

Assessment of Catherine Hill Bay Water Utility's network operator's licence application

Prepared under the *Water Industry Competition
Act 2006* (NSW)

Water — Report to the Minister
September 2015

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The Tribunal members for this review are:

Dr Peter J Boxall AO, Chairman

Ms Catherine Jones

Mr Ed Willett

Inquiries regarding this document should be directed to a staff member:

Erin Cini (02) 9113 7778

Mamata Titus (02) 9113 7750

Independent Pricing and Regulatory Tribunal of New South Wales

PO Box K35, Haymarket Post Shop NSW 1240

Level 15, 2-24 Rawson Place, Sydney NSW 2000

T (02) 9290 8400 F (02) 9290 2061

www.ipart.nsw.gov.au

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1 Summary

We recommend that the Minister grants Catherine Hill Bay Water Utility Pty Ltd (CHBWU) a network operator's licence (licence number 15_035) and name Solo Water Pty Ltd (Solo Water) as an authorised third party on the licence. The licence would authorise CHBWU to construct, operate and maintain water industry infrastructure to supply drinking water, non-potable¹ water and sewerage services to the Catherine Hill Bay development (development). The development is located on the South Wallarah Peninsula in the Lake Macquarie City Council (LMCC) Local Government Area. This is consistent with the application that CHBWU provided to us.

CHBWU intends to construct the proposed water industry infrastructure in two stages (stages 1 and 2), and ultimately supply drinking water sourced from Wyong Shire Council's (WSC) network and non-potable generated by treating sewage collected from the development to up to 470ET². CHBWU will also provide sewerage services to these 470ET. Excess non-potable water will be disposed onto land owned by the developer, Coastal Hamlets Pty Ltd (Coastal Hamlets), within the development. The development has a total capacity of up to 540ET. If CHBWU decides to develop Stage 3 of the water and sewerage services scheme (scheme), providing services for up to 540ET, it will seek a variation to the network operator's licence (licence number 15_035), if it is granted by the Minister.

In assessing CHBWU's licence application, we considered the licensing criteria set out in sections 10(3),(4) of the *Water Industry Competition Act 2006* (NSW) (WIC Act), and had regard to the licensing principles in section 7(1) of the WIC Act.

In granting this WIC Act licence, the Minister is not a determining authority under Part 5 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act). For this application, we have undertaken an environmental assessment, having regard to the environmental considerations under the WIC Act.³ We engaged an expert consultant to undertake a review of CHBWU's Review of Environmental Factors (REF) for construction of the proposed recycled water treatment plant (RWTP), and sewerage and non-potable water reticulation infrastructure. The consultant concluded that CHBWU's REF, and its accompanying specialist studies, have examined and taken into account to the fullest extent possible all matters likely to affect the environment by reason of the

¹ In the *Water Industry Competition Act 2006* (NSW), non-potable water means water that is not drinking water. CHBWU seeks this licence to supply recycled water.

² Water Directorate, *Section 64 Determinations of Equivalent Tenements Guidelines*, January 2009: An Equivalent Tenement (ET) is considered to be the demand or loading a development will have on infrastructure in terms of the water consumption or sewage discharge for an average residential dwelling or house.

³ WIC Act, sections 7(1)(a) and 10(4)(e) and clause 7 of the *Water Industry Competition (General) Regulation 2008* (WIC Regulation).

activity. The consultant reported that the activity is not likely to significantly affect the environment.

In addition to assessing the application against the licensing criteria and principles of the WIC Act, we also considered whether CHBWU should be considered a monopoly supplier and subject to price regulation. We consider that the construction, operation and maintenance of the drinking water, non-potable water and sewerage infrastructure at the development could be considered a monopoly service. However, we recommend that CHBWU is not declared a monopoly supplier in relation to these services at this time. Should the Minister declare any monopoly services, we recommend that the Minister does not refer any of these services to IPART for determination of pricing or a periodic review of pricing policies, at this time.

The Minister must consider, but is not bound to accept, any advice or recommendation in this report in determining the licence application. The Minister may, if circumstances so require, seek further advice from us in relation to the licence application.⁴

2 Background

2.1 The applicant and its parent organisation

We received an application for a network operator's licence from CHBWU on 30 April 2013. CHBWU is a wholly owned subsidiary company of Solo Water. CHBWU has no direct employees, other than its four directors, and relies on the full support of Solo Water to provide technical, organisational and financial capacity.

CHBWU has applied for a network operator's licence to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure at the development. Solo Water has applied for a separate retail supplier's licence⁵ to supply water and provide sewerage services to residential and retail customers at the development, by means of CHBWU's infrastructure. The residential and retail customers at the development will include small retail customers.

⁴ WIC Act, section 10(2).

⁵ Solo Water's application for a retail supplier's licence under the WIC Act is currently being assessed by IPART.

2.2 The scheme

CHBWU has been engaged by Coastal Hamlets to provide drinking water, non-potable water and sewerage infrastructure at the development. We understand that it was originally intended that Hunter Water Corporation (Hunter Water) would provide water and sewerage services⁶ at the development. Hunter Water has since confirmed that it does not intend to provide these services to the development, in the immediate future.⁷

WSC will supply sufficient drinking water to meet all of the customers' demand at the development. This drinking water will be supplied directly to the customers, by means of CHBWU's water infrastructure. CHBWU will not treat the drinking water obtained from WSC, but it will monitor the residual chlorine of the water and undertake chlorine dosing, as required. CHBWU relies on WSC to maintain the quality of the drinking water, upstream of CHBWU's customer connection point. We understand that WSC's drinking water quality will be regulated by NSW Health under the *Public Health Act 2010* (NSW) (Public Health Act) and associated regulations.⁸

Sewage will be collected from customers at the development and treated to generate non-potable water, by means of CHBWU's infrastructure. Customers will use the non-potable water for toilet flushing, laundry (specifically the washing machine cold water connection), irrigation of private lots and footpaths, outdoor cleaning and washdown (including car and bin washing).

CHBWU intends to construct the scheme in three stages. The scope of this licence is limited to the first two stages of the scheme and will service up to 470ET.⁹ If CHBWU decides to develop Stage 3 of the scheme, providing services for up to 540ET, it will seek a variation to its network operator's licence (licence number 15_035), if it is granted.

In Stage 1 of the scheme, non-potable water will not be supplied to customers as it will not be of the required quality for reuse.¹⁰ The non-potable water will instead be disposed onto 4.5ha of privately owned land.¹¹

⁶ We understand that Hunter Water did not intend to supply recycled water. Hunter Water intended to supply drinking water and provide stormwater and sewerage services at the development.

⁷ Letter to IPART, Hunter Water, 16 October 2013.

⁸ Letter to IPART, Wyong Shire Council, 12 March 2014

⁹ Up to 112ET will be connected to the scheme in Stage 1. In Stage 2, the scheme will be augmented to connect up to 470ET in the development. The approved subdivision has capacity for up to 540ET. However the last 70ET will only be developed if Stage 3 of the water supply scheme is approved and licensed.

¹⁰ As per the requirements of the *Australian Guidelines for Water Recycling 2006* for internal reuse.

¹¹ Up to 8.5ha of land is available for disposal of excess non-potable water in stages 1 and 2 of the scheme. This land is privately owned by Coastal Hamlets, the developer. It is reserved for stages 6 and 7 of the development which will only be developed if Stage 3 of the scheme is developed. The development will be built in seven stages.

In Stage 2, customers will be supplied with non-potable water of the required quality and any excess non-potable water will be disposed onto 8.5ha of privately owned land.

If Stage 3 is pursued, we understand that any excess treated effluent will be disposed to the environment. The details of this have not yet been finalised. This is outside the scope of this licence application. If Stage 3 is pursued, CHBWU will seek a variation to its network operator's licence, if granted.

The non-potable water system will be topped up with drinking water, as required to meet customer demand. CHBWU can draw drinking water directly from WSC's network at one of its approved metered stand pipe locations, by means of a licensed water carter, to supply the development in case of emergency. The nearest approved stand pipe location to the development is at Wyee Road, Doyalson.¹² Any excess sewage can be pumped out of CHBWU's sewerage system, by tanker, and transported to an approved disposal facility. CHBWU intends to engage Solo Resource Recovery Group Pty Ltd (SRR) to tanker away any waste or excess sewage to nearby disposal facilities.¹³ Excess non-potable water that cannot be disposed to the designated land will also be transported away by carter.

3 Consultation and submissions

On 6 September 2013, we provided the licence application to, and invited submissions from, the following Ministers and their relevant departments:

- ▼ Minister administering the *Public Health Act 2010* (NSW) (Minister for Health)
- ▼ Minister administering Chapter 2 of the *Water Management Act 2000* (NSW) (Minister for Primary Industries)
- ▼ Minister administering the *Protection of the Environment Operations Act 1997* (NSW) (Minister for the Environment), and
- ▼ Minister administering the *Environmental Planning and Assessment Act 1979* (NSW) (the then Minister for Planning and Infrastructure).¹⁴

We also provided a copy of the licence application to the then Minister for Natural Resources, Lands and Water as the Minister administering the WIC Act at the time.¹⁵

Previously, CHBWU intended to dispose of the treated effluent on surrounding Lake Macquarie City Council (LMCC) owned land. The scheme was revised when LMCC opposed this proposal.

¹² Letter to IPART, Wyong Shire Council, 12 March 2014.

¹³ SRR and Solo Water are related entities who share directors.

¹⁴ WIC Act, section 9(1)(b).

¹⁵ WIC Act, section 9(1)(a).

We notified WSC of the licence application¹⁶ because CHBWU is proposing to connect to, or use, WSC's water industry infrastructure (as defined in the WIC Act) as part of the activities in relation to which it is seeking a licence, as required under section 9(1)(b)(iii) of the WIC Act and clause 17(2) of the *Water Industry Competition (General) Regulation 2008* (NSW) (WIC Regulation).¹⁷

We invited LMCC¹⁸ to make a submission because, at the time, we considered that LMCC could be a relevant determining authority under the EP&A Act.¹⁹

We also called for submissions on the application from the public.²⁰ We advertised in the Australian, the Sydney Morning Herald and the Daily Telegraph on 18 September 2013 for public submissions. The closing date for submissions was 18 October 2013. However, given the high level of public interest in this scheme, we accepted public submissions until 23 November 2013.

We received 144 submissions in total, including submissions from the Minister for Primary Industries, the Minister for the Environment, NSW Health, the Department of Planning and Environment (DP&E) (the then Department of Planning and Infrastructure), WSC, LMCC, and Hunter Water. 137 of the submissions were from the public. These submissions are available on our website and are discussed below. A summary of the submissions is provided in **Appendix B**.

The **Minister for Primary Industries** clarified that CHBWU does not require a water access licence or water supply work approval under the *Water Management Act 2000* (NSW) since CHBWU does not intend to extract drinking or non-potable water from a water source.²¹

The **Minister for the Environment** supports CHBWU's proposed activities at the development.²² They clarified that CHBWU would not require an Environment Protection Licence under the provisions of the *Protection of the Environment Operations Act 1997* (NSW) (**POEO Act**). The Minister for the Environment's submission is explained in further detail in section 4.6.2.

¹⁶ Letter to WSC, IPART, 9 September 2013.

¹⁷ We did not notify Hunter Water because CHBWU is not proposed to connect to, or use, any of Hunter Water's water industry infrastructure.

¹⁸ Email to LMCC, IPART, 18 September 2013.

¹⁹ We understand that LMCC would be a relevant regulatory authority if CHBWU were to seek approval under the *Environmental Planning and Assessment Act 1979* (EP&A Act) to construct the proposed water industry infrastructure. Part of CHBWU's proposed infrastructure is located within the LMCC Local Government Area. We have considered CHBWU's regulatory requirements under the EP&A Act in more detail in section 4.6.2.

²⁰ WIC Act, section 9(1)(c).

²¹ Letter to IPART, the Minister for Primary Industries, 25 October 2013.

²² Letter to IPART, the Minister for the Environment, 9 October 2013.

NSW Health supports CHBWU's licence application.²³ NSW Health has requested to be consulted by CHBWU when it develops its final risk assessments and licence plans, prior to commencing commercial operation of the water infrastructure at the development. This is discussed further in section 4.3.

DP&E confirmed that the development has previously been approved under Part 3A of the EP&A Act (under development approval MP10_0204).²⁴ Further, DP&E clarified CHBWU's environmental planning and legislative requirements, and the provisions for the proposed development under the *State Environmental Planning Policy (Infrastructure) 2007* (NSW) (ISEPP). This is explained further in section 4.6.2

WSC supports CHBWU's licence application.²⁵ It clarified the terms under which it will supply drinking water to CHBWU, for supply at the development. WSC and CHBWU will enter into a formal agreement prior to commencing commercial operation and supply of services at the development. The details of WSC's submission are discussed further in section 4.2.1.

LMCC did not support CHBWU's original proposal at the development.²⁶ CHBWU has since revised its proposal to address LMCC's concerns. The details of LMCC's submission are discussed further in section 4.2.1.

LMCC also raised concerns regarding the proposed land use and permissibility, irrigation of public open space, water balance accuracy and assumptions, impact on adjacent natural areas, public asset management and maintenance, cumulative impacts, and the public interest. This is discussed further in section 4.6.2.

Hunter Water supports CHBWU's licence application because it promotes greater levels of competition within the lower Hunter region for the provision of water, wastewater and non-potable water services.²⁷

Hunter Water also raised some matters related to CHBWU's technical capacity, including the standards used to design the infrastructure. This is discussed further in section 4.2.1.

We received 137 submissions from the **community** at Catherine Hill Bay and surrounding areas, as well as the wider NSW community, expressing concerns and objections with the project. The 136 submissions can be summarised as follows:

- ▼ 135 submissions (99%) were concerned with CHBWU's technical and organisational capacity

²³ Letter to IPART, NSW Health, 18 October 2013.

²⁴ Letter to IPART, the then Department of Planning and Infrastructure, 15 November 2013.

²⁵ Letter, to IPART, Wyong Shire Council, 15 October 2013.

²⁶ Letter, from Lake Macquarie City Council, 16 October 2013.

²⁷ Letter to IPART, Hunter Water, 16 October 2013.

- ▼ 135 submissions (99%) were concerned with the environmental impacts of CHBWU's proposed scheme
- ▼ 136 (99%) were concerned with matters of public interest (location of the RWTP which we consider outside the scope of this licence application as explained in section 4.7)
- ▼ 132 (96%) were concerned with matters of public health
- ▼ 1 (1%) was concerned with CHBWU's proposed insurance arrangements, and
- ▼ 3 (2%) were concerned that CHBWU's proposed scheme did not meet the requirements of the WIC Act.

The main concerns from the community were about CHBWU's organisational capacity including its experience in operating and retailing services in the water industry in New South Wales. We consider that CHBWU has the organisational capacity to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure at the development. CHBWU has demonstrated this in a number of ways, including having adequate experience in other states within Australia. This is discussed in section 4.2.3.

The community members raised concerns regarding the proposed location of the RWTP, including whether it was an appropriate solution for the supply of drinking water and provision of sewerage services for a development on the South Wallarah Peninsula. This is discussed in section 4.7.

The community members raised concerns regarding the impact to the development if CHBWU did not construct its Advanced Water Treatment Plant (AWTP) in Stage 2 of the proposed scheme. We consider that construction of the AWTP is a critical aspect of the scheme for which CHBWU is seeking a licence. CHBWU has proposed that in Stage 1, before the AWTP is constructed, drinking water will be supplied to the customers to meet all of their needs. WSC has confirmed that it can supply sufficient water to meet this demand.²⁸ We consider that the customers will not be negatively impacted.

The community members were also concerned about the appropriateness of CHBWU's insurance policies and provider to cover its proposed licensed activities. We have sought expert advice from the NSW Self Insurance Corporation (SICorp), who has confirmed that CHBWU has obtained sufficient insurance cover to undertake the activities for which it is seeking a licence.²⁹ This is discussed further in section 4.4.

On 17 October 2014, CHBWU submitted a REF for the Minister's consideration under the WIC Act. The REF includes an assessment of the environmental impacts of the proposed RWTP, and sewerage and non-potable water reticulation

²⁸ Letter to IPART, Wyong Shire Council, 12 March 2014,

²⁹ Emails to IPART, Insurance and Reinsurance Strategy Manager, SICorp, 18 August 2015 and 28 August 2015.

infrastructure at the development. We consider the REF to be part of CHBWU's licence application and therefore it was necessary to seek public consultation on the REF.

On 9 February 2015, we invited the same Ministers and government departments to comment on CHBWU's REF as those that were invited in 2013 to comment on the remainder of the licence application. We also called for submissions on the REF from the public. We advertised in the Australian, Sydney Morning Herald and the Daily Telegraph on 11 February 2015. The closing date for submissions was 13 March 2015. We accepted public submissions until 17 April 2015.

We received submissions on the REF from DP&E, the Environment Protection Authority (EPA), DPI Water (the then NSW Office of Water), LMCC and WSC. We also received two public submissions. These submissions are available on our website. A summary of the submissions is included in **Appendix B**.

These submissions either supported the application or remained silent on their support, or otherwise, of the application. These submissions focussed on raising specific concerns with CHBWU's environmental assessment, as detailed in the REF. These matters have all been addressed to our satisfaction, as discussed in section 4.6.2 and **Appendix B**.

In addition to inviting submissions, we sought expert advice from:

- ▼ Vincents Chartered Accountants Pty Ltd (Vincents) to inform our financial assessment (see section 4.2.2),
- ▼ Parsons Brinckerhoff Australia Pty Ltd (PB) to inform our environmental assessment (see section 4.5 and 4.6.2), and
- ▼ SiCorp to inform our assessment of appropriate insurance arrangements (see section 4.4).

4 Assessment of application

This section of the report contains our assessment of CHBWU's licence application. Our assessment considers each of the following requirements of the WIC Act:

- ▼ A licence must not be granted to:
 - a) a disqualified corporation, or
 - b) a corporation that is a related entity of a relevant³⁰ disqualified corporation.

³⁰ Where the disqualified corporation would have a direct or indirect interest in, or influence on, the carrying out of the activities that the licence would authorise if granted. WIC Act, section 10(3)(b).

- ▼ A licence may not be granted unless the Minister is satisfied as to each of the following:
 - that the applicant has, and will continue to have, the capacity (including technical, financial and organisational capacity) to carry out the activities that the licence (if granted) would authorise
 - that the applicant has the capacity to carry out those activities in a manner that does not present a risk to public health
 - that the applicant has made, and will continue to maintain, appropriate arrangements with respect to insurance
 - in the case of an application for a licence to supply water, that, if such a licence is granted, sufficient quantities of the water supplied by the licensee will have been obtained otherwise than from a public water utility
 - that the applicant has the capacity to carry out the activities that the licence (if granted) would authorise in a manner that does not present a significant risk of harm to the environment, and
 - such other matters as the Minister considers relevant, having regard to the public interest.³¹
- ▼ In considering whether or not a licence is to be granted, and what conditions are to be imposed on such a licence, regard is to be had to the following principles:
 - the protection of public health, the environment, public safety and consumers generally
 - the encouragement of competition in the supply of water and the provision of sewerage services
 - the ensuring of sustainability of water resources
 - the promotion of production and use of recycled water
 - the promotion of policies set out in any prescribed water policy document
 - the potential for adverse financial implications for small retail customers generally arising from the activities proposed to be covered by the licence, and
 - the promotion of the equitable sharing among participants in the drinking water market of the costs of water industry infrastructure that significantly contributes to water security.³²

³¹ WIC Act, sections 10(3) and (4), and WIC Regulation, clause 7.

³² WIC Act, section 7.

4.1 Disqualified corporation and related entity checks

We consider that CHBWU is neither a disqualified corporation nor a corporation that is a related entity of a relevant³³ disqualified corporation.

