- Some impacts to parking will be unavoidable.
- Community notices will be distributed to all affected property owners, business, schools etc by letter-box drop one month prior to construction to provide information about the construction duration, hours, location and impacts as part of the Community Consultation Plan for the project.

Consideration

The Department is satisfied that the Proponent has undertaken a robust and comprehensive assessment of traffic and access impacts during the construction and operation phases of the Project and that impacts can be managed through preparation of Traffic Management Plans in consultation with Councils and the RTA. The Department notes that the Proponent has made significant effort to minimise traffic and access impact by the proposed mitigation measures. The Department is satisfied that the Proponent has demonstrated that construction and operational traffic and access impacts can be minimised within the local context of the Project.

The Proponent will be required to prepare a Construction Traffic Management Plan for approval by the Department and the Department has recommended conditions of approval to ensure that the Construction Traffic Management Plan is consistent with RTA and Council requirements to minimise disruption.

5.2 Noise and Vibration

Issue

A noise and vibration impact assessment was conducted in the Environmental Assessment including baseline monitoring, establishment of noise criteria and noise level predictions for the construction and operational phases of the Project. Daytime attended noise monitoring was conducted at five locations in the vicinity of sensitive receptors including residents, a child care centre, and a primary school. In addition, unattended monitoring was conducted at one site in North Street, Fairfield. No quantitative noise assessment was conducted for the proposed reservoir and pumping station at Rosehill due to the absence of residential or other sensitive receptors.

Construction noise

Noise criteria for construction of the Project were identified based on the provisions of the *Protection of the Environment Operations Act* and DECC guidelines, as detailed in the following table.

Table 6: Acoustic design objectives for construction activities

Construction period	Acoustic design objective
<4 weeks	Received $L_{A10} \leq L_{A90}$ + 20dB(A)
4 – 26 weeks	Received $L_{A10} \leq L_{A90}$ + 10dB(A)
>26 weeks	Received $L_{A10} \leq L_{A90}$ + 5dB(A)

Source: EA, Parsons Brinckerhoff 2009

Based on this, construction noise design levels for the main residential pipeline areas, the RWTP in Fairfield and reservoir in Woodville Road were established.

A noise and vibration assessment was conducted for the EA in accordance with the DECC *Industrial Noise Policy* (INP), EPA 1999 and associated *Industrial Noise Application Notes*, consideration of the *NSW Environmental Criteria for Road Traffic Noise* (EPA 1999) and Chapter 171 *Noise Control Guideline, Construction Site Noise, Environmental Noise Manual* (EPA 1994). This included consideration of construction plant sound power levels, meteorological conditions, the construction program and possible screening of noise. The following table sets out the predicated range of noise levels received at the nearest sensitive receptor for each of the proposed construction techniques.

Table 7: Summary of predicted pipeline construction noise levels

Activity	Predicted noise level (L_{A10} dB(A))	Finding
Excavation	51 – 81.5	• Noise levels predicted to exceed noise design goals by up to 26.5dB(A)LA10 at the nearest potentially affected receptors for the most sensitive background noise environment; • within 100m of construction sites, approximately 20 properties may be affected by elevated noise levels for 2 consecutive days.
Trenching	45.5 – 70	• Compliance with noise design criteria is expected at receptors 50m or greater from work locations; • Within 50m, approximately 10 to 15 properties may experience high noise levels during short-term construction work. • Elevated noise along the pipeline would be expected over 1-2 days duration at any location.
Thrust boring	30.5	• Expected to comply with noise design goals at nearest receptors; • 1-2 weeks duration per work location.
Horizontal drilling	57 – 61.5	• Expected to comply with noise design goals at nearest receptors; • 3-5 weeks duration per work location.
Pipe bursting	51 – 68	• Mostly evening and night time work, therefore compared to evening and night time noise levels; • Non-compliance with adopted night-time noise design goals of up to 29.5dB(A) as worst case scenario including saw cutting activity; • Non-compliance of up to 12dB(A) predicted at receptors within 50m of entry/exit pits during excavation stage; • Compliance predicted at 75m and greater from

		entry/exit pits; • Within 90m of entry/exit pits, approximately 10-15 receptors may experience high noise levels on two consecutive nights; • Night-time noise levels on Woodville Road not yet measured, therefore actual noise exceedences expected to be less.

Source: EA, Parsons Brinckerhoff 2009

The noisiest construction activity is the use of saw cutting plant, which is initial and short-term (1-2 hours duration), and asphalt cutting, at the commencement of each construction day.

Of note, non-compliance with the construction noise design criteria is predicted at Villawood North Public School on Tangerine and at the TAFE College on Elizabeth Street.

