
4.1 WATER INFRASTRUCTURE – POTABLE WATER

4.1.1

- Appendix 4.1.1(b) Letter of Support from Hunter Water



Hunter Water Corporation
ABN 46 228 513 446

PO Box 5171
HRMC NSW 2310
36 Honeysuckle Drive
NEWCASTLE NSW 2300
1300 657 657
(02) 4979 9625 (F)
enquiries@hunterwater.com.au

14 March 2014

Our Ref: 2007-1222/4.002

Flow Systems
Suite 201, Level 2
1 Alfred Street
SYDNEY NSW 2000

Attention: [REDACTED]
Project Manager

Dear [REDACTED]

**HUNTLEE WATER UTILITY SUPPLY ARRANGEMENTS – LETTER OF SUPPORT
Flow Systems Independent Pricing & Regulatory Tribunal Licence Application**

I refer to Hunter Water's ongoing negotiations with Flow Systems regarding their provision of water sector utility services under the auspices of the Water Industry Competition Act (WICA) to the Huntlee New Town (Huntlee) development at Branxton. Hunter Water understands that Flow Systems has been engaged by LWP (the developer) to supply a range of water utility services to Stage 1 of the Huntlee development.

Hunter Water is offering this letter of support to form part of the Huntlee Water licence application being made by Flow Systems to the Independent Pricing and Regulatory Tribunal under WICA.

While the technical and commercial terms are yet to be agreed, it is intended that Hunter Water and Flow Systems enter a 'Utility Services Agreement' that contemplates:

1. Hunter Water supplying bulk drinking water to Flow Systems at Huntlee;
2. Interim sewerage treatment for approximately 200 residential lots with flows being received by road tanker at a Hunter Water Wastewater Treatment Works (location to be determined). The tankering pickup facility and associated road tankering of waste is to be operated and maintained by Huntlee Water.

Please note that road tankering of waste requires the concurrence of the local council(s) whose local roads and residents may be impacted by such an arrangement.

3. Other interface requirements as needed.

The water and sewer servicing strategies for Huntlee were conditionally approved by Hunter Water in June 2013 – Addendum C (attached). Hunter Water will work with Flow Systems to implement the previously approved servicing strategies.

Hunter Water looks forward to establishing an ongoing commercial relationship with Flow Systems. Should you wish to discuss these matters further please contact me on (02) 4979-9717.

Yours faithfully

BRETT LEWIS
Manager Developer Services

Attached: 1. Hunter Water Servicing Strategy Approval – Addendum C - June 2013



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26 June 2013

SMEC Australia
PO Box 1346
Newcastle NSW 2300

Attention: Kate Beard

Dear Kate

**APPROVAL OF HUNTLEE NEW TOWN WATER AND WASTEWATER SERVICING STRATEGY
ADDENDUMS REVISION C**

Thank you for your submission of the Huntlee New Town Water and Wastewater Servicing Strategy Addendums Revision C – July 2013. Hunter Water is satisfied from your responses that the strategy has been suitably modified to take into account the recommendations made following our most recent review. Approval of the strategy is therefore given.

In offering this approval, Hunter Water notes that the strategy proposes to serve initial development at Huntlee by a single pressure zone. This servicing arrangement will be able to serve up to a maximum of 550 lots prior to construction of "Connection 1" to connect the site to Greta, in conjunction with a portion of the Stage 4 Maitland to North Rothbury upgrades. Accordingly, this approval is **conditional** on the developer investigating and designing the optimal solution for low pressure customers at Greta, and implementing the preferred solution within sufficient lead time prior to this threshold being reached.

The approval of this strategy is valid for a maximum five year period from the date of this letter, however, Hunter Water reserves the right to require a revision to the strategy should any of the following circumstances arise:

- The development does not substantially proceed within this five year timeframe; or
- Significant changes in development profile (ie yield, timing, staging or additional development potential); or
- Significant changes in development yield within the contributing catchment(s); or
- Hunter Water Design Standards or criteria are revised impacting the loading / demand derived from the development; or
- Operation circumstances change; or
- Legislative or regulatory changes are imposed on Hunter Water.