In making this recommendation, we have considered the following information:

- ▼ A statutory declaration signed by two company directors stating that:
 - neither CHBWU, nor any director or person concerned in the management of CHBWU is, or would be, a disqualified corporation or a disqualified individual within the meaning of the WIC Act, and
 - CHBWU is not a related entity of a disqualified corporation that would have a direct or indirect interest in, or influence on, the carrying out of activities that the licence would authorise if granted.
- ▼ Information provided by CHBWU regarding details of the:
 - trustees (past and current) of any trusts in relation to which CHBWU is a beneficiary
 - current beneficiaries of any trusts in relation to which CHBWU is a trustee,
 - relevant related entities,³⁴ and
 - names of the company directors including Chief Financial Officer and Chief Executive Officer for CHBWU and each of CHBWU's relevant related entities.
- ▼ Results of ASIC and Dun & Bradstreet reports that we have obtained for CHBWU, and for the five relevant related entities, confirmed that these companies are not disqualified, nor are their directors or persons concerned in the management disqualified individuals.³⁵
- ▼ Results of our search of the WIC Act licence database,³⁶ confirming in part the above.

4.2 Capacity (including technical, financial and organisational capacity) to carry out the activities

CHBWU has applied for a network operator's licence to authorise it to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure.

³³ A related entity that would have a direct or indirect interest in, or influence on, the carrying out of the activities that the licence authorises. WIC Act, section 10(3)(b).

³⁴ CHBWU identified five relevant related entities: Solo Water Pty Ltd (ACN 160 136 14), Ranclose Investments Pty Ltd (ACN 160 562 201), Gwynfi Investments Pty Ltd (ACN 160 562 774), Carrychip Pty Ltd (ACN 068 397 419), and Rico Enterprises Pty Ltd (ACN 110 348 537).

³⁵ We obtained the results of the ASIC and Dun & Bradstreet reports on 14 August 2015.

³⁶ There are currently no disqualified corporations or individuals on the register pursuant to the WIC Act, sections 16(1)(e) and 16(f).

We assessed CHBWU's technical, financial and organisational capacity to carry out activities to be licensed. Our assessment was based on CHBWU's capacity at the time of making the application.

4.2.1 Technical capacity

We are satisfied that CHBWU, supported by Solo Water, has the technical capacity to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure at the Catherine Hill Bay development.

As mentioned previously, CHBWU relies on the full support of Solo Water to provide technical capacity. Our analysis included a review of:

- ▼ A signed letter of intent from WSC, dated 12 March 2014, confirming the arrangements under which WSC will supply up to 23.3L/s of drinking water to the development. This is evidence of CHBWU's capacity to negotiate a services agreement with a public water utility, necessary to supply services to the development.
- ▼ The final executed Services Agreement with Solo Water, as a third party service provider. The Services Agreement provides the terms under which Solo Water will provide the technical expertise and resources that CHBWU requires to undertake the proposed licensed activities, as an authorised person on the licence, if it is granted.
- ▼ Process flow diagrams for drinking water, non-potable water and sewerage infrastructure (including staged and permanent facility development). This is evidence of CHBWU's capacity, supported by Solo Water, to design the required non-potable water treatment system appropriate for each stage of the scheme, and identify key input and output streams and storages (eg, source materials, waste streams, etc.). The diagrams also indicate the proposed non-potable water end-uses.
- ▼ CHBWU's preliminary infrastructure operating plan and water quality plans. These documents demonstrate CHBWU's technical understanding of design, construction, operation and maintenance of drinking water, non-potable water and sewerage infrastructure.
- ▼ CHBWU's preliminary risk assessment for the drinking water, non-potable water and sewerage services. This demonstrates CHBWU's technical capacity to identify hazards and risks related to the scheme's drinking water, non-potable water and sewerage infrastructure and CHBWU's business systems, and to develop control measures to manage these risks. The residual risks are considered adequate and we consider the control measures identified are appropriate. Further, the preliminary risk assessment provided demonstrates technical capacity to understand and implement the *Australian Guidelines for Water Recycling 2006*.

- ▼ Proposed drinking water, non-potable water and sewerage reticulation masterplans. These demonstrate CHBWU's technical capacity, as supported by Solo Water, to design staged reticulation networks in accordance with future project demands and stage requirements.
- ▼ An integrated water management plan, submitted as an appendix to CHBWU's REF. The plan demonstrates CHBWU's technical capacity, as supported by Solo Water, to forecast non-potable water requirements, production and storage necessary in the scheme, and key information such as future sewage production, drinking and non-potable water demands and system losses.
- ▼ A land capability assessment report. The report demonstrates CHBWU's technical capacity, as supported by Solo Water, to determine an appropriate rate for effluent disposal onto the land within the development, taking into consideration daily water and nutrient balancing.
- ▼ An independent technology assessment.³⁷ The audit confirmed that the proposed technology is adequate to achieve the non-potable water quality required under the *Australian Guidelines for Water Recycling 2006* to meet the requirements of the customers at the development.
- ▼ Solo Water's previous technical experience³⁸ (within Australia) which we assessed by reviewing the descriptions of previously undertaken and similar schemes, and conducting reference checks with external parties who were also involved in the schemes. We consider Solo Water's technical experience is appropriate to provide sufficient technical capacity to CHBWU.
- ▼ CHBWU's and Solo Water's human resources capability, which we assessed from the position descriptions and professional experience of specific personnel nominated to the project in the application. We consider the personnel and positions nominated by CHBWU and Solo Water are appropriate to provide technical capacity to CHBWU.

We received the following submissions regarding CHBWU's technical capacity:

WSC supports CHBWU's licence application.³⁹ WSC and CHBWU will enter into a formal drinking water supply agreement before commencing commercial operation and supply of services at the development.

³⁷ GHD, Catherine Hill Bay Water Utility New Infrastructure Audit, July 2014.

³⁸ The projects were undertaken by Sirex Pty Ltd (Sirex). Sirex and Solo Water share the same directors. Sirex has transferred its intellectual property to Solo Water who will provide technical capacity to CHBWU.

³⁹ Letter to IPART, Wyong Shire Council, 15 October 2013.

WSC has confirmed that sufficient drinking water is available from the WSC system for supply to the development. WSC explained that CHBWU was advised at a meeting in February 2013 that the drinking water supply could be provided from an existing main in Kanangra Drive.⁴⁰ WSC has confirmed that the letter represents the full extent of consultation undertaken with WSC during the preparation of CHBWU's proposed servicing strategy and licence application.

WSC has clarified that it does not intend to enter into a bulk supply agreement with CHBWU. WSC will supply water to CHBWU at the regulated fees and charges as is the case for all of its customers, including large commercial and industrial customers. Guarantees of flow, pressure or water quality will not be provided specifically for CHBWU. Further, CHBWU will be subject to water supply contributions, in accordance with WSC's regulated Developer Servicing Plans.

Finally, WSC has also clarified that it will be the responsibility of CHBWU to ensure appropriate chlorine residual levels are provided at their customer's taps. CHBWU has committed to monitoring chlorine residual levels in the drinking water network, prior to supplying to customers, and undertaking appropriate chlorine dosing, as required.

LMCC did not support CHBWU's original proposal at the development.⁴¹ CHBWU has since revised its proposal to address LMCC's concerns.

Originally, CHBWU proposed to dispose of up to 40% of its recycled water onto publicly owned land. LMCC opposed the proposal explaining that these lands are owned by LMCC. LMCC only intends to irrigate high profile sports grounds and recreation areas. LMCC was therefore concerned about the likely adverse impacts of disposing such high volumes of treated effluent onto areas which are designed to require low maintenance. LMCC was also concerned about the individual allotment irrigation scheme at the development, ensuring that no more than 40% of the treated effluent would be disposed to LMCC owned lands. LMCC only supported irrigation of sports grounds at Middle Camp, outside the development's approved subdivision. However, LMCC considered that this is insufficient area to dispose of all of the treated effluent from CHBWU's scheme.

CHBWU has since revised its proposal so that it no longer intends to dispose of any treated effluent onto LMCC owned land. Any excess non-potable water generated in stages 1 and 2 of the scheme will be disposed onto land within the development, owned by Coastal Hamlets. We note, LMCC provided as

⁴⁰ WSC explained in its letter to IPART dated 12 March 2014 that connection will be made to WSC's existing network rather than directly at Kanangra Reservoir, as CHBWU originally considered, allowing supply to be maintained when the Kanangra Reservoir is off-line. We understand that this connection point will be located within the Kanangra Reservoir site. Solo Water, as CHBWU's parent organisation, advised WSC that a pumping station will be constructed at the start of the Solo Water easement in Kanangra Drive.

⁴¹ Letter to IPART, Lake Macquarie City Council, 16 October 2013.

submission on CHBWU's REF and revised scheme. LMCC's submission is summarised in Table B3 of Appendix B.

Hunter Water supported CHBWU's licence application.⁴² Hunter Water noted that CHBWU has designed its water and sewerage networks in accordance with the Water Services Association of Australia standards. Hunter Water noted that if the system is to be integrated with Hunter Water's networks in future, it will need to be modified to comply with Hunter Water's specifications. We understand CHBWU is aware of Hunter Water's submission and consider CHBWU has discretion to apply its advice during design and construction.

Hunter Water also made a comment that if in future, an operator of last resort (OOLR) is appointed, as allowed under the WIC Act, appointment of the OOLR should not burden the existing customer base. We will consider Hunter Water's position if an OOLR is appointed. We consider that there is not an immediate need for an OOLR as CHBWU has proposed adequate contingency measures to ensure that services are maintained. This includes transport of drinking water to the development directly from the WSC network, and transport of excess sewage and non-potable water to a nearby disposal facility, by tanker.

We also received submissions on CHBWU's technical capacity from members of the community. The community suggested that it would be of benefit to encourage use of solar energy at the RWTP to reduce operating costs and power usage. The community members were also concerned that the technology proposed to be used by CHBWU is outdated and inappropriate for use in an environmentally sensitive area such as the development. They were also concerned that the RWTP is undersized and does not consider seasonal variations of customer demand.

We consider that the design of CHBWU's scheme is adequate to generate non-potable water at a quality that meets the requirements of the *Australian Guidelines for Water Recycling 2006*, and to meet customer demand at the development. Further, we consider that the customer demand has been based on appropriate design assumptions and that there is sufficient drinking water available to top up the non-potable water system during times of high demand. WSC has committed to providing sufficient drinking water to meet the entire customer demand, including non-potable water demand. CHBWU no longer intends to dispose of excess non-potable water onto publicly owned land. During high rainfall events, any overflows from the wet weather storage tanks will be transported to nearby disposal facilities to prevent water logging and associated issues arising within the subdivision. We consider the impact of the proposed scheme on the environment to be low, as discussed in section 4.5.

⁴² Letter to IPART, Hunter Water, 16 October 2013.

We consider that the information submitted by CHBWU demonstrates that it has the technical capacity to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure at the development.

We recommend that CHBWU should be subject to the following standard licence condition (see draft licence in **Appendix A**), in relation to technical capacity, if a licence is granted:

B1.1 The Licensee must have the technical, financial and organisational capacity to carry out the activities authorised by this Licence. If the Licensee ceases to have this capacity, it must report this to IPART immediately in accordance with the Reporting Manual.

Further, we recommend that CHBWU should be subject to the following special condition, in relation to technical capacity, if a licence is granted. These conditions requires CHBWU to provide prior notification to IPART when it proposes to modify any agreement in connection with the licence application, including its Services Agreement with Solo Water:

A4.1 If a party to an Agreement proposes to:

- (a) terminate the Agreement,
- (b) novate the Agreement,
- (c) assign or transfer any of its rights or obligations under the Agreement to any other person, or
- (d) alter the Agreement in any way that materially reduces the Licensee's technical, financial or organisational capacity to carry out the activities authorised by this Licence, and

the Licensee must provide IPART with written notice as soon as practicable, but no later than three months, before the time when the proposed action is to occur. The written notice must include details of how the service provided under the Agreement will be provided subsequent to the proposed termination, novation, assignment, transfer or alteration.

4.2.2 Financial capacity

We are satisfied that CHBWU, supported by the Rico Family Trust, has the financial capacity to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure at the Catherine Hill Bay development.

CHBWU relies on the full support of its related entity, Rico Enterprises Pty Ltd ATF The Rico Family Trust (Rico Family Trust) to provide financial capacity. In making our assessment of CHBWU's financial capacity, we have considered the following information:

- ▼ Executed Deed of Financial Capacity and Guarantee between the applicant and Rico Enterprises Pty Ltd ATF Rico Family Trust (as guarantor), dated 26 June 2015 (Deed)
- ▼ Rico Family Trust *Interim Accounts for the period July 2014 to 28 February 2015*
- ▼ Catherine Hill Bay Water Utility, *Cash Flow Projects Year 1 to Year 20*
- ▼ Rico Family Trust, *Financial Statements for the year ended 30 June 2010*
- ▼ Rico Family Trust, *Financial Statements for the year ended 30 June 2011*
- ▼ Rico Family Trust, *Financial Statement for the year ended 30 June 2012*
- ▼ Rico Family Trust, *Financial Statement for the year ended 30 June 2013*
- ▼ Rico Family Trust, *Financial Statement for the year ended 30 June 2014*
- ▼ Rico Family Trust, *Finance Facilities confirmation letter from Commonwealth Bank dated 1 October 2013*
- ▼ Rico Family Trust, *Finance Facilities confirmation letter from National Australia Bank dated 27 September 2013*
- ▼ Rico Family Trust, *Finance Facilities confirmation letter from Westpac dated 19 September 2013*
- ▼ Rico Family Trust, *additional information provided by Wynn Owen under email received by IPART on 2 July 2013*
- ▼ Rico Family Trust, *additional information provided by Wynn Owen under email received by IPART on 12 June 2015*
- ▼ Australian Securities & Investments Commission, *Historical Company Extract for Solo Water Pty Ltd*, 13 June 2013
- ▼ Australian Securities & Investments Commission, *Historical Company Extract for Catherine Hill Bay Water Utility Pty Ltd*, 20 July 2015
- ▼ Australian Securities & Investments Commission, *Rico Enterprises Pty Ltd*, 20 July 2015, and
- ▼ Australian Taxation Office, *Guidelines on Unpaid Present Entitlements and Division 7Aa*, 22 June 2011.

We engaged an independent financial consultant, Vincents, to assess the financial capacity of CHBWU and the viability of the scheme. Vincents also assessed the financial capacity of the Rico Family Trust because CHBWU and its parent organisation, Solo Water, have not undertaken any significant operations since their incorporation and as such, do not currently hold material levels of assets or

liabilities. CHBWU will rely on the financial support of the Rico Family Trust to undertake the proposed licensed activities.

The Deed between CHBWU and the Rico Family Trust provides a guarantee for CHBWU that the Rico Family Trust will provide the financial support necessary to meet any claim during the term of the Deed. Vincents reported that the limitations on liability of the Deed are satisfactory, taking into account the cash flow projections for the project. The Deed has a term of five years (60 months). The liability is capped in any year under the term to \$500,000 and to \$1,500,000 during the term of the Deed.

Vincents reported that CHBWU has a low risk of financial failure. In terms of financial viability of the project, Vincents considered the project operations will be cash flow positive from its commencement. Further, CHBWU's cash flow will be supported by the developer, Coastal Hamlets, for the first four years of its operation. Subsequent to the fourth year, the majority of revenue will come from customer connections and rates revenue.

Based on its assessment of CHBWU, the Rico Family Trust, and the scheme's cash flows, Vincents considers that CHBWU does not require any special licence conditions relating to financial capacity.

We would like to emphasise that our financial assessment represents the applicant's financial capacity at a point in time. Our recommendation to grant CHBWU a licence should not be viewed as an endorsement of the future ongoing viability of the corporation. The assessment is based on a combination of information sources, none of which is to be regarded as individually determinative. This assessment is done for our own purposes and for the Minister's purposes in assessing the application. The conclusion is not to be relied upon for any other purpose by any other person.

We note that Vincents' assessment was made on the basis that the insurance policies obtained by the applicant are adequate for its proposed operations. We consider this assumption is reasonable (see section 4.4 for our assessment of insurance).

We reviewed the Deed and consider that it is adequate to provide a continuing guarantee and indemnity for all liabilities incurred by CHBWU in carrying out the obligations under the scheme contract.

We received no submissions regarding CHBWU's financial capacity.

We consider that the information submitted by CHBWU demonstrates that it has the financial capacity to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure at the development.

We recommend that CHBWU should be subject to the following standard licence condition (see draft licence in Appendix A), in relation to financial capacity, if a licence is granted:

B1.1 The Licensee must have the technical, financial and organisational capacity to carry out the activities authorised by this Licence. If the Licensee ceases to have this capacity, it must report this to IPART immediately in accordance with the Reporting Manual.

Further, we recommend that CHBWU should be subject to the following special condition, in relation to financial capacity, if a licence is granted. This conditions requires CHBWU to provide prior notification to IPART when it proposes to modify any agreement in connection with the licence application, including the Deed:

A4.1 If a party to an Agreement proposes to:

- (a) terminate the Agreement,
- (b) novate the Agreement,
- (c) assign or transfer any of its rights or obligations under the Agreement to any other person, or
- (d) alter the Agreement in any way that materially reduces the Licensee's technical, financial or organisational capacity to carry out the activities authorised by this Licence, and

the Licensee must provide IPART with written notice as soon as practicable, but no later than 3 months, before the time when the proposed action is to occur. The written notice must include details of how the service provided under the Agreement will be provided subsequent to the proposed termination, novation, assignment, transfer or alteration.

4.2.3 Organisational capacity

We are satisfied that CHBWU, supported by Solo Water, has the organisational capacity to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure at the Catherine Hill Bay development.

As mentioned previously, CHBWU relies on the full support of Solo Water to provide organisational capacity. Our analysis included a review of CHBWU:

- ▼ providing evidence of Solo Water's, CHBWU's parent organisation, experience in providing services to other schemes, confirming that Solo Water can provide organisational capacity to CHBWU
- ▼ providing evidence of contractual agreements between CHBWU and Solo Water (Services Agreement), confirming that Solo Water will provide organisational capacity to CHBWU

- ▼ having an appropriate organisational structure to manage its nominated third party (ie., Solo Water) to deliver the proposed work based on their contractual arrangements and agreements
- ▼ outlining the experience of the personnel currently and proposed to be in the Project Director (Chief Executive Officer), Chief Financial Officer, Operations Manager, Construction Manager, Site Supervisor and Compliance and Operations Manager roles, which matched that of the role descriptions
- ▼ having previous experience in the water industry (within Australia) and specific personnel nominated to the project, as shown by the CVs of its key personnel provided to us in its application form
- ▼ showing evidence of its capacity to negotiate agreements with network operators through its correspondence with WSC, and
- ▼ having demonstrated that business risks have been identified and will be managed, through the risk assessment provided to us in its application form.

We received submissions from the community members at the development raising concerns that Solo Water, as CHBWU's service provider, does not have sufficient experience operating and retailing services in the water industry and in New South Wales. We consider the risk related to this issue to be minor. Solo Water's proposed technology is adequate to meet the requirements of the *Australian Guidelines for Water Recycling 2006* to supply non-potable water for internal and external reuse. Further, we have conducted reference checks to ensure that Solo Water and CHBWU have appropriately qualified personnel and adequate resources to undertake the activities for which CHBWU is seeking a network operator's licence.

We consider that the information submitted by CHBWU demonstrates that it has the organisational capacity to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure at the development.

We recommend that CHBWU should be subject to the following standard licence condition (see draft licence in Appendix A), in relation to organisational capacity, if a licence is granted:

B1.1 The Licensee must have the technical, financial and organisational capacity to carry out the activities authorised by this Licence. If the Licensee ceases to have this capacity, it must report this to IPART immediately in accordance with the Reporting Manual.

Further, we recommend that CHBWU should be subject to the following special condition, in relation to organisational capacity, if a licence is granted. This condition requires CHBWU to provide prior notification to IPART when it proposes to modify any agreement in connection with the licence application, including the Services Agreement:

A4.1 If a party to an Agreement proposes to:

- (a) terminate the Agreement,
- (b) novate the Agreement,
- (c) assign or transfer any of its rights or obligations under the Agreement to any other person, or
- (d) alter the Agreement in any way that materially reduces the Licensee's technical, financial or organisational capacity to carry out the activities authorised by this Licence, and

the Licensee must provide IPART with written notice as soon as practicable, but no later than 3 months, before the time when the proposed action is to occur. The written notice must include details of how the service provided under the Agreement will be provided subsequent to the proposed termination, novation, assignment, transfer or alteration.