With regard to construction of the RWTP (North Street) and Woodville reservoir (Barbers Road), the following findings were made:

- Non-compliances with noise design goals are predicted at the nearest receptors of up to 18dB(A) at North Street and up to 17.5dB(A) at Barbers Road at times when cumulative operation of noise generating plant occurs;
- When the grader, cement mixers and cranes are not in use, it is considered that construction works are likely to comply with the adopted noise design goals;
- At the RWTP, noise levels may be reduced by 10dB(A) due to separation and distances from sensitive receptors and by 6dB(A) at the Woodville site for the same reason.

Road traffic noise impact is expected to peak during construction at 17 round trips per day per site. The short-term nature of truck pass-by events during daytime construction is not predicted to increase ambient noise levels due to existing road traffic noise.

Operation noise

The noise impact assessment concluded no issues in relation to operation of the pipeline, or surface facilities at Rosehill or Woodville. At the RWTP, the main noise sources are predicted to be operation of water pumps which will operate on an as-needed basis resulting in intermittent noise generation. Predicted noise levels comply with night-time amenity noise design goals at all, but two receptors: properties located at 6 and 8 North Street were predicted to experience noise exceedence of up to 4dB(A) when two pumps operate simultaneously. Mitigation measures are proposed to reduce the received noise. Some noise attenuation is also provided by the location of water tanks providing a barrier effect.

In the submissions received from public agencies, four raised concerns over elevated construction and operational noise and operational noise of RWTP impact on local residents. DECC stated that operational noise of the RWTP is not to exceed 40dBA LAeq, 15min at the potentially most affected sensitive noise receiver. Fairfield City Council raised concern regarding operational noise impact to residents 150m from the RWTP on North Street. Bankstown City Council raised concern of construction noise, particularly during night time pipebursting on Woodville Road and construction of Woodville Reservoir over a 5 month period. Parramatta City Council raised the issue of noise impact at the Rosehill reservoir. Responses from the Proponent centred around noise mitigation measures which will be included in the Construction Environmental Management Plan and Operational Environmental Management Plan which will include a Noise and Vibration management sub-plan.

The Preferred Project Report included additional noise modelling undertaken for the revised location of the pumping station and transformers at the RWTP. The detailed design for the proposed enclosure structure was not available. Therefore, the approximate noise attenuation from the structure is considered in the assessment assuming an open sided structure, as described in the Environmental Assessment.

Predicted noise levels at receivers along North Street and Lyndon Street were found to be compliant with the night time operational noise goals of 40 dB(A) LAeq, 15min outlined in Section 5.2 of the Environmental

Assessment. Attenuation of noise levels by 10 dB(A) is expected due to the recycled water storage tanks and other equipment. Noise levels were expected to exceed night time operational noise goals at the closest residences on Railway Parade to the west by up to 4.5 dB(A). However, a raised railway embankment (up to 2m high) may attenuate received noise levels at receivers on Railway Parade to the west of the site by up to 3 dB.

The low voltage transformer scenario is predicted to result in no incremental increase in total received noise impacts at all nearest receivers.

Enclosing the pumps in a structure with solid façades and a roof is estimated to provide additional attenuation of 25 dB(A), resulting in a received noise impact of approximately 10 - 20 dB(A) LAeq, 15min at nearest receivers. With the pumps enclosed as proposed, compliance with the adopted night time operational noise goal of 40 dB(A) LAeq, 15min would be expected at all receiver locations within the surrounding environment.

Furthermore, the application of solid façades and a roof to the pump station structure would be expected to provide required noise reduction performance to achieve compliance at all receptors with the sleep disturbance noise goals where external facade noise levels do not exceed 85 dB(A) LAeq and 97 dB(A) LA1. The pump enclosure will be designed to meet or exceed these noise performance requirements.

Submissions to the Preferred Project Report from DECC, Bankstown City Council, Parramatta City Council and Fairfield City Council recommended Conditions of approval to include the preparation of Noise Management Plans for both construction and operational stages of the Project. Bankstown City Council also proposed that a quantitative noise impact assessment be included as part of the Construction Noise Management Plan prior to project approval. The following summary table for predicted noise levels during construction is provided by Bankstown City Council:

Table 8: Predicted construction noise levels from Environmental Assessment

Proposed work	Location	Distance to Nearest Receptor (m)	Construction LA10 noise level dB(A)			Time
			Predicted	Criterion	Compliance	
Excavation	Woodville Road	7	80-90	56	No (+24-34)	2 hours maximum – early evening/night
Pipe bursting	Woodville Road	7	68	56	No (+12)	2days/nights per location in early evening/night
Const. Woodville Reservoir	Barbers Road	60	53.5-66.5	49	No (+4.5-17.5)	Minimum 5 months
Excavation	Barbers Road	12	75.5-85.5	59	No (+16.5-26.5)	Maximum 2 days at one location
Trenching & backfilling	Barbers Road	12	70	59	No (+11)	Maximum 2 days at one location

Source: Bankstown City Council 2009

Consideration

Noise Impacts due to construction

The Proponent's noise assessment modelled impacts at sensitive receivers that exceed noise design goals at a number of locations during various construction activities. It is clear that noise mitigation measures are required to be prepared and presented in a Construction Noise Management Plan by the Proponent. This has been proposed in a number of submissions received from public agencies in response to the Environmental Assessment and Preferred Project Report.