Should any of the above circumstances arise within the five-year approval period, the strategy will require revision by the developer and approval by Hunter Water. Should the maximum 5 year period elapse it is a mandatory requirement that the strategy be reviewed by the developer and approved by Hunter Water prior to proceeding with the works related to water, wastewater or recycled water supply. This process should commence with submission of a new Development Assessment application, Preliminary Servicing application or feasibility analysis to ensure that the most current information, system modelling and performance, and design standards are used in the analysis.

Should the strategy need to be reviewed, the revised servicing strategies shall apply only to those development stages not already completed, or for which detail designs have not yet been approved. The revision of servicing strategies shall be completed by the developer and again be reviewed and approved by Hunter Water. Any costs associated with these reviews shall be borne by the developer.


Please note that approval of a strategy is not a commitment by Hunter Water to fund infrastructure, or an approval to connect the development to Hunter Water's water and sewerage systems. Furthermore, a strategy approval is not a commitment for capacity being allocated to a particular development in existing water and sewerage systems, nor is it an approval to connect to these systems. Connection and/or capacity availability will only be confirmed by submission and determination of a Development Assessment application and development consent being issued by the relevant consent authority. Please also note the legal disclaimer attached at Appendix A with respect to the use of Hunter Water's Servicing Strategy Template for the development of this strategy.

Please also note that all intellectual property in a servicing strategy as submitted to Hunter Water vests in Hunter Water on submission and Hunter Water can distribute the strategy, as submitted, and as may be approved by Hunter Water, to third parties (including developer/consultants and members of the public under freedom of information laws). Hunter Water will use reasonable endeavours not to disclose private personal information or information which is commercial in confidence when providing a servicing strategy to third parties.

Please submit three hard copies and one electronic copy of the final strategy (in PDF format). Please ensure that the version history in the document and the front cover of the strategy are clearly notated as "final".

If you have any questions, please do not hesitate to contact me on 4979 9545.

Yours faithfully



Malcolm Withers
Senior Developer Services Engineer

4.1 WATER INFRASTRUCTURE – POTABLE WATER

4.1.1

- Appendix 4.1.1(c) Hunter Water-approved Water Servicing Strategy



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Malcolm Withers
Senior Developer Services Engineer

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Huntlee New Town

Water and Wastewater Servicing Addendum

July 2013

Project Name:	Huntlee Water and Wastewater Servicing Addendum
Project Number:	30011224
Report for:	Huntlee Pty Ltd

PREPARATION, REVIEW AND AUTHORISATION

Revision #	Date	Prepared by	Reviewed by	Approved for Issue by
A	25/07/12	K. Beard	M. Rose	
B	18/02/13	K. Beard/ M. McCarthy	B. Patterson	B. Patterson
C	12/06/13	K. Beard	B. Patterson	B. Patterson