4.3 Capacity to carry out those activities in a manner that does not present a risk to public health

We are satisfied that CHBWU, supported by Solo Water, has the capacity to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure at the Catherine Hill Bay development, in a manner that does not present a risk to public health.

We assessed CHBWU's capacity to manage the following key risks to public health, posed by constructing, operating and maintaining water industry infrastructure at the development:

- ▼ **Source water quality:** CHBWU will source drinking water from WSC. We understand that WSC's drinking water quality will be regulated by NSW Health under the Public Health Act and associated regulations,⁴³ and non-potable water will be consistent with the *Australian Guidelines for Water Recycling 2006*. CHBWU has committed to developing incident notification and communication protocols with WSC to ensure that CHBWU is notified of all drinking water quality events in a timely manner. CHBWU will continuously monitor the drinking water chlorine residual and non-potable water quality. CHBWU will shut down the systems in the case of poor quality water. CHBWU has also committed to developing a customer taste and odour complaint monitoring system for supply of drinking water.

⁴³ Letter to IPART, Wyong Shire Council, 12 March 2014

- ▼ **Water supply interruption:** Interruptions in supply of drinking water or non-potable water could pose a risk to public health. CHBWU will establish a drinking water supply agreement with WSC which will include communication and incident notification protocols. CHBWU has also committed to developing an emergency response plan for water main breaks, developing appropriate redundancy in its design, and undertaking appropriate pressure testing, leak detection, and routine inspection and maintenance of equipment. Drinking water will be used to top up the non-potable water system, as required. CHBWU has indicated that should a water supply interruption occur, drinking water can be transported to the development directly from the WSC network, by tanker, to meet the customers' drinking water and non-potable water demand, as required.
- ▼ **Sewerage service interruptions:** CHBWU has demonstrated its capacity to mitigate this risk through its sewerage infrastructure risk assessment. CHBWU has indicated that should an interruption occur, sewage will be removed by tankers to a nearby disposal facility.
- ▼ **Provide non-potable water quality fit for purpose:** CHBWU has demonstrated its capacity to treat and provide non-potable water to an appropriate quality for the proposed specific uses. CHBWU's non-potable water source will be domestic sewage collected within the development. If necessary, it intends to top-up the non-potable water system with drinking water sourced from WSC. We consider CHBWU's proposed sewage treatment and non-potable water systems to be robust and consistent with the requirements of the *Australian Guidelines for Recycling Water 2006*.
- ▼ **Potential for inappropriate water use:** Non-potable water will be supplied customers at the development for re-use. This could present a risk to public health if the customers do not use the non-potable water for appropriate uses. CHBWU has indicated that customers will be provided with guidance on the appropriate use of non-potable water through means of brochures, pamphlets, internet marketing, and signage.

We consider this is the responsibility of the retail supplier. We will consider it in more detail in our report to the Minister on Solo Water's application for a retail supplier's licence to supply services to the development.

- ▼ **Potential for cross-connections:** CHBWU has explained controls to ensure that the risks of cross-contaminations are minimised. Such controls include lower pressure in the non-potable water and sewerage networks, relative to the drinking water distribution network, installation of dual check valves for backflow prevention at all connection points, procedures for routine testing for cross-connections in the network, maintenance of minimum pipe separation distances in common trenches, and appropriate use of identification tape and signage on all trenches.

We reviewed CHBWU's preliminary risk assessment and we consider that CHBWU has demonstrated its capacity to identify and manage hazards and risks of the drinking water, non-potable water and sewerage components of the proposed scheme, to acceptable levels of risk, and will have in place reasonable control and mitigation measures.

NSW Health supports CHBWU's licence application and did not identify any specific risks to public health.⁴⁴ NSW Health has requested that it is consulted when CHBWU undertake detailed drinking water and non-potable water management risk assessments, before commencing commercial operation, to ensure that all relevant health matters are addressed. NSW Health has also requested that it is involved in the development of the final drinking water, and non-potable water quality (management) plans, including incident notification and management procedures. NSW Health has requested that these plans be submitted to it prior to commencing commercial operation of the scheme.

Finally, NSW Health has also requested that CHBWU should develop a mosquito risk assessment and management plan that addresses impacts of artificial wetlands planned for the non-potable water project, including the collective detention and storage areas in the wastewater and reverse osmosis brine transpiration areas.⁴⁵

Our current practices will ensure that NSW Health is consulted at various stages throughout the development and auditing of the licence's management plans. The WIC Regulation requires audit plans for 'greenfield schemes' to be submitted prior to commercial operation.

We received a submission from the community. The community was concerned that CHBWU proposed to supply non-potable water to customers for drinking. CHBWU will only be able to supply non-potable water for the uses authorised under its licence, if granted.

We consider that the information submitted by CHBWU demonstrates that it has the capacity to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure in a manner that does not present a risk to public health.

⁴⁴ Letter to IPART, NSW Health, 18 October 2013.

⁴⁵ NSW Health also requested that it is consulted during preparation of risk assessments and plans for stormwater management. However, stormwater management will be undertaken by LMCC for the development.

We recommend that CHBWU should be subject to the following standard licence condition (see draft licence in Appendix A), in relation to its capacity to protect public health, if a licence is granted:

B4.1 The Licensee must carry out the activities authorised by this Licence in compliance with any requirements of NSW Health that:

- (a) IPART has agreed to; and
- (b) are notified from time to time to the Licensee by IPART in writing.

4.4 Appropriate arrangements with respect to insurance

We are satisfied that CHBWU has made, and will continue to maintain, appropriate insurance arrangements.

In making our assessment of CHBWU's insurance arrangements, we have considered CHWBUS:

- ▼ construction liability insurance
- ▼ professional indemnity insurance covering construction activities only
- ▼ public and products liability insurance
- ▼ Deed of Financial Guarantee between CHBWU and its financial supporter, the Rico Family Trust (Deed), and
- ▼ CHBWU's risk management assessment.

We requested advice from SICorp on the appropriateness of CHBWU's insurance arrangements, with respect to the activities to be licensed.

As part of the review, SICorp examined CHBWU's proposed scope of work, risk assessments for construction, operation and maintenance of the drinking water, non-potable water and sewerage infrastructure, insurance coverage in the areas of construction liability insurance, professional indemnity insurance, and public and products liability insurance, as shown in CHBWU's insurance certificates, and the Deed. SICorp also reviewed the product disclosure statements for each insurance certificate.

On SICorp's request, CHBWU provided specific information on the activities proposed to be undertaken, such as the design of the proposed RWTP, sewerage infrastructure, and drinking water and non-potable water infrastructure, long-term pollution control measures, risk management, and exclusions to insurance policies.

SICorp reviewed the draft licence conditions. As CHBWU is responsible for the design of the water industry infrastructure, we proposed an additional licence condition, that the licensee must maintain professional indemnity insurance during the Design Phase and for a minimum period of six years from the date of completion of the Design Phase. SICorp agreed with the inclusion of the Design Phase condition.

SICorp concluded that the insurances held by CHBWU, CHBWU's risk management procedures and the Deed are adequate for the purposes of CHBWU's network operator's licence application.⁴⁶

We received a submission from the community who was concerned about the appropriateness of CHBWU's insurance policies and provider to cover its proposed licensed activities. SICorp has confirmed that this is adequate to cover CHBWU's proposed licensed activities.

We consider that the information submitted by CHBWU demonstrates that it has made, and will continue to maintain, appropriate insurance arrangements.

We recommend that CHBWU should be subject to the following standard licence conditions (see draft licence in Appendix A), in relation to its insurance arrangements, if a licence is granted:

B2.1 Before commencing to commercially operate the Specified Water Industry Infrastructure under this Licence, the Licensee must:

- (a) obtain insurance that is appropriate for the size and nature of the activities authorised under this Licence;
- (b) provide a copy of each certificate of currency of the insurance obtained to IPART; and
- (c) demonstrate that the insurance obtained is appropriate for the size and nature of the activities authorised under this Licence by providing a report to IPART from an Insurance Expert that:
 - (i) certifies that in the Insurance Expert's opinion, the type and level of the insurance obtained by the Licensee is appropriate for the size and nature of the activities authorised under the Licence; and
 - (ii) is in the form prescribed by the Reporting Manual.

B3.1 The Licensee must maintain insurance that is appropriate for the size and nature of the activities authorised under this Licence.

B3.2 The Licensee must provide a copy of each certificate of currency of the insurance maintained by the Licensee to IPART in accordance with the Reporting Manual.

⁴⁶ Emails to IPART, Insurance and Reinsurance Strategy Manager, SICorp, 18 August 2015 and 28 August 2015.

B3.3 If there is to be a change in:

- (a) the insurer or underwriting panel in respect of an insurance policy held by the Licensee; or
- (b) the type, scope or limit on the amount of insurance held by the Licensee,

in relation to the activities authorised under this Licence, the Licensee must provide a report to IPART in accordance with the Reporting Manual.

B3.4 From time to time when requested in writing by IPART, the Licensee must provide a report to IPART, in the manner, form and time specified by IPART, from an Insurance Expert certifying that in the Insurance Expert's opinion the type, scope or limit on the amount of the insurance held by the Licensee is appropriate for the size and nature of the activities authorised under this Licence.

[Note: The circumstances in which IPART may request a report under clause B3.4 include (but are not limited to) the following:

- ▼ *where IPART has reason to believe that there may be a change in the type, scope or limit on the amount of insurance held by the Licensee in relation to activities authorised under this Licence;*
- ▼ *where there is a change in the type or extent of activities authorised under this Licence;*
or
- ▼ *where IPART or an approved auditor has reason to believe that the type, scope or limit on the amount of insurance held by the Licensee may not be appropriate for the size and nature of the activities authorised under this Licence.]*

B3.5 The licensee must maintain professional indemnity insurance during the Design Phase and for a minimum period of 6 years from the date of the completion of the Design Phase.

4.5 Capacity to carry out those activities in a manner that does not present a significant risk of harm to the environment

We are satisfied that CHBWU, supported by Solo Water, has the capacity to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure at the Catherine Hill Bay development, in a manner that does not present a significant risk of harm to the environment.

In making our assessment of CHBWU's capacity to manage key risks to the environment posed by the construction, operation and maintenance of drinking water, non-potable water and sewerage infrastructure, we have considered CHBWU's:

- ▼ **Capacity to comply with environmental regulations on existing schemes:** CHBWU, in conjunction with Solo Water, has demonstrated capacity to comply with environmental regulations, through its ability to prepare an environmental risk assessment, Environmental Management Plan, Statement of Environmental Effects, and a Review of Environmental Factors. These environmental assessments cover the construction, operation and maintenance of water industry infrastructure to supply drinking water, non-potable water and provide sewerage services at the development.
- ▼ **Understanding of environmental regulations in NSW:** CHBWU has demonstrated an appropriate understanding of its regulatory approval requirements, as confirmed by our own assessment. The developer obtained approval under Part 3A of the EP&A Act (MP10_0204) which included approval for construction of drinking water and sewerage infrastructure at the development. CHBWU has also been through other relevant regulatory processes. It has applied for approval to the Office of Environment and Heritage (OEH) and WSC to construct the drinking water transfer infrastructure.⁴⁷ CHBWU understands that it does not require approval under the EP&A Act to construct the RWTP and sewerage and non-potable water infrastructure, if it is granted a licence under the WIC Act. This is explained further in section 4.6.2.
- ▼ **Capacity to implement environmental management processes in relation to the activities to be licensed:** CHBWU has demonstrated its capacity to implement environmental management processes through its development of an environmental management plan, including environmental risk assessment, and Statement of Environmental Effects for its drinking water transfer infrastructure, and Review of Environmental Factors for the RWTP and sewerage and non-potable water reticulation infrastructure. We have engaged PB to undertake a thorough assessment of CHBWU's proposed controls for the RWTP and sewerage and non-potable water reticulation infrastructure. We rely on OEH and WSC to assess the proposed controls for the drinking water infrastructure. This is explained further in section 4.6.2.

We present the description and relevant conclusions of submissions received in relation to the environmental matters concerning CHBWU's licence application in section 4.6.2.

⁴⁷ We understand that OEH and WSC are both determining authorities for different parts of the proposed 6.5km drinking water transfer infrastructure. Approximately 5km of the pipeline is proposed to be located in the LMCC Local Government Area (and is subject to provisions under the *National Parks and Wildlife Act 1974*) and a further 1.5km is proposed to be located in the WSC Local Government Area. This is explained further in section 4.6.2.

We consider that the information submitted by CHBWU demonstrates that it has the capacity to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure in a manner that does not present a significant risk of harm to the environment.

We recommend that CHBWU should be subject to the following special licence conditions (see draft licence in Appendix A), in relation to its capacity to protect the environment, if a licence is granted:

A4.2 The Licensee is to implement environmental mitigation measures substantially consistent with the environmental risk mitigation measures identified in:

- a) the Review of Environmental Factors (REF) in carrying out any activities authorised under clause A1 and A3 of this Licence.

A4.3 The Licensee must not commence, or authorise the commencement of, construction of any water industry infrastructure which is:

- a) described in Clause A1 and Table 1.2; and
- b) described in Clause A3 and Table 3.2.

(Relevant Recycling Infrastructure)

until after the Licensee has provided IPART with a Construction Environmental Management Plan (CEMP), and IPART has provided written approval of the CEMP to the Licensee.

A4.4 In addition to any requirements imposed by or under the Act or the Regulation, the Licensee must not commence commercial operation of, or authorise commercial operation of, the Relevant Recycling Infrastructure until the Licensee has provided:

- a) a report addressing how the environmental mitigation measures identified in the CEMP have been implemented during the design and construction of the Relevant Recycling Infrastructure (Report); and

- b) an Operational Environmental Management Plan (OEMP),

to IPART, and IPART has provided written approval of the Report and the OEMP to the Licensee.

A4.5 The Licensee must operate and maintain the Relevant Recycling Infrastructure consistently with the OEMP.

A4.6 If the Licensee proposes to vary its environmental mitigation measures referred to in clause A4.2, it must first notify IPART in accordance with the Reporting Manual. The Licensee must not vary its environmental mitigation measures without the prior written approval of IPART.

4.6 Licensing principles

We have had regard to the licensing principles of the WIC Act⁴⁸ in making a recommendation as to whether or not the network operator's licence should be granted, and if so, what conditions to impose. This is explained below.

4.6.1 Protection of public health

We have had regard to protection of public health through our assessment of CHBWU's capacity to construct, operate and maintain drinking water, non-potable water, and sewerage infrastructure at the development, in a manner that does not present a risk to public health. As outlined in section 4.3 of this report, we assessed CHBWU's capacity to manage the key risks posed to public health by the activities to be licensed.

NSW Health supports CHBWU's licence application and did not identify any specific risks to public health.⁴⁹

If the Minister grants a network operator's licence to CHBWU, we consider that public health will be protected in relation to the activities licensed.

4.6.2 Protection of the environment

In having regard to the protection of the environment, we considered the approvals obtained/required under the EP&A Act for the activities to be licensed. The EP&A Act is main legislation that controls planning and development in NSW.

We understand that only some of the activities to be licensed require approval under the EP&A Act:

- ▼ CHBWU has applied to WSC for development approval, under the EP&A Act, to construct drinking water infrastructure located within the WSC Local Government Area. This includes construction of approximately 1.25km of water main and a new pumping station, to transfer drinking water from WSC's network to the development.

⁴⁸ WIC Act, section 7.

⁴⁹ Letter to IPART, NSW Health, 18 October 2013.

WSC has confirmed that CHBWU has sought approval under the EP&A Act for this drinking water infrastructure.⁵⁰ WSC also clarified that originally a part of this infrastructure was proposed to be located on WSC owned land zoned E1 National Parks and Nature Reserves. We understand that CHBWU and WSC have discussed relocation of this infrastructure to land zoned RE1 Public Recreation, to enable construction, with development consent, under the EP&A Act. We understand that construction of drinking water infrastructure on land zoned E1 National Parks and Nature Reserves is not permissible under the EP&A Act. We understand that construction on this land may be allowed under the *National Parks and Wildlife Act 1974* (NSW) (NPW Act), with OEH as the determining authority. However, WSC reported that OEH advised CHBWU that it would not consider approvals, under the NPW Act, for any part of the infrastructure located on WSC owned land. For this reason, CHBWU and WSC have discussed relocation of infrastructure proposed to be built on WSC owned land zoned E1.

DP&E noted that there are no provisions in ISEPP for development for the purpose of a water supply system⁵¹ by any person other than a public authority (or acting on behalf of a public authority), with or without development consent.⁵² We understand that this does not prohibit CHBWU from constructing the proposed drinking water infrastructure, provided it has obtained the appropriate approvals.

- ▼ CHBWU does not currently hold any other approvals under the EP&A Act for the proposed licensed activities.
- ▼ The development has previously been approved for subdivision under Part 3A of the EP&A Act (under development approval MP10_0204). The development approval enabled construction of drinking water and sewerage infrastructure at the development. Therefore, we understand that CHBWU does not need to seek further development approval under the EPA& Act to construct drinking water or sewerage reticulation infrastructure at the development.

⁵⁰ Letter to IPART, Wyong Shire Council, 20 February 2015. We understand that this approval has not yet been granted.

⁵¹ Clause 124 of ISEPP defines a 'water supply system' to mean a water reticulation system, water storage facility, water treatment facility, or any combination of these.

A water reticulation system mean a facility for the transport of water, including pipes, tunnels, canals bores, pumping stations, related electricity infrastructure, dosing facilities, and water supply reservoirs.

A water storage facility means a dam, weir, or reservoir for the collection and storage of water, and includes associated monitoring or gauging equipment.

A water treatment facility means a facility for the treatment of water (such as a desalination plant, or a recycled or reclaimed water plant), whether the water produced is potable or not, and includes residuals treatment, storage and disposal facilities, but does not include a water recycling facility within the meaning of Division 18 of ISEPP.

⁵² Letter to IPART, the then Department of Planning and Infrastructure, 15 November 2013.

DP&E confirmed that the Planning Assessment Commission approved the Catherine Hill Bay subdivision (development approval MP10_0204) on 13 May 2011 allowing for a subdivision of the development into 553 residential lots, two retail lots and seven reserves.⁵³ DP&E clarified that the approval was modified in September 2014 to consolidate some lots to accommodate CHBWU's proposed non-potable water infrastructure. DP&E also clarified that the modified approval states that CHBWU, as the scheme proponent, must separately obtain any relevant approvals and licences to construct and operate the proposed recycled water infrastructure. The need for further approvals would depend on the provisions of ISEPP. This is discussed further below.

LMCC understands that construction of a water supply system is prohibited in the SP2 Infrastructure and R2 Low Density Residential zones of the development.⁵⁴ We understand that because construction of drinking water infrastructure was previously approved at the development under Part 3A approval MP10_0204, it is permissible. We have advised CHBWU to seek its own legal counsel to ensure that it has obtained the relevant approvals prior to commencing development. This is outside the scope of the WIC Act and it will be further assessed by DP&E, as required.

We understand that the following activities to be licensed have not obtained approvals under the EP&A Act, and do not require approvals in the future:

- ▼ The remainder of the proposed drinking water transfer main is located in land zoned E1 National Parks and Nature Reserves in the LMCC Local Government Area.⁵⁵ CHBWU has applied for approval to OEHL, under the provisions of the NPW Act, to construct this section of the transfer main.⁵⁶

WSC confirmed that if construction of the proposed infrastructure is included in the uses authorised under the NPW Act, it can be carried out without development consent under the EP&A Act.⁵⁷ CHBWU informed WSC that OEHL confirmed that approval could be sought under the NPW Act for the part of the infrastructure located in the LMCC Local Government Area.

- ▼ CHBWU does not intend to seek approval to construct the RWTP or recycled water reticulation infrastructure, under the provisions of division 18 of ISEPP.

⁵³ Letter to IPART, the then Department of Planning and Infrastructure, 15 November 2013.

⁵⁴ Letter to IPART, Lake Macquarie City Council, 16 October 2013.

⁵⁵ The land is zoned E1 National Parks and Nature Reserves under the Lake Macquarie Local Environmental Plan 2014.

⁵⁶ We understand that this approval has not yet been granted.

⁵⁷ Letter to IPART, Wyong Shire Council, 20 February 2015.