With regard to construction hours, the Proponent requested construction hours on Saturdays to be 7am to 1pm. This has been considered by the Department and included in the conditions, however it is noted that the Construction Noise and Vibration Management Plan shall include scheduling and measures to avoid noisey work and use of noisey equipment during the first hour of construction (7am to 8am) on Satudays. It is also considered by the Department that the benefit of these construction hours is a shorter overall duration of works.

Noise impacts during operation
Predicted noise emissions during operation of the Project are limited to operation of the RWTP, specifically the pump house which is expected to result in noise levels above the noise design goals at two nearby residents. Actual noise levels are dependant on final design of the pump house enclosure and noise mitigation measures that will be included in the final RWTP design.

The Department is satisfied that the noise assessment has been undertaken in accordance with the *NSW Industrial Noise Policy*, including consideration of worst case operating scenarios and meteorological conditions and the impact assessment is representative of noise conditions to nearest sensitive receivers. The Department is further satisfied that the mitigation measures proposed by the Proponent are viable and feasible options that can be implemented as part of the Project to ensure that appropriate noise goals are achieved. Consequently, the Department is satisfied that the revised noise modelling at the RWTP indicated the Project would not result in unacceptable noise impacts to existing sensitive receivers.

To ensure that the project is operated consistent with the predicted environmental outcomes, the Department has recommended comprehensive annual reporting of the environmental performance of the project including how complaints have been addressed and what additional mitigation has been implemented in the case that the performance of the Project has not been consistent with predicted outcomes.

5.3 Riparian Ecology

Issue

The Project is located within a highly developed landscape in Western Sydney. A reconnaissance survey conducted as part of the Environmental Assessment identified the following biodiversity values in relation to riparian ecology. The Project is proposed to traverse or pass in proximity to drainage lines in nine locations, as detailed in the following table:

Table 9: Drainage lines traversed by the Project

Location	Description
Prospect Creek	
Fairfield Park, Fairfield	Natural drainage line alignment with large, permanent pools. Lined with native vegetation (Alluvial Woodland) with high density of weeds.
Prospect Creek Recreation Reserve	Natural drainage line alignment with large, permanent pools. Lined with native vegetation (Alluvial Woodland) with high density of weeds
Burns Creek	
Tangerine Street, Fairfield East	Small drainage line (4-6 m wide) that would flow in response to localised rainfall only. Not located in native vegetation community, channel dominated by weeds.
Normanby Street, Fairfield East	Small drainage line (4-6 m wide) that would flow in response to localised rainfall only. Not located within native vegetation community, channel dominated by weeds.
Duck Creek	
Woodville Road, Fairfield East to Granville	Concrete channel
Elizabeth Street, Granville	Concrete channel

Elizabeth Street	Concrete channel
Parramatta Granville Sportsground/Duck Creek Crossing, Granville	Estuarine waterway lined with Avicennia marina var. australasica (Grey Mangrove) woodland.
St Elmo's Drain adjacent to the RWTP	
North Street &Taylor Street, Fairfield	Small drainage line (4-6 m wide) that would flow in response to localised rainfall only. Located in native vegetation community, however channel dominated by weeds

Source: Environmental Assessment, Parsons Brinckerhoff, 2009

The Proponent assessed the impacts of the Project on riparian ecology in the above locations. The Environmental Assessment identifies Prospect Creek as providing the highest quality aquatic habitat and associated riparian habitat in the Project area. It is lined with Alluvial Woodland, although with high weed density. In the Recreation Reserve along Prospect Creek at Smithfield, a weir on Prospect Creek forms a large, shallow pool dominated by bulrush, spikerush and other rushes. Prospect Creek provides good habitat for frogs, wetland birds, Eastern Water Dragon and Eastern Water Skink. The freestanding water along Prospect Creek also provides suitable habitat for the Southern Myotis (a fishing microbat), which was recorded in Fairfield Park.