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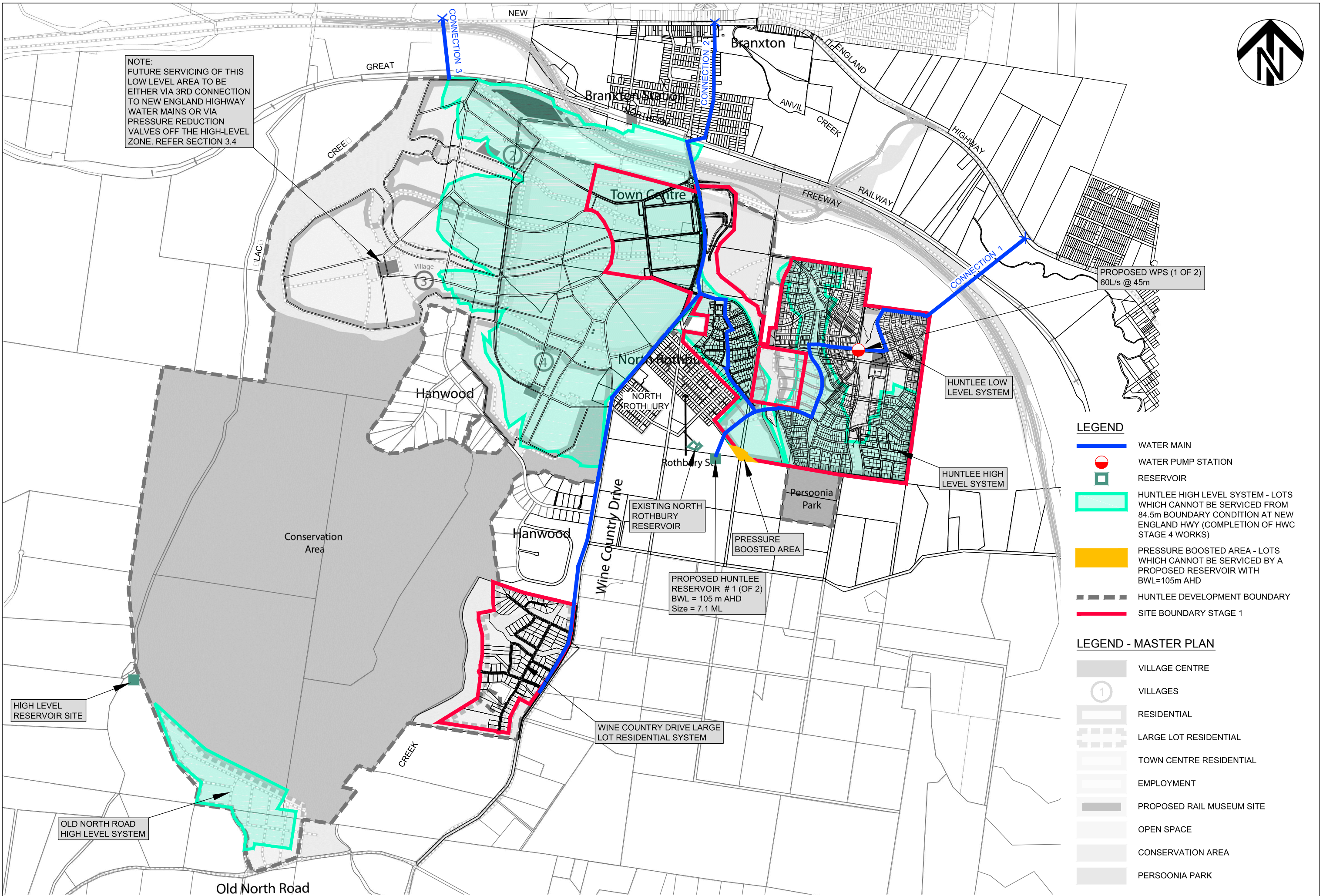
Email: ben.patterson@smec.com

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NOTE:
FUTURE SERVICING OF THIS
LOW LEVEL AREA TO BE
EITHER VIA 3RD CONNECTION
TO NEW ENGLAND HIGHWAY
WATER MAINS OR VIA
PRESSURE REDUCTION
VALVES OFF THE HIGH-LEVEL
ZONE. REFER SECTION 3.4



PROPOSED WPS (1 OF 2)
60L/s @ 45m

LEGEND

- WATER MAIN
- WATER PUMP STATION
- RESERVOIR
- HUNTLEE HIGH LEVEL SYSTEM - LOTS WHICH CANNOT BE SERVICED FROM 84.5m BOUNDARY CONDITION AT NEW ENGLAND HWY (COMPLETION OF HWC STAGE 4 WORKS)
- PRESSURE BOOSTED AREA - LOTS WHICH CANNOT BE SERVICED BY A PROPOSED RESERVOIR WITH BWL=105m AHD
- HUNTLEE DEVELOPMENT BOUNDARY
- SITE BOUNDARY STAGE 1

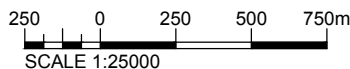
LEGEND - MASTER PLAN

- VILLAGE CENTRE
- VILLAGES
- RESIDENTIAL
- LARGE LOT RESIDENTIAL
- TOWN CENTRE RESIDENTIAL
- EMPLOYMENT
- PROPOSED RAIL MUSEUM SITE
- OPEN SPACE
- CONSERVATION AREA
- PERSOONIA PARK