DP&E confirmed our understanding of the permissions under Division 18 of ISEPP including:⁵⁸

- development by a person licensed under the WIC Act for the purpose of a sewage treatment plant⁵⁹ or water recycling facility⁶⁰ may be carried out without development consent, within prescribed zones, and
- a sewage reticulation system⁶¹ may be carried out with development consent on any land.

DP&E and LMCC⁶² noted that CHBWU originally proposed to construct the RWTP on land zoned R2-Low Density Residential, under the State Environmental Planning Policy (Major Development) 2005, which is prohibited. However, we understand that part of the subdivision has now been rezoned to SP2 Infrastructure, to allow construction of the RWTP.⁶³ Further, SP2 Infrastructure is a prescribed zone, allowing construction of the RWTP without development approval under the EP&A Act, under the provisions of Division 18 of ISEPP.

We consider that CHBWU has displayed adequate understanding of its environmental planning requirements and obligations. CHBWU should seek its own legal counsel and consult with DP&E to ensure that it has the appropriate approvals in place prior to commencing construction of the scheme. This is outside the scope of this licence application.

⁵⁸ Letter to IPART, the then Department of Planning and Infrastructure, 15 November 2013.

⁵⁹ Clause 105 of ISEPP defines a *sewage treatment plant* to mean a facility for the treatment and disposal of sewage, whether or not the facility supplies non-potable water for use as an alternative water supply.

⁶⁰ Clause 105 of ISEPP defines a *water recycling facility* to mean a facility for the treatment of sewage effluent, stormwater or wastewater for use as an alternative supply to mains water, groundwater or river water (including sewer mining works), whether the facility stands alone or is associated with other development, and includes associated retention structures, treatment works, and irrigation schemes.

⁶¹ Clause 105 of ISEPP defines a *sewage reticulation system* to mean a facility for the collection and transfer of sewage to a sewage treatment plant or water recycling facility for treatment or transfer of the treated water for use or disposal, including associated pipelines and tunnels, pumping stations, dosing facilities, odour control works, sewage overflow structures, and vent stacks.

⁶² Letter to IPART, Lake Macquarie City Council, 16 October 2013.

Letter to IPART, the then Department of Planning and Infrastructure, 15 November 2013.

⁶³ Rezoning approved on 17 April 2014 when the *State Environmental Planning Policy Amendment (South Wallarah Peninsula) 2014* (South Wallarah Peninsula SEPP) was published under the *Environmental Planning and Assessment Act 1979*. Rezoning of the development, on the South Wallarah Peninsula, to include land zoned SP2 Infrastructure to allow construction of the RWTP, is reflected in section 136 of the South Wallarah Peninsula SEPP.

In having regard to protection of the environment, we also considered the following information:

- ▼ **CHBWU's Draft Environmental Management Plan⁶⁴ (EMP)**, which includes a preliminary Environmental Risk Assessment, prepared for the management of environmental impacts related to the construction of around 5km of drinking water transfer main from WSC's network to the development, located in the LMCC Local Government Area. The EMP forms part of CHBWU's application to OEHL for approval under the NPW Act. We consider that the environmental impacts have been adequately considered by CHBWU. CHBWU has considered environmental management responsibilities, control and monitoring procedures, and incident and emergency procedures. We will rely on OEHL to review the environmental assessment in detail when considering whether or not to grant approval under the NPW Act.
- ▼ **CHBWU's Statement of Environmental Effects (SEE)⁶⁵**, which considers the environmental effects of constructing the drinking water pump station and around 1.5km of drinking water transfer main located in the WSC Local Government Area. We consider that the SEE adequately considers the statutory requirements applying to the site. We understand that CHBWU may develop a detailed environmental assessment, informed by the above mentioned EMP, to meet WSC's requirements for development approval under the EP&A Act. We will rely on WSC to review the environmental assessment in detail when considering whether or not to grant approval under the EP&A Act.
- ▼ **Environmental Assessment for the subdivision at the Catherine Hill Bay development, included in its Part 3A development approval (MP10_0204)**. At the time of granting this development approval, the Planning Assessment Committee considered that the environmental impacts of constructing drinking water and sewerage infrastructure at the development were acceptable. We consider that this is still an appropriate assessment for the construction of drinking water reticulation infrastructure. However, we consider that since the proposal has changed to include a RWTP and associated non-potable water reticulation infrastructure at the development, it is necessary to consider the environmental impacts of constructing the sewerage and non-potable water infrastructure together, as explained below.
- ▼ **CHBWU's Review of Environmental Factors**, which considers the environmental impacts of constructing the RWTP, sewerage infrastructure and non-potable water infrastructure at the development. We engaged PB to assess CHBWU's REF. PB considers that the REF adequately meets the requirements of the WIC Act. PB's report is included in **Appendix C**.

⁶⁴ Daracon Group, Draft *Environmental Management Plan, Catherine Hill Bay Potable Water Transfer Main*, 6 November 2014.

⁶⁵ Planit Consulting, Draft *Statement of Environmental Effects for the Proposed Private Water Supply System*, February 2015.

▼ **Submissions made in relation to the protection of the environment.**

The Minister for the Environment advised that the EPA confirmed that CHBWU would not require a licence to undertake the proposed licensed activities, under the provisions of the *Protection of the Environment Operations Act 1997* (NSW) (POEO Act). Further, the Minister for the Environment advised that CHBWU had discretion to apply to the EPA for an Environment Protection Licence (EPL) to conduct non-scheduled activities to protect CHBWU in relation to water pollution, provided that any discharges are carried out in accordance with the terms of the EPL.⁶⁶ CHBWU has discretion to decide if it wishes to seek an EPL to conduct non-scheduled activities.

LMCC was concerned with CHBWU's original proposal to dispose of up to 40% of its non-potable water onto publicly owned land surrounding the development. LMCC was concerned that this may negatively impact the vegetation on the land. CHBWU has since revised its proposal to only dispose of non-potable water onto privately owned land within the development. We consider that CHBWU has adequately considered the impacts of this proposal on the vegetation, in its REF.

Specific submissions on CHBWU's REF are included in **Appendix B**.

In having regard to protection of the environment, we recommend that the activities authorised by the licence, if granted, should be limited to the construction, maintenance and operation of water industry infrastructure that

- ▼ has been, or will be, granted development approval under the EP&A Act,
- ▼ has been, or will be, granted approval under the NPW Act, or
- ▼ is exempt development under the EP&A Act and may be carried out without development approval, under the provisions of ISEPP.

We consider that the proposed limitation on the authorised activities would remove the risk that CHBWU could carry out activities without any assessment under the EP&A Act, or the WIC Act, which we consider relevant to ensuring protection of the environment.

We also recommend that CHBWU should be subject to the following special licence conditions (see draft licence in Appendix A), in relation to protection of the environment, if a licence is granted:

A4.2 The Licensee is to implement environmental mitigation measures substantially consistent with the environmental risk mitigation measures identified in:

- a) the Review of Environmental Factors (REF) in carrying out any activities authorised under clause A1 and A3 of this Licence.

⁶⁶ Letter to IPART, Minister for the Environment, 9 October 2013.

A4.3 The Licensee must not commence, or authorise the commencement of, construction of any water industry infrastructure which is:

- a) described in Clause A1 and Table 1.2; and
- b) described in Clause A3 and Table 3.2.

(Relevant Recycling Infrastructure)

until after the Licensee has provided IPART with a Construction Environmental Management Plan (CEMP), and IPART has provided written approval of the CEMP to the Licensee.

A4.4 In addition to any requirements imposed by or under the Act or the Regulation, the Licensee must not commence commercial operation of, or authorise commercial operation of, the Relevant Recycling Infrastructure until the Licensee has provided:

- a) a report addressing how the environmental mitigation measures identified in the CEMP have been implemented during the design and construction of the Relevant Recycling Infrastructure (Report); and
- b) an Operational Environmental Management Plan (OEMP),

to IPART, and IPART has provided written approval of the Report and the OEMP to the Licensee.

A4.5 The Licensee must operate and maintain the Relevant Recycling Infrastructure consistently with the OEMP.

A4.6 If the Licensee proposes to vary its environmental mitigation measures referred to in clause A4.2, it must first notify IPART in accordance with the Reporting Manual. The Licensee must not vary its environmental mitigation measures without the prior written approval of IPART.

4.6.3 Protection of public safety

We have had regard to the protection of public safety through our assessment of CHBWU's technical capacity to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure at the development. As outlined in section 4.2.1 of this report, we assessed CHBWU's capacity to manage key risks to public safety by the activities to be licenced.

We have also considered environmental assessment reports provided by CHBWU, which include specific control and mitigation measures to protect the public safety during construction and operation of the proposed scheme. Further, we considered CHBWU's risk assessment and proposed control and mitigation measures for the drinking water, non-potable water and sewerage services proposed. We will audit the adequacy of these controls prior to CHBWU commencing commercial operation of the scheme.

We did not receive any submissions regarding the protection of public safety.

If the Minister grants a network operator's licence to CHBWU, we consider that public safety will be protected in relation to the activities licensed.

4.6.4 Protection of consumers generally

We have had regard to the protection of consumers through our assessment of CHBWU's technical, financial and organisational capacity to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure at the development. We consider that CHBWU has the capacity to undertake the proposed activities in a way that will satisfactorily manage risks and afford protection to consumers.

Community members expressed concerns that if CHBWU decides to terminate the scheme in the future, or if the business defaults, the cost of supplying water and providing sewerage services to the customers at the development would be transferred to Hunter Water, its customers and the community.

If it is granted a licence, CHBWU will be required to maintain its technical, financial and organisational capacity to undertake the proposed licensed activities.⁶⁷ Further, if it intends to cease providing any of the services relating to the activities authorised by the licence, it must provide us with written notice no later than 28 days before the date of cessation of services. This written notice must include details of how the services will continue to be provided.⁶⁸ We have guidelines and procedures in place to ensure licensees uphold the requirements of their licence. There are currently no OOLR provisions in place at the development, and no requirement to have them.

If the Minister approves this licence application, we consider that consumers generally will continue to be protected in relation to the activities licensed.

4.6.5 Encouragement of competition

Historically, Hunter Water has provided monopoly water supply and sewerage services in the Hunter regions. Hunter Water has confirmed that it does not intend to provide these services to the development in the immediate future. Hunter Water supports CHBWU's licence application because it promotes greater levels of competition within the lower Hunter region for the provision of water, wastewater and non-potable water services.⁶⁹

⁶⁷ Standard licence condition B1.1- Ongoing capacity to operate

⁶⁸ Standard licence condition B12 – Notification of changes to Authorised Person

⁶⁹ Letter to IPART, Hunter Water, 16 October 2013.

The community challenged whether CHBWU's proposed scheme encourages competition in the area, because there is not sufficient evidence to show that other suppliers have been invited to provide a water and sewerage services scheme. We understand that Hunter Water originally intended to supply water and provide sewerage services at the development. Coastal Hamlets engaged CHBWU to provide these services at the development because Hunter Water no longer intends to. It would follow that Coastal Hamlets considered suitable options prior to engaging CHBWU to provide the scheme at the development.

We consider this licence would enable a new entity to supply drinking water, non-potable water and provide sewerage services to the development, thus encouraging competition in the provision of these services. This is consistent with the long title of the WIC Act.

4.6.6 Ensuring sustainability of water resources

CHBWU will construct, operate and maintain infrastructure to supply water, including non-potable water, to its customers at the development. The non-potable water will be sourced from treated sewage which would otherwise have been discharged into the environment. The recycling of water also replaced the use of drinking water ultimately sourced from the Central Coast and Hunter Regions' surface and groundwater sources, contributing to the sustainability of those water resources.

The Minister for Primary Industries clarified that CHBWU does not require a water access licence or water supply work approval under the *Water Management Act 2000* (NSW) since CHBWU does not intend to extract drinking or non-potable water from a water source.⁷⁰

4.6.7 Promotion of policies set out in any prescribed water policy document

The Metropolitan Water Plan is the only prescribed water policy document in the WIC Regulation. The Metropolitan Water Plan outlines strategies to secure greater Sydney's water supply now and in the future. The development is not within the greater Sydney area. Therefore, the policies set out in the Metropolitan Water Plan do not apply.

The NSW Government has recently released the Lower Hunter Water Plan⁷¹ which is a package of water supply and demand management measures to ensure the region can withstand severe drought. Although this is not a prescribed water policy document, we considered whether CHBWU's supply of services at the development is consistent with the document.

⁷⁰ Letter to IPART, the Minister for Primary Industries, 25 October 2013.

⁷¹ NSW Department of Finance and Services, *Lower Hunter Water Plan*, January 2014.

The Lower Hunter Water Plan includes actions to supply, save and substitute water in relation to non-potable water and notes that there are continuing actions, including:

...private sector suppliers are likely to play a bigger role in providing water supply, wastewater and non-potable water services to new developments, particularly in areas remote from urban centres.⁷²

CHBWU's supply of drinking water, non-potable water and sewerage services at the development is consistent with this Plan.

4.6.8 Potential for adverse financial implications for small retail customers

We have had regard to the potential for adverse financial implications for small retail customers through our assessment of CHBWU's technical capacity to construct, operate and maintain infrastructure to supply drinking and non-potable water and provide sewerage services to its customers.

We will assess this principle in further detail in our assessment of Solo Water's application for a retail supplier's licence at the development.

4.6.9 Promotion of equitable sharing of the costs of water industry infrastructure that significantly contributes to water security

CHBWU will source drinking water from WSC. The price that CHBWU will pay WSC should incorporate a share of the cost of any infrastructure that significantly contributes to water security in the region.

WSC has explained that the price at which it will supply drinking water to CHBWU will include water supply contributions, in accordance with WSC's regulated Developer Servicing Plans.⁷³

⁷² NSW Department of Finance and Services, *Lower Hunter Water Plan*, January 2014, p 2.

⁷³ Letter to IPART, Wyong Shire Council, 15 October 2013.

4.7 Public interest considerations

We received submissions from local organisations, developers and the wider community⁷⁴ raising concerns about the proposed location for the RWTP. We consider that this is outside the scope of this licence application.

We note that the proposed location was approved by DP&E when the area was rezoned to SP2 Infrastructure to allow construction of the RWTP.⁷⁵ We rely on DP&E to have considered the environmental and social impacts when it rezoned the area.

We consider that CHBWU should not be subject to any licence conditions in relation to public interest, if a licence is granted.

4.8 Additional matters considered

In addition to assessing the application against the licensing criteria and principles of the WIC Act, we also considered whether the applicant's services should be subject to price regulation, at this time.

4.8.1 Monopoly supply and price regulation

We recommend that the Minister does not declare CHBWU to be a monopoly supplier in relation to the construction, operation and maintenance of drinking water, non-potable water and sewerage infrastructure at the Catherine Hill Bay development.

Should the Minister declare any monopoly services at Catherine Hill Bay, we recommend that the Minister does not refer these services to IPART for a determination of pricing or a periodic review of pricing policies, at this time.

The Minister *may* declare a licensed retail supplier or licensed network operator to be a monopoly supplier in relation to a specified water supply or sewerage service in a specified area to a specified class of customers.⁷⁶

⁷⁴ We received submissions from members of the local community and from the wider NSW community.

⁷⁵ *State Environmental Planning Policy Amendment (South Wallarah Peninsula) 2014* under the EP&A Act.

⁷⁶ WIC Act, section 51.

The Minister can declare a monopoly supplier at any time. This declaration does not have to link to the grant or variation of a licence or a change in licence conditions. If the Minister declares a monopoly supplier, the Minister may then refer the monopoly services to IPART for price regulation.⁷⁷

A monopoly declaration may only be made in relation to a service, if the Minister is satisfied that it is a service:

1. for which there are no other suppliers to provide competition in the part of the market concerned, and
2. for which there is no contestable market by potential suppliers in the short term in that part of the market, and
3. in the case of a water supply service for non-potable water, that connection of land to that service is required by or under some other Act.⁷⁸

We have considered the market for each of the services within the development (the specified area) for all classes of customer. CHBWU will construct, operate and maintain water industry infrastructure to supply drinking, non-potable water and provide sewerage services to customers. Hunter Water has confirmed that it has no immediate plans to provide these services to the development.⁷⁹ We consider that CHBWU's proposed services could be considered monopoly services.

We note that, CHBWU has not indicated its proposed pricing arrangements at the development. We consider that it is appropriate to assess the pricing arrangements as part of Solo Water's application for a retail supplier's licence. For this reason, should the Minister declare any monopoly services, we recommend that the Minister does not refer these monopoly services to IPART for price regulation, at this time. We will re-assess this matter in our report to the Minister on Solo Water retail supplier's licence application.

⁷⁷ Determination of the pricing and/or periodic review of the pricing policies. WIC Act, section 52(1).

⁷⁸ WIC Act, section 51(2).

⁷⁹ Letter to IPART, Hunter Water, 16 October 2013.

5 Recommendations

We recommend that the Minister:

- ▼ grants a network operator's licence to CHBWU, subject to the conditions as set out in the attached draft licence (licence number 15_035), and
- ▼ does not declare CHBWU to be a monopoly supplier in relation to the construction, operation and maintenance of drinking water, non-potable water and sewerage infrastructure at the Catherine Hill Bay development.

Should the Minister declare any monopoly services at Catherine Hill Bay, we recommend that the Minister does not refer these services to IPART for a determination of pricing or a periodic review of pricing policies, at this time.

The Minister must consider, but is not bound to accept, any advice or recommendation in this report in determining the licence application. The Minister may, if circumstances so require, seek further advice from us in relation to the licence application.⁸⁰

The Minister is required to provide us with a notice of the decision and of the reasons for the decision on making a decision whether or not to grant the licence⁸¹. We will then make the information in the notice available to the public on our website, in accordance with the requirements of the WIC Act.⁸²

⁸⁰ WIC Act, section 10(2).

⁸¹ WIC Act, section 10(5).

⁸² WIC Act, section 10(6).



Appendices

A Draft licence



NEW SOUTH WALES GOVERNMENT

***WATER INDUSTRY COMPETITION ACT 2006
(NSW)***

NETWORK OPERATOR'S LICENCE

**Catherine Hill Bay Water Utility Pty Ltd
(ACN 163 381 922)**

SCHEDULE A - SPECIAL MINISTERIALLY-IMPOSED LICENCE CONDITIONS FOR CATHERINE HILL BAY WATER UTILITY PTY LTD'S NETWORK OPERATOR'S LICENCE

This schedule sets out the conditions which the Minister imposes pursuant to section 13(1)(b) of the Act. In addition to these special Ministerially-imposed conditions, the Licensee is subject to obligations imposed by the Act, the Regulation and the standard Ministerially-imposed licence conditions set out in Schedule B. The Minister may vary the conditions in this schedule or impose new conditions, provided there is no inconsistency with the conditions imposed on the Licensee by the Act or the Regulation.

A1 Activities authorised - non-potable water

A1.1 This Licence authorises the Licensee and any authorised persons specified in Table 1.1 to construct, maintain and operate the water industry infrastructure which is specified in Table 1.2, and is substantially consistent with the water industry infrastructure described in the Review of Environmental Factors:

- a) for one or more of the authorised purposes specified in Table 1.3; and
- b) within the area of operations specified in Table 1.4, subject to the conditions imposed by or under the Act, the Regulation and this Licence.

Table 1.1 Authorised persons

Solo Water Pty Ltd (ACN 160 013 614)

Table 1.2 Water industry infrastructure

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| <ul style="list-style-type: none">1) A treatment plant for non-potable water and other water infrastructure used, or to be used, in connection with the treatment plant, where components of the treatment plant or the other water infrastructure may also be used for one or more of the following:<ul style="list-style-type: none">a) production of non-potable water;b) treatment of non-potable water;c) filtration of non-potable water;d) storage of non-potable water; ande) conveyance of non-potable water.2) A reticulation network for non-potable water and other water infrastructure used, or to be used, in connection with the reticulation network, where components of the reticulation network or the other water infrastructure may also be used for one or more of the following:<ul style="list-style-type: none">a) storage of non-potable water;b) conveyance of non-potable water; andc) treatment of non-potable water. |
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Table 1.3 Authorised purposes

Toilet flushing, laundry machine cold water connection, irrigation of private lots and footpaths, outdoor cleaning and washdown (including car and bin washing).
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Table 1.4 Area of operations

Lot 100 DP1129872, Lot 101 DP1129872, Lot 106 DP1129872, Lot 1 DP1141989, Lot 1 DP1129299, Lot 103 DP1194707, Lot 101 DP1194707, Lot 102 DP1194707, Lot 213 DP883941, Lot 1 Section I DP163, Lot 1 Section K DP163, Flowers Drive Road Reserve, and Montefiore Street Road Reserve.