Burns Creek and St Elmo's drain between Taylor Street and the RWTP site provide secondary riparian habitat comprising smaller drainage lines that would flow following rain, although some pools may persist between rainfall events. The riparian vegetation along these drainage lines is highly modified and weed dominated.

The concrete lined channel section of Duck Creek provides limited aquatic or riparian habitat as it has been modified for flood control purposes. Three crossing locations provide limited habitat diversity. At the proposed Granville/Rosehill crossing location, Duck Creek is the only waterway within the intertidal zone in the study area and the associated riparian vegetation is dominated by Grey Mangrove in moderate condition.

With regard to construction impacts of the Project, the clearing of native vegetation is listed as a Key Threatening Process under the NSW *Threatened Species Conservation Act 1995* and the Commonwealth EPBC Act. Clearing of vegetation and potential impact on riparian zone degradation may occur as follows:

Within Fairfield Park, pipe laying works may require the removal of some scattered E. piperita on the western side of Prospect Creek (the final number would be determined in the detailed design phase) expected to be less than five trees in this location. The path of the direction drill to install the pipeline underneath Prospect Creek at this location would also pass underneath the vegetation along the eastern bank of Prospect Creek. The exit point for the drill would be within the adjacent road reserve (the Gordon St/Vine St/Bland St intersection). Impacts to riparian vegetation on the eastern side of Prospect Creek would be avoided.

Within the Prospect Creek Recreation Reserve at Smithfield, pipe laying would be predominantly within cleared, grassed areas along the existing concrete footpath. Clearing of vegetation in the Prospect Creek Recreation Reserve would be restricted to one location with insufficient clearance between remnant vegetation and the adjoining industrial properties. No large trees would be removed.

The Mangrove/Saltmarsh complex at Duck Creek would not be affected by pipe laying as the pipeline is proposed to be constructed using the horizontal directional drilling in this location. The entry and exits points for the drilling under Duck Creek would be located outside of the extent of the vegetation community.

Impact of pipe laying across drainage lines on riparian habitats will be avoided through the use of trenchless pipe laying techniques, such as horizontal directional drilling under Prospect Creek in Fairfield Park, Burns Creek in Fairfield East (two locations) and Duck Creek at Granville. Thrust boring under St Elmo's Drain between Taylor Street and the Fairfield RWTP; and pipe bridges at the three crossings of Duck Creek. Trenching is not proposed for any drainage line crossing.

Operation of the Project is not predicted to impact on riparian ecology in the Project area.

Four public submissions raised concerns regarding riparian ecology, specifically relating to potential vegetation removal (riparian forest and remnant vegetation) and the restoration of drainage channels as movement corridors for fauna. The Proponent's responses in the Preferred Project Report addressed these issues.

Specifically, DECC raised the issue of impact on Green and Golden Bell Frogs to be minimised by restoring drainage channels following pipeline installation as they are movement corridors. The Proponent stated that the alignment of the proposed distribution pipeline has modified at a key location between the proposed water recycling plant and Taylor Street, Fairfield to avoid direct impacts to riparian zone and creek lines. The proposed crossing of Prospect Creek at Fairfield Park and Burns Creek at Fairfield east would occur via horizontal directional drilling methods to avoid impacts to creek beds, banks and riparian corridors. Other creek crossings will occur via cased thrust bores from within the paved road network or pipe bridges across highly altered stormwater canals. In-stream works are not proposed. As such, the potential for impacts to Green and Golden Bell Frogs habitat is very low limited to short durations only.

The Department of Water and Energy stated that works within 40m of waterways must be consistent with *Guidelines for Controlled Activities*. In response, the Proponent confirmed that the proposed watercourse crossings are consistent with the DWE *Guidelines for Controlled Activities*. The methods elected for crossing each watercourse as outlined in the Environmental Assessment were selected based on each watercourse type and associated riparian corridor. No in-stream works are proposed. The Proponent stated that footprints of disturbance for each crossing will be minimised and appropriately located to avoid impacts to riparian zones and vegetation. Further, for all proposed subsurface crossings (via horizontal direction drill or cased thrust bore) direct impacts to beds and banks will be avoided. Where pipe bridges are to be used the watercourses are highly modified stormwater canals with no riparian zones. Geomorphic, hydrologic, hydraulic and ecological functions at each watercourse will remain unaffected by the proposed crossings

Fairfield City Council raised concern over work in Fairfield Park and also raised concern of impact on aquatic ecology due to chemical spills and use of herbicides. In response, the Proponent will include appropriate measures for preventing and managing spills when working around aquatic environments. Likewise, use of herbicides for weed control during maintenance works will be included in the Operations Environmental Management Plan, including appropriate herbicide selection and application to prevent impact to aquatic environments.