HIGH LEVEL RESERVOIR SITE

OLD NORTH ROAD HIGH LEVEL SYSTEM

Old North Road



SOURCES: 'MASTER PLAN' COX RICHARDSON
THIS FIGURE SHOWS CONCEPTUAL INFORMATION ONLY

STAGE 1 WATER LEAD-IN WORKS

FIGURE No. 04

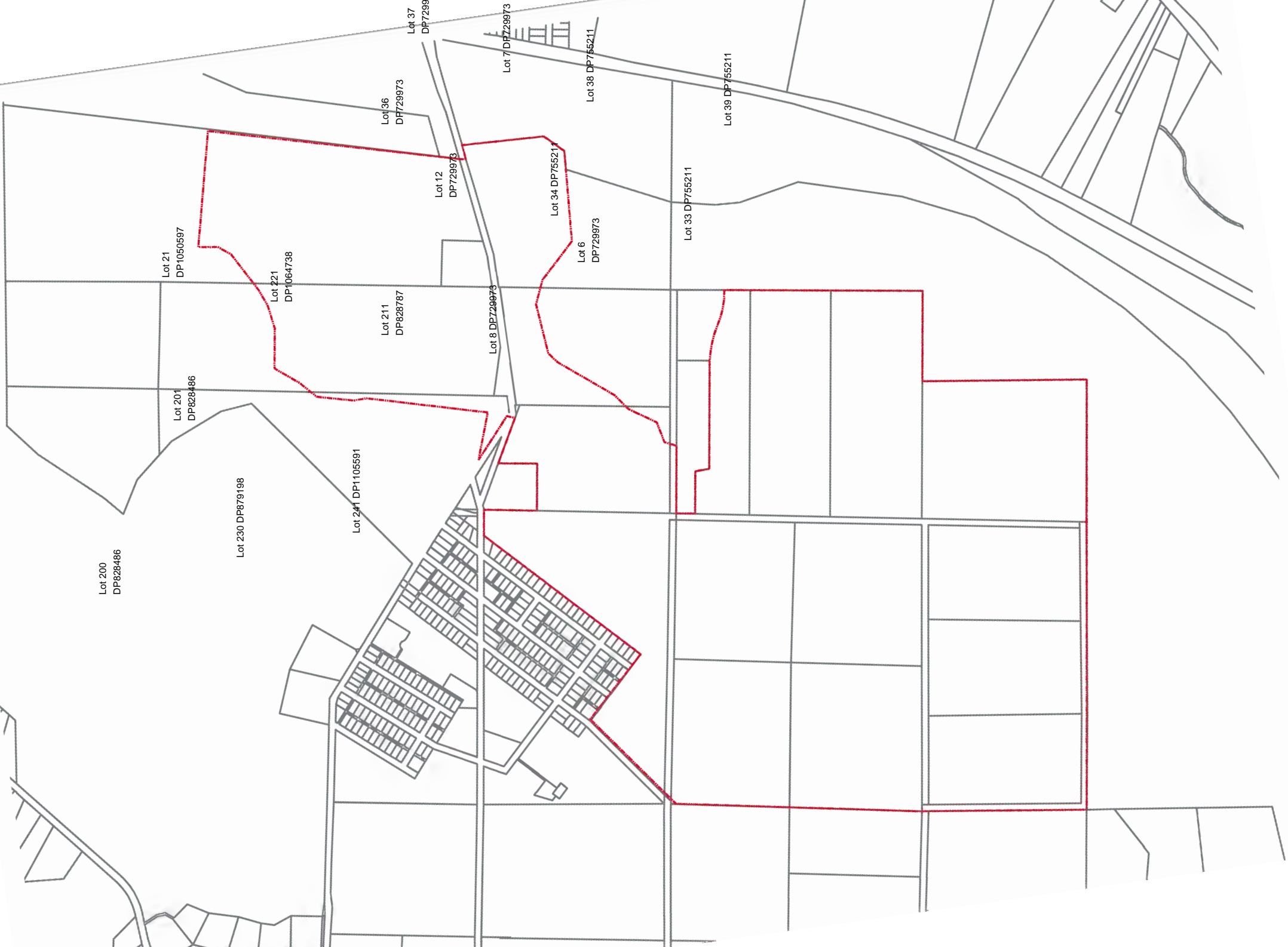
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4.1 WATER INFRASTRUCTURE – DRINKING WATER