A2 Activities authorised – drinking water

- A2.1 This Licence authorises the Licensee and any authorised persons specified in Table 2.1 to construct, maintain and operate the water industry infrastructure which is specified in Table 2.2, and is substantially consistent with the water industry infrastructure described in the Review of Environmental Factors:
- a) for the authorised purposes specified in Table 2.3; and
 - b) within the area of operations specified in Table 2.4, subject to the conditions imposed by or under the Act, the Regulation and this Licence.

Table 2.1 Authorised persons

Solo Water Pty Ltd (ACN 160 013 614)

Table 2.2 Water industry infrastructure

A reticulation network for drinking water and other water infrastructure used, or to be used, in connection with the reticulation network, where components of the reticulation network or the other water infrastructure may also be used for one or more of the following:

- a) storage of drinking water;
 - b) conveyance of drinking water; and
 - c) treatment of drinking water.
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Table 2.3 Authorised purposes

Drinking water and fire water

Table 2.4 Area of operations

- (a) The area of the transfer pump station on Lot 12 DP598580 and Lot 13 DP598580.
 - (b) The area of the transfer pipeline on Lot 649 DP1027231, Lot 204 DP1164883, Lot 12 DP1180296, Lot 145 DP755266, Lot 105 DP1129872, Lot 100 DP1129872, Lot 101 DP1129872, Kanangra Drive, Pacific Highway Road Reserve, Montefiore Street Road Reserve
 - (c) Lot 100 DP1129872, Lot 101 DP1129872, Lot 106 DP1129872, Lot 1 DP1141989, Lot 1 DP1129299, Lot 103 DP1194707, Lot 101 DP1194707, Lot 102 DP1194707, Lot 213 DP883941, Lot 1 Section I DP163, Lot 1 Section K DP163, Flowers Drive Road Reserve, and Montefiore Street Road Reserve.
-

A3 Activities authorised – sewerage services

A3.1 This Licence authorises the Licensee and any authorised persons specified in Table 3.1 to construct, maintain and operate the water industry infrastructure which is specified in Table 3.2, and is substantially consistent with the water industry infrastructure described in the Review of Environmental Factors:

- a) for one or more of the authorised purposes specified in Table 3.3; and
- b) within the area of operations specified in Table 3.4,
subject to the conditions imposed by or under the Act, the Regulation and this Licence.

Table 3.1 Authorised persons

Solo Water Pty Ltd (ACN 160 013 614)

Table 3.2 Water industry infrastructure

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| <ul style="list-style-type: none">1) A treatment plant for sewage and other sewerage infrastructure used, or to be used, in connection with the treatment plant, where components of the treatment plant or the other sewerage infrastructure may also be used for one or more of the following:<ul style="list-style-type: none">a) production of treated non-potable water from sewage;b) treatment of sewage;c) filtration of sewage;d) storage of sewage; ande) conveyance of sewage.2) A reticulation network for sewage and other sewerage infrastructure used, or to be used, in connection with the reticulation network, where components of the reticulation network or the other sewerage infrastructure may also be used for one or more of the following:<ul style="list-style-type: none">a) storage of sewage; andb) conveyance of sewage. |
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Table 3.3 Authorised purposes

Sewage collection, transport, treatment, effluent transfer to non-potable water system
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Table 3.4 Area of operations

Lot 100 DP1129872, Lot 101 DP1129872, Lot 106 DP1129872, Lot 1 DP1141989, Lot 1 DP1129299, Lot 103 DP1194707, Lot 101 DP1194707, Lot 102 DP1194707, Lot 213 DP883941, Lot 1 Section I DP163, Lot 1 Section K DP 163, Flowers Drive Road Reserve, and Montefiore Street Road Reserve.
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A4 Special conditions

A4.1 If a party to an Agreement proposes to:

- a) terminate the Agreement;
- b) novate the Agreement;
- c) assign or transfer any of its rights or obligations under the Agreement to any other person; or
- d) alter the Agreement in any way that materially reduces the Licensee's technical, financial or organisational capacity to carry out the activities authorised by this Licence,

the Licensee must provide IPART with written notice as soon as practicable, but no later than 3 months, before the time when the proposed action is to occur. The written notice must include details of how the service provided under the Agreement will be provided subsequent to the proposed termination, novation, assignment, transfer or alteration.

A4.2 The Licensee is to implement environmental mitigation measures substantially consistent with the environmental risk mitigation measures identified in:

- a) the Review of Environmental Factors (**REF**) in carrying out any activities authorised under clause A1 and A3 of this Licence.

A4.3 The Licensee must not commence, or authorise the commencement of, construction of any water industry infrastructure which is:

- a) described in Clause A1 and Table 1.2; and
- b) described in Clause A3 and Table 3.2.

(Relevant Recycling Infrastructure)

until after the Licensee has provided IPART with a Construction Environmental Management Plan (**CEMP**), and IPART has provided written approval of the CEMP to the Licensee.

A4.4 In addition to any requirements imposed by or under the Act or the Regulation, the Licensee must not commence commercial operation of, or authorise commercial operation of, the Relevant Recycling Infrastructure until the Licensee has provided:

- a) a report addressing how the environmental mitigation measures identified in the CEMP have been implemented during the design and construction of the Relevant Recycling Infrastructure (**Report**); and
- b) an Operational Environmental Management Plan (**OEMP**),

to IPART, and IPART has provided written approval of the Report and the OEMP to the Licensee.

A4.5 The Licensee must operate and maintain the Relevant Recycling Infrastructure consistently with the OEMP.

A4.6 If the Licensee proposes to vary its environmental mitigation measures referred to in clause A4.2, it must first notify IPART in accordance with the Reporting Manual. The Licensee must not vary its environmental mitigation measures without the prior written approval of IPART.

INTERPRETATION AND DEFINITIONS

Interpretation

In this Schedule A, unless the context requires otherwise:

- (i) the singular includes the plural and vice versa;
- (ii) headings are used for convenience only and do not affect the interpretation of this Schedule A;
- (iii) a reference to a document includes the document as modified from time to time and any document replacing it;
- (iv) a reference to a person includes a natural person and any body or entity whether incorporated or not;
- (v) a reference to a clause is to a clause in this Schedule A;
- (vi) a reference to a schedule is to a schedule to this Licence;
- (vii) a reference to a law or statute includes regulations, rules, codes and other instruments under it, and consolidations, amendments, re-enactments or replacements of them; and
- (viii) explanatory notes do not form part of this Licence, but in the case of uncertainty may be relied on for interpretation purposes.

Definitions

Expressions used in this Schedule A that are defined in the Act or the Regulation have the meanings set out in the Act or the Regulation.

In this Schedule A:

Act	means the <i>Water Industry Competition Act 2006</i> (NSW).
Agreement	means any agreement or deed provided to IPART in connection with the Licensee's application for this Licence.
Construction Environmental Management Plan (CEMP)	<p>means a site or project specific plan which, in relation to construction works:</p> <ul style="list-style-type: none">(a) complies with the basic structure detailed in the "Guideline for the Preparation of Environmental Management Plans", Department of Infrastructure, Planning and Natural Resources (2004); and(b) identifies the environmental risks associated with the licensed activities and the mitigation measures to be implemented.
Licence	means this network operator's licence granted under section 10 of the Act.
Licensee	means the person to whom this Licence is granted under section 10 of the Act.
Minister	means the Minister responsible for Part 2 the Act.

Operational Environmental Management Plan (**OEMP**)

means a site or project specific plan which, in relation to the operational phase:

- (a) complies with the basic structure detailed in the “Guideline for the Preparation of Environmental Management Plans”, Department of Infrastructure, Planning and Natural Resources (2004); and
- (b) identifies the environmental risks associated with the licensed activities and the mitigation measures to be implemented.

Review of Environmental Factors (**REF**)

means the Review of Environmental Factors for the proposed sewage treatment plant and sewage and recycled water reticulation systems (Planit Consulting Pty Ltd, July 2015).

Reporting Manual

means the document entitled “Network Operator's Reporting Manual” which is prepared by IPART and is available on IPART’s website at www.ipart.nsw.gov.au.

Regulation

means the *Water Industry Competition (General) Regulation 2008* (NSW).

SCHEDULE B - STANDARD MINISTERIALLY-IMPOSED LICENCE CONDITIONS FOR ALL LICENSED NETWORK OPERATORS UNDER THE ACT

This schedule sets out the standard conditions which the Minister imposes on the Licensee and all other licensed network operators pursuant to section 13(1)(b) of the Act. In addition to these standard Ministerially-imposed conditions, the Licensee is subject to obligations imposed by the Act, the Regulation and the special Ministerially-imposed licence conditions set out in Schedule A. The Minister may vary the conditions in this schedule or impose new conditions, provided there is no inconsistency with the conditions imposed on the Licensee by the Act or the Regulation.

B1 Ongoing capacity to operate

- B1.1 The Licensee must have the technical, financial and organisational capacity to carry out the activities authorised by this Licence. If the Licensee ceases to have this capacity, it must report this to IPART immediately in accordance with the Reporting Manual.

B2 Obtaining appropriate insurance

- B2.1 Before commencing to commercially operate the Specified Water Industry Infrastructure under this Licence, the Licensee must:
- a) obtain insurance that is appropriate for the size and nature of the activities authorised under this Licence;
 - b) provide a copy of each certificate of currency of the insurance obtained to IPART; and
 - c) demonstrate that the insurance obtained is appropriate for the size and nature of the activities authorised under this Licence by providing a report to IPART from an Insurance Expert that:
 - i) certifies that in the Insurance Expert's opinion, the type and level of the insurance obtained by the Licensee is appropriate for the size and nature of the activities authorised under the Licence; and
 - ii) is in the form prescribed by the Reporting Manual.

B2.2 *[Not applicable]*

- B3 Maintaining appropriate insurance** The Licensee must maintain insurance that is appropriate for the size and nature of the activities authorised under this Licence.

B3.2 The Licensee must provide a copy of each certificate of currency of the insurance maintained by the Licensee to IPART in accordance with the Reporting Manual.

B3.3 If there is to be a change in:

- a) the insurer or underwriting panel in respect of an insurance policy held by the Licensee; or
 - b) the type, scope or limit on the amount of insurance held by the Licensee,
- in relation to the activities authorised under this Licence, the Licensee must provide a report to IPART in accordance with the Reporting Manual.

B3.4 From time to time when requested in writing by IPART, the Licensee must provide a report to IPART, in the manner, form and time specified by IPART, from an Insurance Expert certifying that in the Insurance Expert's opinion the type, scope or limit on the amount of the insurance held by the Licensee is appropriate for the size and nature of the activities authorised under this Licence.

[Note: The circumstances in which IPART may request a report under clause B3.4 include (but are not limited to) the following:

- where IPART has reason to believe that there may be a change in the type, scope or limit on the amount of insurance held by the Licensee in relation to activities authorised under this Licence;*
- where there is a change in the type or extent of activities authorised under this Licence; or*
- where IPART or an approved auditor has reason to believe that the type, scope or limit on the amount of insurance held by the Licensee may not be appropriate for the size and nature of the activities authorised under this Licence.]*

B3.5 The Licensee must maintain professional indemnity insurance during the Design Phase and for a minimum period of 6 years from the date of the completion of the Design Phase.

B4 Complying with NSW Health requirements

B4.1 The Licensee must carry out the activities authorised by this Licence in compliance with any requirements of NSW Health that:

- a) IPART has agreed to; and
- b) are notified from time to time to the Licensee by IPART in writing.

B5 Complying with Audit Guidelines from IPART

B5.1 The Licensee must comply with any Audit Guidelines issued by IPART.

B6 Reporting in accordance with the Reporting Manual

B6.1 The Licensee must prepare and submit reports in accordance with the Reporting Manual.

B7 Reporting information in relation to the Register of Licences

B7.1 Within 14 days of any change in relation to the following, the Licensee must notify IPART, and provide details, of the change in accordance with the Reporting Manual:

- a) any source from which the water handled by the Specified Water Industry Infrastructure is derived;
- b) the Authorised Purposes of the water handled by the Specified Water Industry Infrastructure;
- c) the identity of each licensed retail supplier or public water utility that has access to the infrastructure services provided by the Specified Water Industry Infrastructure for the purpose of supplying water to its customers;
- d) any other water infrastructure to which the Specified Water Industry Infrastructure is connected;
- e) the identity of each licensed retail supplier or public water utility that has access to infrastructure services provided by the Specified Water Industry Infrastructure for the purpose of providing sewerage services to its customers;
- f) any other sewerage infrastructure to which the Specified Water Industry Infrastructure is connected;
- g) the arrangements for the disposal of waste from the Specified Water Industry Infrastructure.

B8 Monitoring

- B8.1 The Licensee must undertake any monitoring that is required for the purposes of this Licence, any Plan, the Act or the Regulation in accordance with this clause B8.
- B8.2 The Licensee must keep the following records of any samples taken for monitoring purposes specified in the Water Quality Plan:
- a) the date on which the sample was taken;
 - b) the time at which the sample was collected;
 - c) the point or location at which the sample was taken; and
 - d) the chain of custody of the sample (if applicable).
- B8.3 The Licensee must ensure that analyses of all samples taken for the purposes of Verification Monitoring are carried out by a laboratory accredited for the specified tests by an independent body that is acceptable to NSW Health, such as the National Association of Testing Authorities or an equivalent body.

B9 Provision of copy of Plan

- B9.1 Whenever the Licensee makes a significant amendment to a Plan, the Licensee must provide a copy of the amended Plan to IPART at the same time that it provides a copy to the approved auditor engaged to prepare a report as to the adequacy of the amended Plan, as required under the Regulation.

B10 Delineating responsibilities – interconnections

- B10.1 If a code of conduct has not been established under reg 25 of the Regulation, the Licensee must (by a date specified by IPART) establish a code of conduct (**Licensee's Code of Conduct**) in accordance with this clause B10.
- B10.2 The Licensee's Code of Conduct must set out the respective responsibilities of:
- a) the Licensee; and
 - b) each licensed network operator, licensed retail supplier and/or public water utility that supplies water, provides sewerage services or constructs, maintains or operates any other water industry infrastructure in the Specified Area of Operations,
- by, at a minimum, providing for:
- c) if the Specified Water Industry Infrastructure is connected to any other water industry infrastructure, who is responsible for repairing, replacing or maintaining any pipes, pumps, valves, storages or other infrastructure connecting the Specified Water Industry Infrastructure to the other water industry infrastructure;
 - d) who is responsible for water quality;
 - e) who is liable in the event of the unavailability of water;
 - f) who is liable in the event of failure of the Specified Water Industry Infrastructure;
 - g) the fees and charges payable in respect of the use of the Specified Water Industry Infrastructure; and
 - h) who is responsible for handling customer complaints.

B10.3 Before the Licensee brings the Specified Water Industry Infrastructure into commercial operation or by a later date specified by IPART (if any), the Licensee's Code of Conduct must be agreed in writing between the Licensee and the other licensed network operators, licensed retail suppliers and/or public water utilities referred to in clause B10.2.

B10.4 *[Not applicable]*

B10.5 The Licensee must not contravene the Licensee's Code of Conduct to the extent that it makes the Licensee responsible or liable for the matters set out in it.

B11 Notification of changes to end-use

B11.1 If the Licensee proposes to operate the Specified Water Industry Infrastructure to supply water for an end-use which is not set out in the most recent Water Quality Plan provided to IPART, the Licensee must notify IPART in writing at least 3 months before commencing such operation.

B12 Notification of changes to Authorised Person

B12.1 If an Authorised Person ceases, proposes to cease, or receives notification to cease providing any of the services relating to the activities authorised by this Licence, the Licensee must provide IPART with written notice as soon as practicable but no later than 28 days before the date of cessation of the services. The written notice must include details of how the services previously undertaken by the Authorised Person will continue to be undertaken.

B13 Notification of commercial operation

B13.1 This clause B13 applies each time the Licensee has brought any of the Specified Water Industry Infrastructure into commercial operation.

B13.2 The Licensee must:

- a) notify IPART in accordance with the Reporting Manual that it has brought the relevant Specified Water Industry Infrastructure into commercial operation; and
- b) provide such notification within 10 days after it has brought the relevant Specified Water Industry Infrastructure into commercial operation.

INTERPRETATION AND DEFINITIONS

Interpretation

In this Schedule B, unless the context requires otherwise:

- (i) the singular includes the plural and vice versa;
- (ii) headings are used for convenience only and do not affect the interpretation of this Schedule B;
- (iii) a reference to a document includes the document as modified from time to time and any document replacing it;
- (iv) a reference to a "person" includes a natural person and any body or entity whether incorporated or not;
- (v) a reference to a clause is to a clause in this Schedule B;
- (vi) a reference to a schedule is to a schedule to this Licence;
- (vii) a reference to a law or statute includes regulations, rules, codes and other instruments under it, and consolidations, amendments, re-enactments or replacements of them; and

- (viii) explanatory notes do not form part of this Licence, but in the case of uncertainty may be relied on for interpretation purposes.

Definitions

Expressions used in this Schedule B that are defined in the Act or the Regulation have the meanings set out in the Act or the Regulation.

In this Schedule B:

Act	means the <i>Water Industry Competition Act 2006</i> (NSW).
Audit Guidelines	means the document entitled “Audit Guideline – Water Industry Competition Act 2006” which is prepared by IPART and is available on IPART’s website at www.ipart.nsw.gov.au , and any other guidelines issued by IPART in relation to audits under the Act.
Authorised Person	means the authorised persons specified in, as applicable: <ul style="list-style-type: none">(i) Schedule A, clause A1, Table 1.1;(ii) Schedule A, clause A2, Table 2.1; and(iii) Schedule A, clause A3, Table 3.1.
Authorised Purposes	means the authorised purposes specified in, as applicable: <ul style="list-style-type: none">(i) Schedule A, clause A1, Table 1.3;(ii) Schedule A, clause A2, Table 2.3; and(iii) Schedule A, clause A3, Table 3.3.
Design Phase	means the period during which any design works are carried out in relation to the water industry infrastructure that the Licensee is authorised to construct, maintain and operate under this Licence.
Insurance Expert	means an insurance broker which holds an Australian financial services licence under Part 7.6 of the <i>Corporations Act 2001</i> (Cth) that authorises the broker to provide financial product advice for, and deal in, contracts of insurance within the meaning of Chapter 7 of that Act.
IPART	means the Independent Pricing and Regulatory Tribunal of New South Wales established under the <i>Independent Pricing and Regulatory Tribunal Act 1992</i> (NSW).
Licence	means this network operator’s licence granted under section 10 of the Act.
Licensee	means a person to whom this Licence is granted under section 10 of the Act.
Licensee’s Code of Conduct	has the meaning given in clause B10.1.
Minister	means the Minister responsible for Part 2 of the Act.
NSW Health	means the Water Unit of NSW Ministry of Health and any of the local health districts as defined by the NSW Ministry of Health.

Plan	means any infrastructure operating plan, water quality plan or sewage management plan that the Licensee is required to prepare under the Regulation.
Regulation	means the <i>Water Industry Competition (General) Regulation 2008</i> (NSW).
Reporting Manual	means the document entitled “Network Operator's Reporting Manual,” which is prepared by IPART and is available on IPART’s website at www.ipart.nsw.gov.au .
Specified Area of Operations	means the area of operations specified in, as applicable: <ul style="list-style-type: none"> (i) Schedule A, clause A1, Table 1.4; (ii) Schedule A, clause A2, Table 2.4; and (iii) Schedule A, clause A3, Table 3.4.
Specified Water Industry Infrastructure	means the water industry infrastructure specified in, as applicable: <ul style="list-style-type: none"> (i) Schedule A, clause A1, Table 1.2; (ii) Schedule A, clause A2, Table 2.2; and (iii) Schedule A, clause A3, Table 3.2.
Verification Monitoring	means verification monitoring as described in the document entitled “Australian Drinking Water Guidelines” or the document entitled “Australian Guidelines for Water Recycling” as the case may be.
Water Quality Plan	means the water quality plan that the Licensee is required to prepare under the Regulation.