Holroyd City Council stated that vegetation clearing required for pipeline construction in Prospect Creek Recreational Reserve is understated in the Environmental Assessment. The proposed clearing also would remove remnant vegetation from within the reserve which is considered unacceptable. The Proponent's response to this issue stated that the proposed alignment of the pipeline through the Prospect Creek Recreational Reserve was selected to follow existing cleared and grassed areas and avoid native vegetation. Therefore significant clearing is not proposed in this area.

The Proponent noted there may be minor impacts to River-Flat Eucalypt Forest, Cumberland Plain Woodland, Shale Gravel Transition Forest and Castlereagh Swamp Woodland, as identified by DECC.

Consideration

No operational impacts on riparian ecology are predicted, with the exception of weed control during maintenance work which is addressed above.

With regard to construction impacts, the Department is satisfied that the assessment of riparian ecology and responses to submissions has considered potential impacts of waterway crossings, vegetation clearing and associated construction works on the existing environment, including potential impact on the Green and Golden Bell Frog habitat. The waterway crossings and all work within 40m of waterways will be conducted in accordance with the DWE *Guidelines for Controlled Activities*.

The Department has recommended a range of conditions of approval to ensure that the Project achieves best outcomes in terms of protecting riparian ecology during construction and operation of the pipeline and RWTP.

5.4 Flooding

Issue

The potential issue of flooding was not included in the Environmental Assessment but was raised by Fairfield City Council in their submission. The Proponent assessed the issue of flooding in the Preferred Project Report primarily addressing potential flooding at the RWTP and the requirement for relocation of St Elmo's Drain, a major stormwater asset in the area.

According to information from Fairfield City Council, the proposed RWTP site is subject to flooding and potential inundation to depths of 2.8m at the peak of a probable maximum flood (PMF). Council requested that a flood risk analysis be carried out addressing the effects on hazardous chemical storage, loss of floodplain storage and the cumulative impacts the Project would have on the floodplain.

In response, the Proponent stated that the RWTP will have finished ground and floor levels around 7.7 – 8.0 m AHD, which is above the predicted peak water level of 6.8 m AHD during a 100 year average recurrence interval (ARI) design flood. However, the predicted peak water levels during a probable maximum flood are indicated by Fairfield Council to be around 10.8 m AHD. Substantial inundation of the site and surrounding areas would occur under such conditions, with minimal flood velocities at the RWTP site. The Proponent stated that the potential for inundation by flood waters during the PMF has been considered in the plant design, and the following measures would be put in place in reference to chemical storage:

- all bulk chemical storage tanks have been designed with regard to potential inundation;
- the height of overflow pipes fitted to each tank is above the PMF;
- all chemical tanks will be firmly anchored to floor and restrained from any uplifting flotation;
- all chemical tanks will be checked for leaks when installed and all connections pressure tested to ensure nil chemical leaks;
- other chemicals will be stored at the plant in 'bulki bins' installed at a height well above the 100yr ARI flood level and will be sealed;
- if peak PMF water levels are experienced, there is a minor risk that the container bins will float (empty bins or partially filled). In the worst case scenario of the stored chemicals entering the floodwaters, each chemical would be diluted by the large volume of the flood waters and given the nature of chemical stored (citric acid and sodium metabisulphite), an insignificant risk to the environment is predicted.

The chemical storage and handling area is designed to *AS 3780-1994*. The storage and handling of corrosive substances to comply with NSW EPA and other statutory requirements.

The Proponent concluded that, the risk of contamination of floodwaters during a mainstream PMF and contaminants entering the Georges River via Prospect Creek or Orphan School Creek from the plant chemical unloading and storage is minimal due to the engineering controls that are proposed at the site.

St Elmo's Drain was identified as a major stormwater drain that traverse the RWTP site in an east-west direction and conveys significant volumes of water during storm events from west of the railway line to an unformed vegetated drainage line to the east of the RWTP site. St Elmo's drain was found to pass directly underneath the proposed main filtration building of the RWTP and may require relocation. To convey the estimated 100 year stormwater flow, the Proponent has proposed relocation of the section of St Elmo's Drain within the RWTP site area, as shown on the following Figure. Detailed engineering drawings for the relocation would be prepared in consultation with Fairfield Council for approval by the Department proir to commencement of relocation works.

Figure 7: Preliminary relocation alignment for St Elmo's Drain

A further flooding issue was raised by Fairfield City Council concerning the potential for significant overland flooding of the RWTP due to surcharge of St Elmo's Drain to the west of the development site. Two additional box culverts are located under the railway line to allow drainage of the local area. Flooding on the RWTP site may result from filling the site (from 6.7m AHD to 8.0m AHD) that would block the existing overland path. Council requested a detailed study to quantify this risk and determine the need for compensation to neighbouring properties if adversely affected.