4.1.3

- Appendix 4.1.3 Stage 1 Lot and DP references

HUNTLEE STAGE 1 LOT AND DEPOSITED PLAN REFERENCES





Lot 10 DP1105639

4.1 WATER INFRASTRUCTURE – POTABLE WATER

4.1.6

- Appendix 4.1.6(a) Huntlee Design Capacity Assumptions

Dept. Of Planning NSW

Average Water Consumption for Residential Detached Dwellings

Residential Water Demand ex DIPNR		Usage and Flows				
	Measured Ave Usage Demand L/p/day	After Water Saving Devices Demand L/p/day		Device	After Water Saving Devices Demand L/p/year Demand L/dwelling/day	
Potable						
Shower	56.9	37.1	3A			
Kitchen Sink	12	6.5	3A			
Bathroom Basin	5.9	3.2	3A			
Dishwasher	3	3				
Bath	8.7	8.7				
Laundry Trough	4.9	4.9				
Leaks	10	10				
Pool/Spa	10.5	10.5	Cover			
Potable Total	111.9 L/p/day	83.9 L/p/day			30.6 kL/p/year	218.1 L/dwelling/day
Non Potable						
Toilet	35.2	20	3A			
Washing Machine	46.1	30	4A			
Garden Irrigation	61	18.3	30%			
Cooling Tower	0	0				
Fire Test	0	0				
Car Washing	6.4	6.4				
Non Potable Total	148.7 L/p/day	74.7 L/p/day			27.3 kL/p/year	194.2 L/dwelling/day
Total Water Demand	260.6 L/p/day	158.6 L/p/day			57.9 kL/p/year	412.4 L/dwelling/day
Wastewater						
Shower	56.9	37.1	3A			
Kitchen Sink	12	6.5	3A			
Bathroom Basin	5.9	3.2	3A			
Dishwasher	3	3				
Bath	8.7	8.7				
Laundry Trough	4.9	4.9				
Toilet	35.2	20				
Washing Machine	46.1	46.1				
Leaks	10	10				
Wastewater Total	182.7 L/p/day	139.5 L/p/day			50.9 kL/p/year	362.7 L/dwelling/day

39 % Savings

People per Dwelling

Using area average **2.60** people/dwelling

TJL Jan 2010

Note The BASIX NSW state-average benchmark for energy and water consumption is collected from over 2 million NSW households.

The use of data from existing dwellings has the added advantage that the total residential annual energy and water consumptions can be correlated with documented ABS Census 2001 findings to assess the penetration of important energy- and water-related features, fittings and appliances in the state-wide sample set. BASIX uses this information to quantify the effect of implementing certain water and energy efficiency measures such as water-rated showerheads and toilets.

Commercial Offices Water Flow

Water Demand	L/p/d
Toilet	9
Urinal (Included in Toilet rate)	
Shower	3.5
Kitchen	5.5
Hand Basin	4
Cooling	0
Total	22.0

	L/p/d	
Potable Water requirements	13.0	
Non Potable Water requirements	9.0	
Population	10	m ² /p
Population	0.1	p/m ²

Total sewage	0.0022	kL/m ² /d
Total Non Potable demand	0.0009	kL/m ² /d

TJL January 2010

Retail Water Flow

Water Demand	L/p/d
Toilet	3
Urinal (Included in Toilet rate)	
Shower	1
Basins/Sinks	26
Dishwashers	2.5
Cooling	0
Total	32.5