B Summary of public submissions

Table B.1 Summary of submissions on CHBWU's licence application (excluding REF) by government agencies and utilities⁸³

ID	IPART reference	Agency	Supports application?	Report to the Minister section/ issue(s)
1	D13/35069	Wyong Shire Council (WSC)	Yes	Sections 3 and 4.2.1 WSC clarified the terms under which it will supply drinking water to CHBWU, for supply at the development.
2	D13/35182	Lake Macquarie City Council (LMCC)	No	Sections 3, 4.2.1 and 4.6.2 LMCC raised concerns regarding CHBWU's original proposal to dispose of non-potable water onto its land. LMCC also raised concerns regarding land use and permissibility, irrigation of public open space, water balance accuracy and assumptions, impact on adjacent natural areas, public asset management and maintenance, cumulative impacts, and the public interest.
3	D13/35185	Minister for the Environment	Yes	Sections 3 and 4.6.2 The Minister confirmed that CHBWU would not require a licence to undertake the proposed licensed activities, under the provisions of the <i>Protection of the Environment Operations Act 1997</i> (NSW).
4	D13/35511	Hunter Water Corporation (Hunter Water)	Yes	Sections 3, 4.2.1 and 4.2.3 Hunter Water supports the promotion of competition in this area. Hunter Water has raised some issues related to CHBWU's technical capacity.
5	D13/36046	NSW Health	Yes	Sections 3 and 4.3 NSW Health has requested to be consulted by CHBWU when it develops its final risk assessments and licence plans, prior to commencing commercial operation of the water infrastructure at the development.
6	D13/37611	Minister for Primary Industries	N/A	Section 3 The Minister for Primary Industries clarified that CHBWU does not require a water access licence or water supply work approval under the <i>Water Management Act 2000</i> (NSW).
7	D13/39727	Department of Planning and Environment (the then Department of Planning and Infrastructure) (DP&E)	N/A	Sections 3 and 4.6.2 DP&E has explained CHBWU's legislative requirements under the EP&A Act and associated environmental legislation.

⁸³ All submissions are available at www.ipart.nsw.gov.au.

Table B.2 Summary of public submissions on CHBWU's licence application (excluding REF) by government agencies and utilities⁸⁴

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
1	D13/32545	Catherine Hill Bay Progress Association						<input checked="" type="checkbox"/> Concern that proposed scheme does not meet requirements of WIC Act including licensing principles (protection of consumers)
2	D13/33218	Catherine Hill Bay Progress Association	<input checked="" type="checkbox"/> capacity of RWTP <input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant		<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> visibility of RWTP <input checked="" type="checkbox"/> noise <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation <input checked="" type="checkbox"/> bushfire risk	<input checked="" type="checkbox"/> location of RWTP		
3	D13/33690	R. Bennett	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
4	D13/33737	Anonymous	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

⁸⁴ All submissions are available at www.ipart.nsw.gov.au.

⁸⁵ We consider that the public interest matters associated with the location of the RWTP are outside the scope of this licence application, as has been explained in section 4.7. DP&E approved rezoning of the land to SP2 Infrastructure to allow construction of the RWTP.

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
5	D13/33817	N. Lambert	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
6	D13/34073	W. Grainger	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
7	D13/34384	D. Saddington	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
8	D13/34545	D. McGregor	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
9	D13/34547	J. Cooper	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
10	D13/34549	J. Baker	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
11	D13/34550	T. Allan	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
12	D13/34552	J. Bryant	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
13	D13/34553	K. Bromley	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
14	D13/34554	E. Allan	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
15	D13/34555	M. Beeken	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
16	D13/34556	C. Cowmeadow	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
17	D13/34557	B. Cooper	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
18	D13/34558	P. Healy	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
19	D13/34559	S. Fulton	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
20	D13/34561	C. House	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
21	D13/34562	G. Bates	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
22	D13/34565	S. Morgan	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
23	D13/34571	G. Jones	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
24	D13/34574	T. Pike	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
25	D13/34575	D. Pike	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
26	D13/34576	B. Rook	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
27	D13/34578	M. Carmody	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
28	D13/34579	M. White	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
29	D13/34581	R. Burmeister	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
30	D13/34582	Anonymous	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
31	D13/34583	R. Sumners	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
32	D13/34584	G. Mitchell	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
33	D13/34585	G. Williams	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
34	D13/34591	H. Orr	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
35	D13/34593	D. Bryant	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
36	D13/34595	J. Vanderburg	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
37	D13/34597	R. Donnelly	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
38	D13/34599	S. Dhnaram	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
39	D13/34609	D. Dhnaram	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
40	D13/34610	G. Jeffes	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
41	D13/34611	C. Morgan	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
42	D13/34612	F. Vandenberg	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
43	D13/34613	G. Lehmann	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
44	D13/34615	B. Loxton	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
45	D13/34617	C. D'hoedt	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
46	D13/34619	S. Watkins	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
47	D13/34620	A. Duff	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
48	D13/34621	B. Lehmann	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
49	D13/34622	A. Doutaz	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
50	D13/34623	B. Morgan	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
51	D13/34625	J. Hudson	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
52	D13/34627	N. Lambert	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
53	D13/34642	R. Tetley	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
54	D13/34643	L. Graham - Tetley	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
55	D13/34645	C. Whyte	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
56	D13/34646	E. Kennedy	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
57	D13/34648	J. Feehan	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
58	D13/34649	R. Milne	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
59	D13/34650	P. Bates	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
60	D13/34651	N. Willis	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
61	D13/34652	M. Willis	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
62	D13/34655	M. Priest	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
63	D13/34656	M. Lanfranca	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
64	D13/34657	R. Jones	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
65	D13/34658	S. Janes	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
66	D13/34659	N. Hudson	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
67	D13/34660	K. McGregor	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
68	D13/34661	Anonymous	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
69	D13/34662	Anonymous	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
70	D13/34663	Anonymous	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
71	D13/34664	Anonymous	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
72	D13/34670	A. Nasseri	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
73	D13/34671	A. Nasseri	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
74	D13/34676	B. Garry	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
75	D13/34677	B. Simpson	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
76	D13/34678	C. Enkelman	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
77	D13/34679	C. Norman	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
78	D13/34681	C. Wicknam	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
79	D13/34682	C. Winning	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
80	D13/34683	D. Brulee	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
81	D13/34684	D. Caruana	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
82	D13/34685	D. Farnsworth	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
83	D13/34686	D. Keelan	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
84	D13/34687	D. MacFadyen	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
85	D13/34688	D. Wynch	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
86	D13/34690	E. Caruana	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
87	D13/34692	E. Davis	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
88	D13/34694	E. Robson	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
89	D13/34696	F. Nasser	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
90	D13/34701	G. Spears	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
91	D13/34702	H. Morrison	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
92	D13/34705	H. Welch	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
93	D13/34706	I. Brophy	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
94	D13/34707	I. Rutherford	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
95	D13/34708	J. Russell	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
96	D13/34709	J. Cresdee	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
97	D13/34710	J. Evans	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
98	D13/34712	J. Harkness	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
99	D13/34713	J. Harris	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
100	D13/34714	J. Howard	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
101	D13/34715	J. Martin	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
102	D13/34716	J. Ord	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
103	D13/34717	J. Powell	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
104	D13/34718	J. Schulg	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
105	D13/34719	J. Skehan	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
106	D13/34721	J. Westerman	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
107	D13/34722	J. Whyte	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
108	D13/34723	K. Lechelt - Green	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
109	D13/34724	M. Koppman	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
110	D13/34726	M. Ferrington	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
111	D13/34727	M. Harvey	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
112	D13/34728	M. Priestley	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
113	D13/34729	P. Baxter	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
114	D13/34730	P. Blacker	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
115	D13/34745	P. Dedye	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
116	D13/34747	P. Grant	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
117	D13/34749	P. Hollis	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
118	D13/34750	R. Bridge	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
119	D13/34751	R. Bulmen	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
120	D13/34753	R. Wilson	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
121	D13/34754	S. Blake	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
122	D13/34756	S. Garry	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
123	D13/34757	S. Pejovic	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
124	D13/34758	S. Thornton	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
125	D13/34759	S. Westerman	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
126	D13/34760	S. Winning	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
127	D13/34761	T. Bell	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
128	D13/34763	M. Bowan	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
129	D13/34764	P. Mooney	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
130	D13/34765	S. Bridge	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
131	D13/34911	C. Brown	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
132	D13/34998	M. Young	<input checked="" type="checkbox"/> capacity of RWTP <input checked="" type="checkbox"/> experience of applicant		<input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> noise <input checked="" type="checkbox"/> traffic <input checked="" type="checkbox"/> power consumption	<input checked="" type="checkbox"/> loss of community asset (due to location of RWTP)		<input checked="" type="checkbox"/> Concern that proposed scheme does not meet the principles of the WIC Act (encouraging competition, protection of consumers)
133	D13/35114	D. Hawcroft	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> adequacy of supply of drinking water		<input checked="" type="checkbox"/> bushfire risk <input checked="" type="checkbox"/> power consumption	<input checked="" type="checkbox"/> negative economic impacts (due to location of RWTP) <input checked="" type="checkbox"/> reliability of applicant	<input checked="" type="checkbox"/> adequacy of applicant's insurance arrangements	<input checked="" type="checkbox"/> Concern that proposed scheme does not meet the principles of the WIC Act (protection of consumers)
134	D13/35213	Anonymous	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
135	D13/35217	Anonymous	<input checked="" type="checkbox"/> appropriateness of infrastructure/technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		

ID	IPART reference	Public submission	Technical/ organisational capacity	Public health	Environment	Public interest ⁸⁵	Insurance	Other
136	D13/36050	Community Environment Network Inc	<input checked="" type="checkbox"/> appropriateness of infrastructure/ technology <input checked="" type="checkbox"/> experience of applicant	<input checked="" type="checkbox"/> public health risk <input checked="" type="checkbox"/> unsuitable water quality/ use of water	<input checked="" type="checkbox"/> odour <input checked="" type="checkbox"/> overflows <input checked="" type="checkbox"/> excessive irrigation	<input checked="" type="checkbox"/> location of RWTP		
137	D13/39729	Coal and Allied Operations Pty Ltd				<input checked="" type="checkbox"/> negative economic impacts <input checked="" type="checkbox"/> too many service providers		

Table B.3 Submissions on CHBWU's Review of Environmental Factors (REF)⁸⁶

No.	Submissions	IPART's comments on how CHBWU has addressed the submissions
1.	D15/3931 - Public submission - Catherine Hill Bay Progress Association	
1a	<p>The wastewater treatment plant will impact Catherine Hill Bay's (CHB) waterways and beach:</p> <p>Stages 6 and 7 lie above a creek which flows directly onto the Bay's beach.</p> <p>The area designated for spraying is on the northern side of Montefiore Street which slopes down to CHB Creek which flows into the sea at the main swimming beach at CHB. The local Dunecare group has worked along CHB Creek for over a decade removing weeds and planting endemic plants. Also, children swim in this creek.</p> <p>This beach is the only patrolled beach in the area and will remain so as Moonee Beach is considered dangerous.</p> <p>The existence of this creek and the impacts on it are not mentioned in the Review of Environmental Factors. The Association considers this to be a serious omission.</p> <p>Also of concern is that the stormwater runoff for all of Stage 3 and the proposed shops is to be directed into a detention pond in the village green (located east of the houses on the sea side of Clarke Street in the heritage village). This stormwater runoff also flows directly into the same creek which exits onto the beach and then into the sea.</p> <p>Why does the Review of Environmental Factors not consider the potential for possible contaminated (pollutants, minerals and fertilisers) surface water to flow into this creek and onto the beach, as well as into the ocean?</p>	<p>CHBWU has clarified its REF to address these comments, as follows:</p> <ul style="list-style-type: none"> ▼ Offsite discharges are not predicted to occur. ▼ The previous (approved) model for the subdivision had a higher potential to pollute the CHB Creek, as it had a sewage pumping station located adjacent to the creek that could potentially overflow. ▼ In the unlikely event of an overflow, the subdivision's stormwater system will capture overflows in detention basins, enabling the overflow to be cleaned up. ▼ The revised REF and Integrated Water Management Plan includes details of monitoring for effluent, non-potable water quality, and environmental surface/groundwater/soils. ▼ Baseline environmental monitoring has commenced. ▼ Impacts from Stage 3 of the scheme are not within the scope of the REF. <p>We consider that the revised REF demonstrates that a high level of control and prevention will be established over functioning of the proposed sewerage system and RWTP, reducing the risk of discharges to the environment to very low.</p> <p>There will always remain some risk of accidental discharge from such a system, such as may be caused by pipe or pump failure, but such a discharge would generally be contained within the subdivision's stormwater management system.</p> <p>CHBWU has committed to developing Emergency Response Plans that would detail procedures for containing and cleaning up a discharge from the system that would further reduce the risk of</p>

⁸⁶ All submissions are available at www.ipart.nsw.gov.au.

No.	Submissions	IPART's comments on how CHBWU has addressed the submissions
1b	<p>Contradictory height figures:</p> <p>The Application states a number of times "No structure associated with the STP will exceed 7.2m in height".</p> <p>Whereas the Visual Impact Assessment, Catherine Hill Bay Development WWTP Site and Associated Infrastructure prepared for Rosegroup Pty Ltd by Planit Consulting Pty Ltd, June 2014 states, "The physical structures located within the northern portion of the WWTP site consist of a shed (5.10m above pad level), and storage/treatment tanks with a maximum height of 6.0m".</p> <p>This height of 6.0m is mentioned a number of times within this document and is used as the basis for shed analysis, "This height data has been used to generate a view shed analysis of the WWTP. Elevation data (Aster GDEM Elevation data 2012) has been used to determine the potential view shed for these elements" (Figure 5).</p> <p>Such contradictory figures bring into question the accuracy of the view shed analysis.</p>	<p>impacts to the surrounding environment.</p> <p>CHBWU has revised its REF to remove reference to a maximum height of 7.2m.</p>
1c	<p>Incorrect assessment of the potential visual impact on the State Heritage Listed Town of Catherine Hill Bay.</p> <p>"The Area of investigation (AOI) is located on the southern side of Montefiore Street at the western edge of the proposed development footprint ...The AOI is bound to the south by the Munmorah State Conservation Area and to the east by the proposed residential lots of the CHB development (Stage 6 and 7)"</p> <p>Stages 6 &7 are north, not east, and are overlooked by a high ridgeline further to the north that separates the two villages of Catherine Hill Bay.</p>	<p>CHBWU has confirmed that the visual catchments were determined using 3D topography models, which we understand is a standard practice for developments that have the potential to create significant visual impacts to sensitive receivers.</p> <p>We understand that the 3D geospatial analysis used in the visual assessment uses the ASTER Global Digital Elevation Model, which is publicly available topographical data collected by NASA. This data is considered to be appropriate for a visual catchment analysis. The overflow of the visual catchment area shown in Figure 7 of the Visual Impact Assessment indicates that the data used for the assessment is representative of the actual topography of the area.</p>

No. Submissions	IPART's comments on how CHBWU has addressed the submissions
<p>This ridgeline is included in the heritage curtilage and yet views from this ridgeline are excluded from this Visual Impact Statement.</p> <p>It is incorrect to say "The visual catchments for the CHB are made up of two distinct primary regions, VCA1 Catherine Hill Bay VCA and VCA2 Moonee VCA. These regions are defined largely through topography with the main site ridgelines acting as the perimeter of VCA2.'</p> <p>It is acknowledged that there is "an additional VIA referred to as Middle Camp Landscape Unit 'to the north of VC1. Given the distance of this VIA from the area of investigation (1.62km), coupled with the topographic features and existing vegetation characteristics of the "Catherine Hill Bay VCA (VCA2) the VCA of Middle Camp is not investigated further in this report."</p> <p>This is a convoluted way of saying that the heritage township which includes the 2 villages and the high ridge that separates them, itself part of the heritage township, is not worth examining. This analysis is incomplete. This should be one of the major areas of analysis in this study if it is to have any validity.</p> <p>This Visual Impact Assessment is only looking at the visual impact on the Rosegroup residential development. It is completely ignoring the fact that this development is adjacent to a State Heritage Listed Township which has always sought to be visually separate from this new development.</p> <p>The State Government approval for this new residential development makes it absolutely clear that there must not be a visual impact on the Heritage Listed Town of Catherine Hill Bay.</p> <p>The proposed waste treatment plant dimensions show there will be a most noticeable visual impact on the heritage township.</p>	<p>We therefore consider that the conclusions made regarding the visual analysis undertaken for the visual impact assessment are valid.</p>

No.	Submissions	IPART's comments on how CHBWU has addressed the submissions
	Because of the potential visual impact of the proposed wastewater treatment plant on the State Listed Heritage Town of Catherine Hill Bay, we ask that the Visual Impact Assessment prepared by Planit for Rosegroup Pty Ltd be forwarded to the Heritage Office for their consideration."	
2.	D15/5355 - Lake Macquarie City Council (LMCC)	
2a	<p>ISEPP provides that a sewage treatment plant and a sewage reticulation system may be carried out on the land by any person licensed under the WIC Act, without consent.</p> <p>If CHBWU obtains a licence under the WIC Act, no development consent is required under Part 4 of the EP&A Act for a <i>sewage treatment plant</i> or a <i>sewage reticulation system</i>.</p> <p>CHBWU's proposal includes the irrigation of treated effluent on land zoned R2, as part of the <i>water recycling facility</i>.</p> <p>ISEPP provides that on land zoned R2, a 'water recycling facility' may only be carried out <i>with</i> consent if it is ancillary to an existing land use.</p> <p>As there is no relevant existing land use where the irrigation scheme is proposed, this aspect of the proposal does not appear to benefit from ISEPP</p>	<p>CHBWU has clarified in its REF that the infrastructure located in the land zoned R2 is part of the <i>sewage reticulation system</i>⁸⁷ and not the <i>water recycling facility</i>.⁸⁸</p> <p>The water recycling facility is wholly located on land zoned SP2 (a prescribed zone).</p> <p>DP&E confirmed our understanding that development for the purpose of sewage reticulation systems may be carried out by any person licensed under the WIC Act, without consent, on any land.⁸⁹</p> <p>We consider that there are no issues with permissibility regarding disposal of treated effluent on the private land at the development.</p>
2b	<p>LMCC considers that CHBWU should submit an EIS.</p> <p>For the purposes of section 112 of the EP&A Act and Clause 228 of the EP&A Regulation, it is considered appropriate that reference be made to the provisions of Schedule 3 of the EP&A Regulation – Designated</p>	<p>We consider that CHBWU does not need to submit an EIS because we have adequately assessed the impacts of the development and its location on the environment, under the WIC Act.</p>

⁸⁷ Clause 105 of ISEPP defines a *sewage reticulation system* to mean a facility for the collection and transfer of sewage to a sewage treatment plant or water recycling facility for treatment or transfer of the treated water for use or disposal, including associated pipelines and tunnels, pumping stations, dosing facilities, odour control works, sewage overflow structures, and vent stacks.

⁸⁸ Clause 105 of ISEPP defines a *water recycling facility* to mean a facility for the treatment of sewage effluent, stormwater or wastewater for use as an alternative supply to mains water, groundwater or river water (including sewer mining works), whether the facility stands alone or is associated with other development, and includes associated retention structures, treatment works and irrigation schemes.

⁸⁹ Letter to IPART, the then Department of Planning and Infrastructure, 15 November 2013.