The Proponent's response disagreed with Council. Existing ground levels across the RWTP site reportedly range from 6.8m AHD to 8.2m AHD. The RWTP and related components would be built at the existing ground surface level. Therefore, the Proponent concluded it is unlikely that the overland flow path would become blocked. RWTP design has considered this issue. Internal site access roads would accommodate overland flows across the site to a depth of 150mm (kerb height). However the actual depths of overland flows that can be expected are unknown.

In response to the Preferred Project Report, Fairfield City Council reviewed the issue of flooding at the RWTP, particularly with regard to the current Fairfield Overland Flow Path study. The Fairfield Catchment where the RWTP is located has been included but results have not yet been modelled. Council therefore stated it is essential that flooding is studied for this Project. Council agreed with the Proponent's approach to conduct an overland flood risk analysis for the site and reiterated that the study must be conducted before the final plant design as it should influence the plant design.

Consideration

With regard to impact of flooding on chemical storage at the RWTP, the Proponent will include the design features listed above for bulk chemical tanks and chemical container storage at the RWTP to prevent impact in the case of a flood event.

With regard to relocation of St Elmo's Drain, the Proponent would prepare detailed engineering drawings for this work in consultation with Fairfield Council for approval by the Department prior to commencement of construction works.

With regard to overland flows across the site, prior to finalising the plant design and the commencement of construction works, an overland flood risk analysis for the site including modelling of overland flows during the 100 year ARI overland flow design flood will be undertaken. A copy of the overland flow modelling results shall be provided to Fairfield City Council and to the Department on completion.

5.5 Contamination

Issue

The Proponent assessed soil contamination during the Environmental Assessment based on recent contamination assessments on proposed surface infrastructure sites. The potential for excavation of contaminated soil during construction was investigated at the Fairfield SSTP site and in the vicinity of existing industrial land uses at Granville (including Clyde), Rosehill and Camellia. The potential for the proposed pipebursting of the isolated Jemena gas main under Woodville Road to result in contamination of the ground around the burst main was also investigated.

RWTP

Coffey Environments (March 2007) conducted a Stage 1 and Stage 2 Environmental Site Assessment of the site of the proposed RWTP at the Fairfield Storm Sewage Treatment Plant (SSTP) for Sydney Water. During the investigation, the site was vacant grassland, however, it formed part of a larger site involved in the manufacture of roof tiles from 1926 to 1968. The findings were as follows:

- Fragments of asbestos cement sheeting were observed in fill material excavated from four of 18 test pits excavated at the site as part of the assessment. Small bundles of asbestos fibres were also detected in several fill samples taken;
- No evidence of chemical contamination or groundwater inflows was observed in any of the test pits, although a layer of ash containing elevated polycyclic aromatic hydrocarbons (PAHs) was detected at a depth of greater than approximately 1 metre;
- Concentrations of PAHs and other potential contaminants were below health investigation levels for commercial/ industrial land use.

Remediation or management of the site was recommended to address the presence of asbestos. Excavation of the site resulting in ash fill being brought to the surface would also require specific management measures (Coffey Environments 2007).

Alinta commissioned PB to undertake a Phase 2 environmental site assessment of an additional area of land at Fairfield SSTP adjoining the area investigated by Coffey Environments. PB (2007) did not report any soil contaminants of concern at concentrations greater than the site assessment criteria. No contamination was identified within the fill materials sampled and the levels of all contaminants were found to be below the commercial / industrial land use criteria.

Remediation or management of contamination of the RWTP site is proposed in conjunction with the development of the proposal. A Remedial Action Plan (RAP) would be prepared in accordance with legislative requirements and relevant DECC guidelines. Any excavation and off-site disposal of soil from the RWTP site would occur in

accordance with the NSW Environment Protection Authority's (1999) Environmental Guidelines: Assessment Classification & Management of Liquid and Non-liquid Waste.

Rosehill Reservoir

ERM (2008) was commissioned by Shell to conduct a Stage 1 and Stage 2 Environmental Site Assessment of the site of the proposed reservoir at Rosehill. At the time of the study, the area was grassed and vacant. Historically, the site was used as a refinery from 1920, with some fuel tanks installed in 1901. The following findings were reported:

- Fill material was found to a maximum depth of 0.8 m below ground level;
- A distinctive ash layer was detected at approximately 0.4 m below ground level in three boreholes;
- Asbestos fibres were detected in fill material excavated from three boreholes;
- No evidence of potential or actual acid sulfate soils (ASS & PASS) was detected with six samples analysed reporting below limits of reporting (LOR);
- A groundwater well was installed on-site and sampling did not report Totals Petroleum Hydrocarbons (TPH), benzene, toluene, ethylbenzene, and xylenes (BTEX) or lead above LOR;
- Concentrations of Benzo (a) Pyrene (B(a)P) were detected in most fill samples with seven of the total 19 boreholes reporting concentrations exceeding site health investigation levels for commercial/industrial land use. All other potential contaminants were below health investigation levels for commercial/industrial land use.
- Hexavalent chromium (Chromium (VI) was below the limits of reporting in all but two samples analysed. In the samples where hexavalent chromium was detected, levels were below health investigation levels for commercial/industrial land use.