	L/p/d	
Potable Water requirements	29.5	
Non Potable Water requirements	3.0	
Population	10	m ² /p
Population	0.1	p/m ²

Total Sewage Flow	0.00325	kL/m ² /d
Total Non Potable Demand	0.0003	kL/m ² /d

TJL January 2010

Cooling Water Flow

Cooling	Value	Unit
Sydney Water Best Practice 22kl/10,000m2/d	22	kL/d
	10000	m2
Fluctuation Summer to Winter	30	%
Peak average daily demand	29	kL/d
Low average daily demand	15	kL/d

In 2005 Sydney Water conducted a study that determined the best practice conditions for cooling towers in NSW.

Water use in cooling towers is hugely variable however it is reasonable to assume that all new buildings will attain a good if not better the water consumption found to be achieved by those existing cooling towers following best practice guidelines.

The reference document is

Water Conservation

Best Practice Guidelines for Cooling Towers in Commercial Buildings.

Sydney Water.

4.1 WATER INFRASTRUCTURE – DRINKING WATER

4.1.9

- Appendix 4.1.9 Huntlee Preliminary Risk Assessment Overview

Preliminary Risk Assessment Overview

Purpose

The purpose of undertaking the preliminary risk assessment was to:

- Identify potential risks that may impact the safe and reliable operation of the facility (and associated components), specifically focussed on risks associated with the following:
 - o Potential impacts to public health and/or water quality
 - o Environmental impacts including noise, odour and general environmental impacts
 - o Operational reliability and process performance
 - o Financial viability
 - o Customer Service
- Identify early, potential risk mitigation/control measures that can be incorporated in the design, construction and operation of the facility in order to sufficiently mitigate these risks.
- Facilitate further dialogue with all key stakeholders to ensure all key risks associated with the project are identified and effectively controlled.

Methodology

The risk assessment approach adopted for conducting the preliminary risk assessment for the project was consistent with the recommendations in the Australian Guidelines for Recycled Water Management (AGRW). The process included the following activities:

- **Risk Identification** – The identification of a range of risk related to the Huntlee project (*what might happen?*)
- **Risk Categorisation** – The categorisation of the risks into various types to aid understanding and to provide context
- **Risk Assessment** – determination of the likelihood and consequence of the unmitigated/uncontrolled risk, see Attachment A for details of the assessment criteria (*what is the likelihood and impact/consequence?*)
- **Managing the Risk / Risk Mitigation** – the identification of appropriate controls to be further developed and implemented as appropriate should the project be approved to proceed (*what can be done to stop it happening?*)
- **Post Mitigation Risk Assessment** – the reassessment of the risk following implementation of appropriate controls to ensure that the risk is sufficiently mitigated (*how effective do we anticipate the controls to be?*)

Outcomes

Identification

In undertaking the preliminary risk assessment a total of 91 key risks were identified across the following areas:

Area	Descriptions
The Catchment	Risks associated with the catchment area including consideration of items such as contamination, volume changes, public health incidents, storage requirements, illegal discharge to sewers etc.
The Sewer Network	Risks associated with the network itself including blockages, pipe or equipment failure, loss of power etc.
Local Water Centre	Consideration of the potential risks associated with the operation of the treatment facility including tank and/or equipment failure, odour, noise, process risks, capacity, power failure, telemetry, vandalism, operator error, flooding etc.
Recycled Water Reticulation and use	Risks associated with the transfer of recycled water from the facility to the users and covered areas such as equipment failure, demand, unauthorised usage, water quality, power failure etc.

Potable Water Distribution	Risks associated with the storage and distribution of potable water to users and considered areas such as equipment failure, demand, unauthorised usage, water quality, security, power failure etc.
Management	General operations management issues risks that may impact operational reliability or supply surety.

Risks have been summarised at Attachment B as the detailed preliminary risk assessment contains information that is commercial in confidence.