No.	Submissions	IPART's comments on how CHBWU has addressed the submissions
	Development.	
	<p>29 Sewerage systems and sewer mining systems.</p> <p>(1) Sewerage systems or works...:</p> <p>(b) that have an intended processing capacity of more than 20 persons equivalent capacity or 6kL per day and are located:</p> <p>(iv) within 100m of a natural waterbody or wetland.</p>	
	<p>The NSW Government's Hydro-line mapping information shows a watercourse crossing the site, and that the site is within close proximity to a coastal wetland.</p> <p>Where a proposal is designated development, an EIS is required under Part 4 of the EP&A Act. It is considered appropriate that this level of assessment be undertaken under Part 5 of the EP&A Act, and it is suggested that IPART request an EIS of the applicant.</p>	
2c	<p>Air quality and odour:</p> <p>Odour impact on sensitive receptors was assessed using methodology that was broadly consistent with that described in the EPA Approved Methods for the Modelling and Assessment of Air Pollutants in NSW. The impact assessment indicated that sensitive receptors are not likely to be impacted by odour emanating from the development.</p> <p>LMCC notes that control factors were excluded in the odour impact model, and control factors (such as watering, engineering controls, etc.) are often used to reduce the predicted impact of pollutants. Given that control factors will be implemented during operation of the facility, the predicted odour impacts were likely artificially high. It is also noteworthy that the most stringent odour impact criteria of two odour units were used.</p> <p>LMCC has raised concerns regarding the odour emissions factors that were extracted from a paper published by Frechen (2002). The publication was not available for review, and its citation is suspected to be incorrect. Considering the emission rates underpin the assessment, a review of the sources of these rates is recommended. CHBWU should confirm the</p>	<p>CHBWU has confirmed that the odour assessment was completed by an odour specialist based on current guidelines and did not consider that further investigation was necessary.</p> <p>CHBWU has confirmed that the assessment was prepared on the assumption that the proposal demonstrated a 'worst case scenario' but still indicated compliance with current guidelines.</p> <p>CHBWU is currently preparing a response to LMCC to directly address its concerns regarding the emission factors used on the odour assessment.</p>

No.	Submissions	IPART's comments on how CHBWU has addressed the submissions
2d	<p>citation, and more importantly, the validity of the emission rates for the location under investigation, and to ensure that the emissions rates are still considered appropriate given that the study as cited is 13 years old.</p> <p>Effluent irrigation: CHBWU's proposal to irrigate treated effluent over future residential land (stages 6 and 7) is not a desirable outcome as there is the potential for public health and safety to be compromised by irrigating the treated effluent over land that will subsequently be developed for residential use.</p> <p>In addition, LMCC raises concern regarding the transfer of the reserves and natural areas surrounding stages 6 and 7 of the subdivision. The 'vegetated buffers' are key inclusions in the control of any risk associated with the treated effluent</p>	<p>CHBWU has amended its REF to include a detailed irrigation area plan which has specified the location and use of exclusion fencing, and signage to educate members of the public to not enter the irrigated areas or come into contact with the non-potable water. CHBWU has also discussed mitigation measures in the REF if the public does come into contact with the non-potable water. CHBWU has specified that the appropriateness of using the land for residential development in stages 6 and 7 of the subdivision will be assessed when seeking a licence to construct Stage 3 of the water supply scheme.</p>
2e	<p>Stage 3: LMCC does not support the exclusion of Stage 3 from the current assessment. Stage 3 will involve the activation of Stages 6 and 7 of the subdivision, which is likely to require additional treated effluent irrigation area (unidentified at this stage). By excluding Stage 3 assessment, the proponent is unable to demonstrate that the utility can effectively function in the longer term. LMCC's concern is that the water balances for Stage 3 will result in a surplus treated effluent with no available mechanism for disposal.</p>	<p>CHBWU has clarified that if Stage 3 of the water supply scheme is pursued, treated effluent will be disposed to the environment. It will not rely on irrigation of private or public lands. If CHBWU is granted a network operator's licence, it will use operational data obtained during stages 1 and 2 to design Stage 3 effectively. If Stage 3 is not approved, stages 6 and 7 of the subdivision, as approved under the development's Part 3A approval (MP10_0204) will not proceed and treated effluent will continue to be disposed onto private lands.</p>
3. D15/7285 - Department of Planning and Environment		
3a	<p>DP&E is not aware of any breaches of the EP&A Act by CHBWU or Solo Water.</p>	<p>Noted.</p>
3b	<p>A Part 3A approval has been granted for the residential subdivision at CHB. In September 2014, this approval was modified to consolidate some lots to accommodate future sewage infrastructure.</p> <p>This approval stated that the proponent must separately obtain any relevant approvals and licenses to construct and operate sewage infrastructure. The need for further approvals is dependent on the provisions of ISEPP.</p>	<p>We consider that CHBWU has obtained the relevant approvals required to construct the proposed drinking water, non-potable water and sewerage infrastructure, as explained in section 4.6.2 of the report.</p> <p>CHBWU has confirmed in its REF that it has considered the requirements of the Water Management Act 2000. CHBWU considers that it may require a controlled activity approval if it</p>

No.	Submissions	IPART's comments on how CHBWU has addressed the submissions
	The approval, as modified, also indicates that all water and sewer assets are to be designed and constructed as per the requirements of the <i>Water Management Act 2000</i> and as authorised under the WIC Act.	undertakes construction of diversion and catch drains within the irrigation area, if it is within 40m of a waterway.
4.	D15/8031 - Environment Protection Authority	
4a	EPA has no knowledge of whether CHBWU has breached the POEO Act.	Noted
4b	<p>EPA advises that if Solo Water intend on irrigating excess wastewater as their disposal option, it is not a scheduled activity under the POEO Act and as a result does not require an Environment Protection Licence (EPL). An EPL is only required if excess wastewater is disposed of to waters, as defined by the POEO Act.</p> <p>The proposal is estimated to have a treatment capacity of 330kL/day or 556EP. An EPL is only required for sewage treatment if the activity has a processing capacity that exceeds 2,500EP or 750kL/day. As a result LMCC becomes the appropriate regulatory authority for environmental issues.</p>	Noted
4c	<p>If granted, the EPA advise that the WIC Act licence should contain, but is not limited to:</p> <ul style="list-style-type: none"> (i) monitoring and reporting conditions in relation to appropriate soil moisture testing (ii) appropriate rainfall triggers to prevent irrigation during high rainfall periods (iii) annual soil monitoring reports to ensure that the sustainability of the irrigation application area (iv) monitoring of volume and quality at the discharge point to the irrigation area and establishment of water quality and volumetric limits (v) water quality monitoring of any nearby waterways considered at high risks to impacts from the irrigation application area to ensure that impacts are not occurring (vi) definition of the extent and size of the appropriate irrigation application area (vii) surface and groundwater quality monitoring up gradient and down 	<p>We consider that no additional licence conditions to address these matters are necessary because CHBWU has considered these matters in its REF. CHBWU will be required to implement environmental mitigation measures substantially consistent with those identified in its REF (Condition A4.2 of CHBWU's draft licence, included in Appendix A).</p>

No.	Submissions	IPART's comments on how CHBWU has addressed the submissions
	<p>gradient from the irrigation application area to monitor status of surface and groundwater to ensure that irrigation of wastewater is not polluting waters</p> <p>(viii) conditions to ensure that runoff to waters does not occur from the irrigation areas such as limitations on ponding and bunding to prevent any offsite migration or irrigated wastewaters.</p>	
4d	<p>EPA advises you to contact LMCC with regard to their assessment of the risks and local planning requirements with respect to the proposed irrigation of effluent.</p> <p>EPA advises to contact Hunter New England Public Health Unit⁹⁰ to seek advice on appropriate limits or conditions in relation to prevention of health impacts</p>	<p>We have consulted LMCC on CHBWU's licence application and REF.</p> <p>We have previously addressed NSW Health's comments on CHBWU's proposed water supply scheme. CHBWU has committed to consult with NSW Health as required and on an ongoing basis, if granted a licence under the WIC Act.⁹¹</p>
5.	D15/8325 - NSW Department of Primary Industries Water (previously NSW Office of Water)	
5a	<p>The Recycled Water Management Plan to be prepared following DA consent should be prepared in consultation with the (former) NSW Office of Water.</p>	<p>CHBWU has committed to consulting DPI Water (formerly NSW Office of Water) when preparing its water quality plans.</p>
5b	<p>Monitoring plans should be developed for effluent quality, recycled water quality and the irrigation scheme (including monitoring of soil, surface water and groundwater), and should identify thresholds, triggers and response plans for exceedances of thresholds.</p> <p>The plans should enable identification of trends in relation to changing water quality of ground water and surface water, and identify actions to protect the water sources.</p>	<p>CHBWU has clarified details of parameters to be monitored and monitoring locations in its REF. It has also specified annual reviews and the reporting requirements in the REF. CHBWU has also clarified monitoring triggers and response plans which it commits to including in its Recycled Water Management Plan (a Water Quality Plan).</p>
5c	<p>Riparian corridors should be established and maintained in accordance with DPI Water's Guidelines for Riparian Corridors.</p> <p>It is requested that a Vegetation Management Plan be prepared for the riparian corridors in accordance with DPI Water's <i>Guidelines for Vegetation</i></p>	<p>CHBWU has clarified that riparian areas within the subdivision have already been defined by the subdivision's approval (MP10_0204). We consider that that specific management measures are not required. An ephemeral drainage line bisects the irrigation area, but has been cleared and will be vegetated with the vegetation area</p>

⁹⁰ The Hunter New England Public Health Unit is a unit of NSW Health.

⁹¹ Standard licence condition B4.1 requires that the licensee must carry out the activities authorised by the licence in compliance with any requirements of NSW Health that IPART has agreed to and are notified from time to time to the Licensee by IPART in writing.

No.	Submissions	IPART's comments on how CHBWU has addressed the submissions
	<i>Management Plans.</i>	cover crop, as clarified in CHBWU's REF. We expect that the irrigation area will not result in run-off of effluent as CHBWU will establish appropriate controls such as to prevent irrigation during wet periods. CHBWU commits to developing a Stormwater Management Plan in its REF.
5d	<p>The evaporation ponds associated with the Reject Reverse Osmosis (RO) plant are modelled to overflow in 6% of years.</p> <p>Management measures are required to be implemented to avoid/minimise overflows, and to minimise impacts to groundwater, surface water and waterfront land resulting from overflows.</p>	CHBWU has clarified in its REF that it does not expect the RO Reject Evaporation ponds to overflow. If required, CHBWU will organise for the excess RO Reject streams to be tankers away to a nearby disposal facility, or the sewage treatment plant will be shut down to prevent overflows.
4e	<p>The proposed 2ML wet weather storage tank for treated effluent is predicted to overflow in 38% of years.</p> <p>Management measures are required to be implemented to avoid/minimise overflows, and to minimise impacts to groundwater, surface water and waterfront land resulting from overflows.</p>	CHBWU has clarified in its REF that a range of controls will be established to minimise overflows from the sewage treatment plant and the sewerage and non-potable water reticulation networks. In the event of an overflow, the subdivision's stormwater system will capture overflows in detention basins, enabling overflows to be cleaned up.
5f	<p>The proposal refers to potential offsite discharge of surplus recycled water to either trade waste or the environment, including potential discharge to ocean, sand dunes, groundwater, or Middle Camp Creek.</p> <p>The proponent should provide detailed assessment to show that the proposed discharge option does not result in more than minimal harm to the environment.</p> <p>Appropriate monitoring and reporting parameters must also be determined.</p>	CHBWU has clarified in its REF that it does not expect offsite discharges to occur. In the event of an overflow, the subdivision's stormwater system will capture overflows in detention basins, enabling overflows to be cleaned up.
5g	<p>Condition B24 of the Consent for the subdivision may require modification as Hunter Water will no longer be the Water Supply Authority servicing the site.</p> <p>The proponent may be required to lodge an application for Modification of Minister's Approval under the EP&A Act.</p>	We understand that the development approval (MP10_0204) has now been modified and Hunter Water is no longer named as the water supply authority.

No.	Submissions	IPART's comments on how CHBWU has addressed the submissions
	We received a submission from Wyong Shire Council (IPART reference D15/ 3586) regarding the regulatory requirements CHBWU should consider before constructing the proposed drinking water infrastructure. This is outside the scope of the REF. These submissions have been addressed in section 4.6.2 of the report.	
	We also received a public submission supporting CHBWU's proposal (IPART reference D15/3455). The submission did not raise any issues.	

C PB's environmental assessment report

Parsons Brinckerhoff Australia Pty Limited

ABN 80 078 004 798

25 August 2015

Mamata Titus
Technical Analyst
Independent Pricing and Regulatory Tribunal
PO Box K35
Haymarket Post Shop
NSW 1240

Level 3 51-55 Bolton Street
Newcastle NSW 2300
PO Box 1162
Newcastle NSW 2300
Australia
Tel: +61 2 4929 8300
Fax: +61 2 4929 8382

www.pbworld.com

Certified to ISO 9001, ISO 14001, OHSAS 18001

Our ref: 2267011A-ENV-LTR-002 RevC

By email
Mamata_Titus@ipart.nsw.gov.au

Dear Mamata

**Stage 2 - Environmental Assessment of Catherine Hill Bay Water Utility Pty Ltd's
Network Operator Licence Application
Review of REF Rev E (29 July 2015)**

1. Introduction

Parsons Brinckerhoff was engaged by the Independent Pricing and Regulatory Tribunal (IPART) to undertake an environmental assessment of a Review of Environmental Factors (REF) prepared by Planit Consulting Pty Ltd (the REF). The REF was prepared for works proposed by Catherine Hill Bay Water Utility Pty Ltd (CHBWU) for the construction, operation and maintenance of water recycling facilities, including a sewage treatment plant and recycled water reticulation network (the proposed works) at the Catherine Hill Bay subdivision (the subdivision). CHBWU is a wholly owned subsidiary of Solo Water and would become the developer and operator of the proposed works following approval of a network operator's licence under the *Water Industry Competition Act 2006*.

The environmental assessment of the REF was provided to IPART in a memo dated 11 May 2015 and is referred to in this report as the 'initial assessment' (the findings of this review are provided in Attachment A of this letter). Following this, Solo Water and Planit Consulting provided REV D of the REF dated 11 June 2015. A review of REV D of the REF was provided to IPART on 9 July 2015 (the findings of this review are provided in Attachment B of this letter). REV E of the REF was provided to Parsons Brinckerhoff on 4 August 2015 and a review provided to IPART in this letter.

It is the view of the reviewer (Parsons Brinckerhoff) that REV E E of the REF adequately meets the requirements of Clause 7(1)(a) and 10(4)(e) of the *Water Industry Competition Act 2006* and Clause 7 of the *Water Industry Competition (General) Regulation 2008*.

2. The project

The 'project' as referred to in this review and assessed in the revised REF refers to the construction and operation of:

- A Sewage Treatment Plant (STP), which would be built in the following stages:
 - ▶ construction of site layout, hardstand areas, office and building structures, ancillary facilities, potable, wastewater and waste storage tanks, and a membrane bioreactor (MBR) system with sufficient capacity to treat all lots within the subdivision
 - ▶ installation of an Advance Water Treatment Plan (AWTP) and associated facilities/services, including: reject tanks, reverse osmosis unit, reject evaporation ponds.
- Establishment of a 9.5 hectare (ha) treated wastewater irrigation area within the subdivision, including vegetated buffer areas and security fencing.
- A sewage reticulation network to remove wastewater from each subdivision lot and transport it to the STP.
- A recycled water reticulation network to supply treated wastewater from the STP to each subdivision lot.

Additional development of the STP may occur following further development of the subdivision (referred to as Stage 3); however this was not assessed or detailed in the REF. The subdivision was planned to be developed in seven Stages and the proposed works will occur in Stages 6 and 7, which will ultimately be developed for residential purposes if Stage 3 of the STP is implemented.

3. Review of the revised REF

The review of the REV E of the REF was undertaken by the same team who undertook the previous assessment. The review focused on the items identified in the previous review that required further action or revision of the REF. The review found that all recommendations and findings of the previous assessments have been adequately addressed. In particular, the following key issues have been resolved:

- The REF clearly provides commitments to preventing all predicted wet weather overflows through road tankering of all excess effluent as required. Overflows of effluent would only occur due to system failures.
- Additional groundwater monitoring bores have been added, including two up-gradient monitoring points and two within the irrigation area.
- The REF commits to providing residents of the subdivision with information packs that outline their responsibilities regarding operation of the recycled water and sewage system and the risks of coming into contact with effluent. Commitments are also provided regarding consultation with health regulators.
- Impacts to water users in the area have been considered (no impacts were identified).

The review is detailed in Table 3.1.

Table 3.1 Review of REV E of the REF

No.	Required amendment to REF (from Rev D Review)	Response from Solo Water (summarised)	Adequately addressed?	Comments (based on Parsons Brinckerhoff's review of REV E of the REF)
1. Effluent irrigation				
1.1	<ul style="list-style-type: none"> Residents living in areas adjacent to irrigation areas should be provided with specific information about the risks of coming into contact with irrigation effluent and what to do if this occurs. This could be in the form of a letter, pamphlet or similar. This letter should be provided to any new residents moving into areas adjacent to irrigation areas. As recommended by the EPA in their response to public exhibition of the original REF, consultation should be undertaken with Hunter New England Health regarding the prevention of public health issues from the project. 	<ul style="list-style-type: none"> Solo Water issues information packs to all residents as a matter of routine. These cover all issues associated with the recycled water and sewage scheme, incident management, household responsibilities, risks of coming into contact with effluent etc. The REF has been updated to reflect this. Solo Water will consult with NSW Health during preparation of the Recycled Water Management Plan and Drinking Water Quality Plan – consultation commitments have been added to the REF. 	Yes	<ul style="list-style-type: none"> Sections 3.4 and 9.1.14 of the REF detail how residents would be provided with Information Packs relevant to the recycled water and sewage system. Section 6.4 and 9.1.14 commit to consultation with NSW Health following granting of the WIC Act licence.
1.2	<ul style="list-style-type: none"> Solo Water should consider the applicability of the Aquifer Interference Policy and Water Sharing Plan for the Central Coast Unregulated Water Sources 2009 to the project, address this in the REF and consult with NOW if required. Solo Water should confirm in the REF, the potential for impacts to existing surface and groundwater users in areas surrounding the project. 	<ul style="list-style-type: none"> The REF has been amended to include a review of the applicability of the NSW Aquifer Interference to the proposal. The REF includes consideration of the Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources (2009). 	Yes	<ul style="list-style-type: none"> Section 5.6 of the REF provides consideration of the Aquifer Interference Policy and concludes that the policy does not apply to the proposal. Section 5.7 confirms that the Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources (2009) applies to the proposal area and identifies 15 registered bores exist within the vicinity of the proposal. The REF states that 14 of these are owned by the proponent and are in the process of being decommissioned. One bore is located about 400 metres from the effluent irrigation area, which is acceptable under the effluent irrigation guidelines.

No.	Required amendment to REF (from Rev D Review)	Response from Solo Water (summarised)	Adequately addressed?	Comments (based on Parsons Brinckerhoff's review of REV E of the REF)
1.3	<ul style="list-style-type: none"> ■ Up-gradient groundwater monitoring should be undertaken as part of groundwater monitoring. ■ The REF should be revised to include the commitment to analyse the full suite of analytes required under Section 5.3 of the DEC 2004 Effluent Irrigation Guidelines. ■ Impact trigger levels for surface water, groundwater, soil chemistry, salinity, and groundwater levels should be developed based on the results of the baseline monitoring program currently being undertaken. ■ Procedures for responding to and reporting exceedances of these trigger values should be developed and specified in the Operational Management Plan or Recycled Water Management Plan for the project. 	<ul style="list-style-type: none"> ■ Up-gradient monitoring points have been added to irrigation area plans and are detailed in the REF. ■ The REF has been updated to include analytes required for groundwater monitoring under the 2004 DEC Effluent Irrigation Guidelines. 	Yes	<ul style="list-style-type: none"> ■ Plan SW-56-C-SK50 (included in Appendix Q of the REF) shows two up-gradient monitoring points and two additional monitoring bores within the irrigation areas that were not previously included. ■ Table 7 of the REF shows that the groundwater monitoring analytes recommended by the 2004 DEC guidelines that were not previously included in the monitoring program are now included. ■ Section 9.2 of the REF includes commitments to developing impact trigger levels and management plans for the system in consultation with NOW.