The site was considered suitable for the proposed development, provided management controls are put in place to manage soil disturbance. Remediation or management of the site was recommended to address the presence of asbestos with asbestos affected material to be removed from site as 'special waste'. Fill material impacted by B(a)P at two locations was recommended to be removed from site as restricted general waste. Fill material in the vicinity of one location was classed as a scheduled waste due to the presence of organochlorine pesticides (OCPs), which exceeded general solid waste criteria. The remainder of material on-site was classed as general solid waste. Further assessment of excavated wastes would be required prior to off-site removal and disposal.

Woodville Reservoir

PB (2008) conducted in-situ soil classification focused on the fill and natural soil material located in the proposed reservoir footprint at Woodville Golf Course. Fill was found to consist of reworked natural material with occasional building material scattered throughout, to 1 - 2 metres below ground level. The following findings were made:

- Elevated levels of contaminants included PAH and lead and nickel. However, leachability analysis indicated these contaminants to be immobile in nature and therefore can be classified as general solid waste;
- No fibrous cement sheeting was located in the reservoir footprint, although some sheeting was found off-site on the eastern side of the golf course storage shed;
- Groundwater was not encountered during the investigation, although some perched water was found in a test pit located off-site.

The site was considered suitable for the proposed development.

Distribution Pipeline: Granville, Rosehill and Camellia

Douglas Partners (2007) conducted a preliminary assessment within industrial areas at Granville (including Clyde), Rosehill and Camellia where there is a known history of industrial use and potential for hexavalent chromium contamination. PB (2008) conducted additional environmental works along the proposed alignment in selected areas. No fibrous cement sheeting was located along the trenched alignment.

The following findings were made:

- Groundwater sampling indicated minor levels of TPH and zinc, but no hexavalent chromium was detected in any samples from the Rosehill area by Douglas Partners (2007).
- Groundwater was not encountered during any of the excavations along the proposed trenched alignment;
- PAH impacts, as B(a)P, exceeding the restricted solid waste threshold, were identified along Durham Street, Rosehill. However further analysis of leachability of the contaminants found them to be immobile and reduced their classification to general solid waste.
- Review of acid sulphate soils maps and sampling along the proposed trenched alignment indicated the possible presence of acid sulphate soils: As a result of the investigations, an acid sulphate soil management plan would be required if the mottled-clay soils at a depth of 1.0 m – 2.5 m below ground level along Berry Street (Granville) to Thackeray Street (Camellia) are to be disturbed. No other areas potential of actual ASS was identified across the project area during preliminary soil investigations.

Any potentially contaminated spoil excavated from trenches along the alignment would need to be classified and disposed in accordance with the Environment Protection Authority's (1999) *Environmental Guidelines: Assessment Classification & Management of Liquid and Non-liquid Waste* and other mitigation measures.

Pipebursting under Woodville Road

The proposed pipebursting of the isolated gas main under Woodville Road has the potential to create a pathway for impurities remaining in the gas main from the town gas era to be transferred to the surrounding ground. Only a small volume of impurities is expected and the paved surface of Woodville Road would reduce the potential for stormwater infiltration due to washing of soils and cracked pipes. However, some potential would remain for transportation of contaminants. Sampling of the dust lining the isolated gas main would be undertaken to determine the nature of any impurities present. Depending on the results of the sampling, specific management and mitigation measures may be required.

Responses to Submissions

Submissions on the issue of contamination were raised by Fairfield City Council, Holroyd City Council, Parramatta City Council and DECC. In response to soil contamination at the RWTP site, the Proponent stated in the Preferred Project Report that a remediation contractor, environmental consultant and accredited contaminated sites auditors have been engaged to undertake the remediation of the RWTP site in accordance with appropriate legislation and guidelines. A Remedial Action Plan is currently under preparation and will be provided to Fairfield City Council when approved.