ATTACHMENT A: RISK ASSESSMENT QUALITATIVE CRITERIA

QUALITATIVE MEASURES OF LIKELIHOOD		
Level	Descriptor	Example description
A	Rare	May occur only in exceptional circumstances. May occur once in 100 years.
B	Unlikely	Could occur within 20 years or in unusual circumstances.
C	Possible	Might occur or should be expected to occur within a 5 to 10 year period.
D	Likely	Will probably occur within a 1 to 5 year period
E	Almost certain	Is expected to occur with a probability of multiple occurrences within a year.

QUALITATIVE MEASURES OF CONSEQUENCE		
Level	Descriptor	Example description
1	Insignificant	Insignificant impact or non-detectable.
2	Minor	Health - Minor impact for small population.
		Environment - Potentially harmful to local ecosystem with local impacts contained to site.
		Financial - Cost of event and / or rectification is less than \$10K.
3	Moderate	Health - Minor impact for large population.
		Environment - Potentially harmful to regional ecosystem with local impacts primarily contained to site.
		Financial - Cost of event and / or rectification is greater than \$10K but less than \$100K.
4	Major	Health - Major impact for small population.
		Environment - Potentially lethal impact to local ecosystem, predominantly local, but potential for off-site impacts.
		Financial - Cost of event and / or rectification is greater than \$100K but less than \$1,000K.
5	Catastrophic	Health - Major impact for large population.
		Environment - Potentially lethal to regional ecosystem or threatened species; widespread on-site and off-site impacts.
		Financial - Cost of event and / or rectification is greater than \$1,000K.

QUALITATIVE RISK ESTIMATION					
Likelihood	Consequence				
	1- Insignificant	2 - Minor	3 - Moderate	4 - Major	5 - Catastrophic
A - Rare	Low	Low	Low	High	High
B - Unlikely	Low	Low	Moderate	High	Very High
C - Possible	Low	Moderate	High	Very High	Very High
D - Likely	Low	Moderate	High	Very High	Very High
E - Almost certain	Low	Moderate	High	Very High	Very High

ATTACHMENT B: PRELIMINARY RISK ASSESSMENT SUMMARY

Item	Component	Potential Hazard	Pre-mitigation Risk	Controls	Post-mitigation (Residual) Risk
1	Catchment	Low flow in reticulation generates odour	Very High	<ul style="list-style-type: none"> Regular flushing of reticulation Interim, staged servicing strategy 	Low
		Out of specification feed water for treatment process	High	<ul style="list-style-type: none"> Testing and monitoring Disinfection barriers Education of customer base Utility approval of new connections Buffering tank 	Low
2	Pressure sewer reticulation	Sewage overflow in community	Very High	<ul style="list-style-type: none"> Monitoring Ability to isolate reticulation built into design Registration on DBYD Allow adequate storage in collection tanks 	Moderate
		Sewage overflow at household	High	<ul style="list-style-type: none"> Installation of pumps by authorised personnel Monitoring of network Proactive maintenance regime Plumbing checks for infiltration prior to occupancy 	Moderate
		Odour	High	<ul style="list-style-type: none"> Design to minimise air entrainment Odour control on air valves Regular replacement of cartridges 	Low
3	Local Water Centre	Inability to treat water due to process unit failure	High	<ul style="list-style-type: none"> Duty / standby of equipment Inlet and product water buffer storage Spares of critical equipment on site Monitoring and controls Proactive maintenance regime Experienced operators Maintain Asset Protection Zones Maintain access around LWC for fire fighting Access to water for fire fighting Located above 1 in 100 year flood level Backup generator 	Low
		Product water out of specification due to process failure	Very High	<ul style="list-style-type: none"> Production shut down Duty / standby of equipment Inlet and product water buffer storage Monitoring and controls Proactive maintenance regime Experienced operators 	Low
		Noise and odour	High	<ul style="list-style-type: none"> Odour and noise modelling at planning phase Odour scrubbing Noise mitigation in building design 	Moderate
		Environmental spill from tank rupture	Very High	<ul style="list-style-type: none"> Quality assurance processes in construction Isolation from stormwater drainage Experienced construction contractors and operators Monitoring of tank levels 	Moderate
4	Recycled water reticulation and use	Compromise of public health through consumption of recycled water	High	<ul style="list-style-type: none"> Plumbing inspections prior to occupancy High treatment quality Education Signage in public areas 	Low
		Interruption to household recycled water supply due to breakage in reticulation	Moderate	<ul style="list-style-type: none"> Monitoring Ability to isolate reticulation built into design Registration on DBYD 	Low
		Recycled water supply exceeds demand	Moderate	<ul style="list-style-type: none"> Buffer storage System monitoring Evaluation of offsite uses as the development progresses 	Moderate
		Recycled water demand exceeds supply	Moderate	<ul style="list-style-type: none"> Buffer storage Top up with drinking water 	Low
5	Drinking water storage and reticulation	Interruption to household drinking water supply due to breakage in reticulation	Moderate	<ul style="list-style-type: none"> Monitoring Ability to isolate reticulation built into design Registration on DBYD 	Low
		Compromise of public health due to poor water quality	Low	<ul style="list-style-type: none"> Huntlee Water is only distributing drinking water provided by Hunter Water Monitoring in distribution network 	Low
6	Management	Unable to provide services due to business failure	Moderate	<ul style="list-style-type: none"> Ongoing auditing of the business in accordance with the network operator's licence Internal governance regime Water Industry Competition Act's Operator of Last Resort provisions and step in rights 	Low