In response to potential contamination of sludges present in the isolated gas mains that may be transferred in the access pits and siphons, the Proponent responded that an internal condition assessment of the isolated gas main along Woodville Road found it to be in suitable condition and relatively clean. Some residual materials, mostly water collected at the low points along the isolated main, will be removed from the isolated main prior to the pipebursting process. The Construction Environmental Management Plan will contain requirements for the identification, testing, remediation and/or removal and disposal of any potentially contaminated soil adjacent to the isolated gas main at the access pits.

Groundwater has been considered in all environmental site assessments/contamination assessments undertaken across all project areas as detailed above. In their submission, DECC stated that groundwater contamination is not likely.

The Proponent has engaged an independent auditor for review of the site investigation reports and preparation of the Remedial Action Plan for the RWTP site. A RAP will be prepared for the site in consultation with the Councils for review. The RAP and appropriate site management plans shall include specific controls address all potential environment impacts associated with the remediation works, including dust management, sediment and erosion control, waste classification and disposal. A Construction Environmental Management Plan (CEMP) will be developed to cover construction of the reservoir, pumping station and network following remediation of the Durham Street/Grand Avenue site. The RAP will include a summary of previous investigations and site issues and provide the methodology for addressing contamination issues across the site. The RAP shall detail the requirements for any material brought to site to be used as fills. Appropriate records shall be kept and maintained. A Validation Report detailing the remediation of the land in context of the methodology outlined in the RAP will also be produced and submitted to Council. All material to be disposed of during remediation, construction and

operation will be classified in accordance with the Waste Classification Guidelines (DECC, 2008) and dispose of at appropriately licensed waste facilities.

Consideration

The Preferred Project Report indicated that for areas of known contamination, Remedial Action Plans will be developed to address the contamination present and provide fit-for-purpose construction sites. Appropriate input from accredited contaminated site auditors will be obtained as required. Validation reports will be prepared on completion of site remediation works and distributed as required by project approval conditions.

In addition, the CEMP shall contain appropriate protocols and requirements in the event of uncovering previously unidentified soil and groundwater contamination during all project excavations. The CEMP shall be approval by the Department prior to the commencement of construction. During pre-construction and construction works, The CEMP shall contain appropriate protocols and requirements in the event of uncovering previously unidentified soil and groundwater contamination during all project excavations.

The Department is satisfied that contamination issues in relation to the Project will be adequately addressed.

6. CONCLUSIONS AND RECOMMENDATIONS

The Department accepts that the Camellia and Rosehill Recycled Water Scheme would entail significant benefits to the State of New South Wales, by helping to reduce demand on potable water supply and reuse recycled water to cater for existing and future inhabitants of the Fairfield area. The Project comprises

- Construction of a reverse osmosis recycled water treatment plant (RWTP);
- Use of secondary effluent as feedstock for the RWTP from the recently constructed Liverpool to Ashfield sewage pipeline;
- Approximately 20 kilometres of primary recycled water main in public roads and public reserves through four local government areas.
- Two storage reservoirs and a pumping station at Rosehill Gardens Racecourse, Rosehill;
- An elevated storage reservoir at Woodville Golf Course on Barbers Road, Guildford.

The Project will allow supply of treated recycled water to specific customers between Smithfield and Camellia. Sufficient capacity in the water recycling treatment plant exists to extend the distribution network to the Liverpool, Wetherill Park and Parramatta/Westmead areas to supply additional customers.

The potential for environmental impacts associated with the Project relate to noise & vibration, traffic & access, riparian ecology, flooding and contamination in addition to other potential impacts.

The Department assessed the Proponent's Environmental Assessment, Preferred Project Report including responses to submissions and Revised Statement of Commitments on the Project and submissions received by public agencies. Note that no submissions were received from the community or private interested on the Project. Based on its assessment, the Department is satisfied that the Proponent has provided a robust and conservative assessment of impacts and that the impacts associated with the Project can be managed and mitigated to achieve acceptable environmental standards, so as to not preclude the orderly and economic development of surrounding land use.

Although some residual impacts may result, particularly to the residents in close proximity to the RWTP, the Department considers the project to be on balance justified given its benefits to the broader community and because opportunity exists to provide a reliable, alternate, clean water source in the growing area of the Project. The Department has drafted a recommended instrument of approval incorporating stringent and comprehensive environmental mitigation and management requirements that will serve mitigate potential environmental impacts and enhance commitments made by the Proponent in its Statement of Commitments.

On balance, the Department considers the project to be justified and in the public's interest and should be approved subject to the Department's recommended conditions of approval and the Proponent's Statement of Commitments.

APPENDIX A – RECOMMENDED CONDITIONS OF APPROVAL

APPENDIX B – STATEMENT OF COMMITMENTS

APPENDIX C – RESPONSE TO SUBMISSIONS

APPENDIX D – ENVIRONMENTAL ASSESSMENT