4.1 WATER INFRASTRUCTURE – DRINKING WATER

4.1.10

- Appendix 4.1.10(d) Notice of Approval for Commercial Operation (Central Park)



New South Wales

Water Industry Competition Act 2006 (NSW)

Notice of approval to bring new infrastructure into commercial operation

I, Andrew Constance MP, Minister for Finance and Services, have considered the request by Central Park Water Factory Pty Limited (ACN 151 072 838) (**Central Park Water Factory**) for approval to bring new infrastructure into commercial operation under the *Water Industry Competition Act 2006 (NSW)* (**Act**). The relevant water industry infrastructure is specified in Schedule A of Central Park Water Factory's network operator licence (12_022) (**Licence**).

I have considered a report dated 14 November 2013 (**Audit Report**) prepared by approved auditors within the meaning of the *Water Industry Competition (General) Regulation 2008 (NSW)* (**Regulation**). The Audit Report is included as Attachment A. I am satisfied that the Audit Report indicates that the new infrastructure identified in that report:

1. complies with the requirements of the Regulation and the conditions of the Licence; and
2. is capable of operating safely and in accordance with Central Park Water Factory's infrastructure operating plan, water quality plan and sewage management plan.

I therefore give my approval under schedule 1, clause 2 of the Regulation for Central Park Water Factory to commence commercial operation of the new infrastructure, as identified in the Audit Report.

Hon. Andrew Constance MP
Minister for Finance and Services

Dated this 23rd day of January 2014

4.1 WATER INFRASTRUCTURE – DRINKING WATER

4.1.12

- Appendix 4.1.12(c) Notice of Approval for Commercial Operation (Pitt Town)



New South Wales

Water Industry Competition Act 2006

Notice of approval to bring new infrastructure into commercial operation

I, Greg Pearce MLC, Minister for Finance and Services, have considered the request by Pitt Town Water Factory Pty Ltd (ACN 141 705 660) (PTWF) for approval to bring new infrastructure into commercial operation under the *Water Industry Competition Act 2006*. The new infrastructure is described in Schedule A, Table 1 and 2 of PTWF's network operator licence (10_014) (**Licence**).

I have considered a report prepared by approved auditors within the meaning of the *Water Industry Competition (General) Regulation 2008* (**Regulation**), which is included as Attachment A. I am satisfied that the report indicates the new infrastructure:

1. complies with the requirements of the Regulation and the conditions of the Licence; and
2. is capable of operating safely and in accordance with PTWF's infrastructure operating plan and water quality plan.

I therefore give my approval under Schedule 1, clause 2 of the Regulation for PTWF to commence commercial operation of the new infrastructure.


.....
Hon. Greg Pearce MLC
Minister for Finance and Services

Dated this *15th* day of *June* 2012