No.	Required amendment to REF (from Rev D Review)	Response from Solo Water (summarised)	Adequately addressed?	Comments (based on Parsons Brinckerhoff's review of REV E of the REF)
2. Offsite discharge				
2.1	<ul style="list-style-type: none"> Controlled wet weather overflows of irrigation quality effluent are predicted to occur in 38% of years from the project. The location for these overflows needs to be defined in the REF and the destination of these overflows assessed for impacts such as surface water quality, public health and ecology. 	<ul style="list-style-type: none"> Wet weather overflows predicted to occur from the system would be prevented by pumping out to tankers which would dispose of excess wet weather flows as required. Reference to wet weather overflows occurring in 38% of years comes from water balance modelling process and does not reflect practices that would be implemented on-site. This is clarified in the REF. 	Yes	<ul style="list-style-type: none"> Section 3.7.2.2 of the REF states that no offsite discharges would occur, as all surplus water would be trucked offsite to another approved facility. Table 7.3 of the Land Capability Assessment (Appendix K) states that an average of 0.32 ML of water will 'overflow' from the system per year (i.e. the 38%). Assuming that 10,000 L tankers were used to transport this effluent, 32 trucks would be required per year to transport surplus effluent from the site. Trucking would not occur evenly throughout the year, but would be concentrated during wet weather periods. It is not expected that (approx.) 32 truck movements per year will result in any operational traffic issues, although truck access, parking and rules for accessing the site should be considered as part of the Operational Management Plan.
2.2	<ul style="list-style-type: none"> In Solo Water's response to the review of the original REF, it is stated that <i>'in the unlikely event that the irrigation area is proven to be not sustainable, a portion or all of the surplus recycled water would be removed by road tanker to the nearest licenced facility and Stage 3 of the scheme would be implemented'</i>. This commitment should be added to the REF. 	<ul style="list-style-type: none"> The REF has been updated to include this commitment. 	Yes	<ul style="list-style-type: none"> Sections 7.1.3 and 9.1.1 of the REF include this commitment.

No.	Required amendment to REF (from Rev D Review)	Response from Solo Water (summarised)	Adequately addressed?	Comments (based on Parsons Brinckerhoff's review of REV E of the REF)
3. Terrestrial flora and fauna assessment				
3.1	<ul style="list-style-type: none"> The inclusion of the 2013 flora and fauna assessment and addenda in the REF is unnecessary and may be confusing to future users or reviewers of the REF. These documents should be removed from the REF and Section 7.7 of the REF updated to reflect that clearing of the site is covered by MP 10_0204, and address the additional impacts of the project on flora and fauna (i.e. enhanced potential for weed invasion). 	<ul style="list-style-type: none"> The flora and fauna assessment has been removed from the REF and Section 7.7 of the REF updated to clarify that clearing of the site has been approved by previous approvals, with the site being currently cleared. 	Yes	<ul style="list-style-type: none"> The REF has been updated to clearly state flora and fauna impacts.
4. Lake Macquarie City Council (LMCC) submission				
4.1	<ul style="list-style-type: none"> Solo Water should provide a direct response to LMCC addressing the concerns relating to the emissions factors used in the odour assessment. 	<ul style="list-style-type: none"> The project odour consultants are currently reviewing LMCC's comments and will provide a response. It is worth noting that the same methodology was used for other similar projects (e.g. Wilton Water) and has been accepted by the EPA. 	Yes	<ul style="list-style-type: none"> Parsons Brinckerhoff has no further comments on this matter.
5. DPI Water (formerly NSW Office of Water) submission				
5.1	<ul style="list-style-type: none"> The commitment to prepare a Recycled Water Management Plan in consultation with NOW should be added to the REF. 	<ul style="list-style-type: none"> Section 9.2 of the REF has been updated to include this commitment. 	Yes	<ul style="list-style-type: none"> Parsons Brinckerhoff has no further comments on this matter.
5.2	<ul style="list-style-type: none"> Prepare monitoring triggers and response plans as part of the Recycled Water Management Plan. 			

No.	Required amendment to REF (from Rev D Review)	Response from Solo Water (summarised)	Adequately addressed?	Comments (based on Parsons Brinckerhoff's review of REV E of the REF)
6. Environmental Protection Authority (EPA) submission				
6.1	<ul style="list-style-type: none"> Solo Water should undertake up-gradient groundwater monitoring as part of its groundwater monitoring program. 	Up-gradient groundwater monitoring bores have been added to the groundwater monitoring program.	Yes	<ul style="list-style-type: none"> Parsons Brinckerhoff has no further comments on this matter.
6.2	<ul style="list-style-type: none"> Solo Water should consult with Hunter New England Health regarding the regulation and management of human health issues associated with the project. 	The REF includes a commitment to consult with NSW Health following approval of the WIC Act licence.		

4. Recommendations

In preparing this letter, the reviewer has reviewed the draft Network Operator Licence for the proposed works and has no further recommendations. All management strategies, commitments and actions provided in REV E of the REF should be implemented during relevant stages of construction and operation of the proposed works – this is reflected by Conditions A4.2 to A4.6 of the draft licence.

5. Conclusion

Table 5.1 provides an assessment of the proposed works as described in REV E of the REF against matters specified by IPART.

Table 5.1 IPART matters for consideration

Matters for consideration	Comment
REF assessment adequacy – does the REF provide enough information to:	
<i>Consider the likely impact of the activity on the environment including by reference to factors referred to in “Is an EIS Required?” (the EIS Guidelines)</i>	<ul style="list-style-type: none"> ■ Matters which may trigger the need for an Environmental Impact Statement (EIS) for projects that meet the definition of an ‘activity’ under the <i>Environmental Planning and Assessment Act 1979</i> are listed under Section 111 and 112 of that Act. Those matters have been reviewed during the assessment process and it is considered that an EIS is not required. ■ The key trigger for an EIS is whether a project is likely to ‘significantly affect the environment’. Rev E of the REF does not predict any significant environmental impacts associated with the proposed works.
<i>Examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the activity</i>	<ul style="list-style-type: none"> ■ Rev E of the REF is considered to have identified and examined as far as possible, all potential impacts associated with the proposed works.
<i>Consider the effect of an activity on the following:</i>	
<ul style="list-style-type: none"> ■ any conservation agreement entered into under the <i>National Parks and Wildlife Act 1974</i> and applying to the whole or part of the land to which the activity relates, and 	<ul style="list-style-type: none"> ■ The proposed works are not predicted to have any impact on a conservation agreement established under the <i>National Parks and Wildlife Act 1974</i>.
<ul style="list-style-type: none"> ■ any plan of management adopted under that Act for the conservation area to which the agreement relates, and 	<ul style="list-style-type: none"> ■ The proposed works are not predicted to affect any plan of management associated with a conservation agreement as described above.
<ul style="list-style-type: none"> ■ any joint management agreement entered into under the <i>Threatened Species Conservation Act 1995</i>, and 	<ul style="list-style-type: none"> ■ The proposed works are not predicted to affect any joint management agreement entered into under the <i>Threatened Species Conservation Act 1995</i>.
<ul style="list-style-type: none"> ■ any bio banking agreement entered into under Part 7A of the <i>Threatened Species Conservation Act 1995</i> that applies to the whole or part of the land to which the activity relates, and 	<ul style="list-style-type: none"> ■ The proposed works are not expected to affect any bio banking agreements.
<ul style="list-style-type: none"> ■ any wilderness area (within the meaning of the <i>Wilderness Act 1987</i>) in the locality in which the activity is intended to be carried on, and 	<ul style="list-style-type: none"> ■ The proposed works are not predicted to affect any wilderness areas.

Matters for consideration	Comment
<ul style="list-style-type: none"> critical habitat, and 	<ul style="list-style-type: none"> The proposed works are not predicted to affect any areas of critical habitat.
<ul style="list-style-type: none"> in the case of threatened species, populations and ecological communities, and their habitats, whether there is likely to be a significant effect on those species, populations or ecological communities, or those habitats, and 	<ul style="list-style-type: none"> The proposed works are not expected to affect any threatened species, populations and/or ecological communities.
<ul style="list-style-type: none"> any other protected fauna or protected native plants within the meaning of the National Parks and Wildlife Act 1974. 	<ul style="list-style-type: none"> The proposed works are not predicted to affect any fauna or plants protected under the <i>National Parks and Wildlife Act 1974</i>.
Assessment issues	
<p>How has the applicant addressed each of the factors identified above?</p> <p>Are the proposed activities likely to significantly affect the environment (including critical habitat) or threatened species, populations or ecological communities, or their habitats? What is the reason for your answer?</p>	<ul style="list-style-type: none"> The applicant has engaged a planning consultant and specialist sub-consultant to prepare a review of environmental factors (REF) in accordance with the requirements provided by IPART. The REF includes a detailed review of the potential issues and impacts associated with the proposed works. The REF identifies that the proposed works will not require any vegetation or fauna habitat clearing (as the site has recently been cleared under other approvals), hence most of the issues outlined above are not applicable. The project is located adjacent to a National Park, but impacts to this area are unlikely, as no off-site discharge or impacts are predicted.
<p>What are the key environmental risks posed by the activities and how will these be mitigated?</p>	<ul style="list-style-type: none"> The key environmental risks associated with the project are: <ul style="list-style-type: none"> Potential for offsite release of treated effluent or raw sewage from infrastructure failure such as a blocked pipe or long-term power failure – this is mitigated by the fact all drainage from the site would be directed to a stormwater management system that would capture overflows or discharges, likely preventing offsite release and allowing for them to be cleaned up. Potential for designed release of treated effluent during wet weather due to increase inflows of sewage – this would be mitigated by pumping all excess effluent to trucks which would transport the effluent to another licenced and approved facility for disposal. So no offsite releases of effluent would be expected to occur. Potential for human health risks associated with residents of the subdivision coming into contact with irrigated effluent – this would be mitigated by installing security devices around irrigation areas (i.e. security fencing and warning signs) and providing residents with education about effluent health risks.

Matters for consideration	Comment
	<ul style="list-style-type: none"> ▶ Potential for soil and groundwater contamination from long-term irrigation of treated effluent which may contain trace amounts of contaminants – this would be mitigated by the fact that lower levels of contaminants would be expected in sewage inflows as it would be almost entirely generated by residential households, who would typically generated lower levels of contaminants. The irrigation system has been designed in accordance with the Department of Environment and Conservation (now EPA)'s <i>Environmental Guidelines: Use of Effluent by Irrigation</i> and includes an extensive soil, groundwater and surface water monitoring program. This program would enable baseline soil and water conditions to be determined and any impacts to be identified as the irrigation scheme is used.
<i>Having regard to protection of the environment, should the Minister grant or refuse to grant a network operator's licence to the applicant? What is the reason for your answer?</i>	<ul style="list-style-type: none"> ■ Based on the information provided in Rev E of the REF, there does not appear to be any reason for refusing the network operators licence application by the applicant. ■ Rev E of the REF is considered to have adequately identified and addressed potential environmental and social impacts associated with the proposed works.
<i>If you recommend that the Minister should grant a network operator's licence to the applicant, should the licence include any specific conditions to protect the environment? If so, what should these conditions be and why?</i>	<ul style="list-style-type: none"> ■ Based on a review of the draft network operator's licence provided by IPART to Parsons Brinckerhoff via email on 11 August 2015 and associated IPART guidelines, no specific conditions are recommended regarding environmental protection. ■ The draft licence would require the applicant to implement the management and mitigation measures outlined in the REF which includes the development of construction and operational management plans in consultation with the NSW Office of Water and IPART. These measures are considered to have adequately addressed all issues raised in the REF.

REV E of the REF and the responses provided by Solo Water regarding issues outlined in our previous assessment are considered to have adequately addressed all concerns that were previously raised.

The proposed recycled water and sewerage system is considered to be a highly efficient and sustainable form of sewage treatment, which compares positively to a traditional centralised system. REV E of the REF is considered to effectively detail how the proposed system will operate in a manner that minimises risk of environmental impacts and potential human health impacts to residents of the subdivision. No further recommendations or actions are considered necessary.

Should you wish to discuss this further, please contact me on (02) 4929 8300.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'S. Crick', is positioned above the printed name.

Steven Crick
Principal Environmental Scientist

List of attachments

Attachment A Findings of review of Rev C of the REF
Attachment B Review of Rev D of the REF

Attachment A

Findings of review of Rev C of the REF

A1. Findings of review of Rev C of the REF

A1.1 Key environmental assessment findings

The key findings of the environmental assessment which in our opinion have been inadequately addressed in REV C of the REF and have the potential to result in offsite environmental impacts if left unaddressed are presented below:

- Lack of consideration of ongoing impacts associated with effluent irrigation – the REF does not include adequate measures for monitoring and assessing changes to soil and groundwater conditions as a result of effluent irrigation, or public health impacts that could occur from members of the public coming into contact with effluent or accessing irrigation areas. Issues associated with the long-term sustainability of the vegetation that the system relies on are not addressed (refer to Section A1.1.2 for more details).
- Insufficient identification and consideration of the operational impacts of the proposed works – the REF does not identify or consider the potential impacts of discharge from the STP or sewerage/recycled water reticulation system to the environment (as may occur by design or accident/malfunction) despite the fact that the REF identifies that discharges will occur in up to 38% of years. It also does not consider the potential for effluent run-off from irrigation areas (refer to Section A1.1.2 for more details),
- Insufficient capacity of treatment system – as described in Section 2 of the REF, the proposed works will provide capacity for treatment and reuse or discharge of wastewater from 470 ETs. Full development of the subdivision is not achievable without further development of the wastewater irrigation areas and/or offsite disposal of waste water. Further environmental impacts associated with the wastewater and recycled water system will occur if full development of the subdivision proceeds (refer to Section A1.1.3 for more details).
- Incorrect consideration of statutory matters outlined in the REF, such as permissibility of the proposed works and consideration of certain matters outlined in Acts and State Planning Instruments (refer to Section A1.1.4 for more details).
- Flora and fauna assessment – A detailed Terrestrial Flora and Fauna Assessment is included in the REF, which *'builds upon the lengthy and detailed investigations carried out over the development area which ultimately secured the Project Approval'*. The purpose of this assessment is unclear, given the proposed works have been approved to be cleared under the overall subdivision EA and work under this approval has commenced. It has been assumed this assessment is to address gaps in the previous assessment. The Terrestrial Flora and Fauna Assessment is not consistent with number of relevant guidelines and statutory requirements (refer to Section A1.1.5 for more details).
- Definition of construction impacts – the REF assesses a proposed STP and sewage reticulation network and provides details of lot numbers that will be affected by the works, but does not provide clear figures or descriptions for the proposed works that may additionally cause disturbance and/or impacts. This is particularly evident for the proposed sewage reticulation network (refer to Section A1.1.6 for more details).

These issues are described further in the following sections.

A1.1.1 Effluent irrigation

Figure 1 of REF shows that effluent from the STP would be irrigated within 'restricted access open space areas' and these are to be developed in Stages 6 and 7 of the subdivision (approved for residential lots). However, these areas will not be developed for residential use until Stage 3 of the STP is approved.

The REF includes a land capability assessment that was prepared to assess the suitability of proposed irrigation areas for effluent irrigation. This assessment was based on the Australian Guidelines for Water Recycling (NRMMC; EPHC; AHMC 2006) and the NSW Department of Conservation (DEC) Environmental Guidelines: Use of Effluent by Irrigation (2004).

Public health and safety

The REF states that public health risks will be minimised through the implementation of vegetated buffers and perimeter fencing around effluent irrigation areas and the STP. Figure 1 of the REF shows these areas, although a footnote to the figure states the figure is '*Illustrative only. Not to scale*'. The figure presented is very small (approximately 20% of an A4 page) and is low resolution, with text that cannot be read. An A3 copy of this plan is included in the Integrated Water Management Plan appended to the REF, although this plan states it is '*Concept Not for Construction*'. Neither copy of the plan identifies where perimeter fencing will be placed or where access to the irrigation areas will be achieved.

No other details of buffer areas and fencing are provided in the REF. Vegetated buffer areas, fencing and public access to the irrigation areas are not reliably defined, which requires assessment in the REF. Fencing type and any other security measures to be undertaken need to be specified.

It is assumed that public access to the effluent irrigation areas will be restricted, however; this is not adequately demonstrated and the risk of members of the public coming into contact with effluent in irrigation areas is not considered in the REF. Measures to educate and warn members of the public about risks of coming into contact with effluent need to be implemented, particularly for future residents of areas immediately adjacent to the irrigation fields. Long-term issues associated with constructing residential developments on areas previously used for effluent irrigation are also not considered, although it is acknowledged that this may be more appropriate to consider during the assessment of Stage 3 of the STP.

Wet weather storage capacity and salinity

The land capability assessment appended to the REF assumes approximately 70% of water treated by the STP will be reused by residential users within the subdivision, with up to 40% requiring irrigation. Section 7.1 of the land capability assessment outlines the quality of the produced effluent used for irrigation. This section states that the water meets the definition of 'low strength effluent' under the *Guidelines for Effluent Irrigation* (Department of Environment and Conservation (DEC) 2004)).

The effluent is expected to have a Total Dissolved Solid (TDS) concentration of up to 1,000 mg/L, which exceeds the DEC 2004 guideline definition for low strength effluent of 600 mg/L. Section 7.1 of the land capability assessment states that, under the DEC 2004 guidelines, '*schemes involving irrigation of 'low strength' effluent are permitted to an overflow discharge from the wet weather storage in 50% of years*'. The DEC 2004 guidelines are not entirely specific in providing limits for effluent overflows. The overflow frequency limit is loosely described within an appendix explaining how DEC's Effluent Re-use Irrigation Model (ERIM) was constructed. A limit of overflows in 50% of years could be appropriate considering the quality of the effluent, but this will depend on further assessment of the impact of overflows on the receiving environments.

As the predicted effluent quality from the STP does not meet all the criteria for 'low strength effluent' under these guidelines and will have a water salinity rating of 'medium' as defined under Section 3.4 of those guidelines, it is recommended that the adequacy of the wet weather storage of the STP is reviewed and confirmed with the EPA. The use of the guideline recommendations for 'low strength effluent' in the land

capability assessment should also be reviewed and the study revised as appropriate following consultation with the EPA.

Impacts to soils and groundwater

Section 7.5.1 of the REF states that *'Groundwater is expected to occur at depth in the rock strata that underlies the site'*. The depth to rock strata is not stated. Section 7.5.2 of the REF highlights that the proposed works have the potential for *'deep percolation'* of *'reject RO storage'* and *'irrigated wastewater'* to groundwater aquifers and this may result in anaerobic soil conditions. No measures are proposed to mitigate or measure these impacts. It is assumed that the anaerobic soil conditions referred to in this section would be a result of elevated groundwater levels.

Appendix F of the land capability assessment (Sewerage Preliminary Risk Assessment), under *Stage 1 temporary, restricted access Irrigation System continued... Percolation to groundwater*, it is stated that *'No groundwater within 3 metres of geotechnical investigation'*. It is therefore assumed that groundwater may exist at depths of up to three metres below the irrigation area. The potential for increasing existing groundwater levels through the irrigation process are not adequately assessed in the REF. It is merely stated that this may occur. The land capability assessment shows that leaching of salts from irrigated effluent will occur, reducing build-up of salts in the soils of the irrigation area. The potential effects of this on underlying groundwater aquifers are not assessed. Groundwater and other water users that may exist surrounding areas and be affected by these processes are not identified in the REF. The REF should determine impacts to water resources in the area against the NSW *Aquifer Interference Policy* and the Water Sharing Plan for the Central Coast Unregulated Water Sources 2009. As recognised in the REF, ongoing irrigation of an area with treated wastewater may result in local impacts to soils and groundwater. Nutrient modelling undertaken for the land capability assessment determined that the proposed irrigation has negligible potential to change soil nutrient levels, although it was noted this is dependent on soil moisture conditions and the final soil conditions following importation of fill material. Potential issues associated with soil contamination by pollutants that are not completely removed by the wastewater treatment process are not considered in the REF. The REF provides no measures for the long-term monitoring of soil and groundwater that may be affected by the proposed irrigation process. No measures are proposed to monitor potentially affected sensitive environments that may be located adjacent to or downstream of irrigation areas.

Table 8.1 of the land capability assessment commits to *'monthly effluent monitoring'* at the STP and *'Centrally controlled irrigation scheduling and monitoring'* of effluent irrigation, although further details are not provided. The land capability assessment also suggests that soil moisture will be undertaken. No commitments for soil, effluent or groundwater monitoring are provided in the REF, although a commitment is made to adhering to the recommendations of the land capability assessment.

The REF should be amended to include commitments for the monitoring and review of soils, surface water and groundwater in areas potentially affected by effluent irrigation, including downstream environments. This should include baseline monitoring. The monitoring program should consider the DEC 2004 effluent irrigation guidelines which recommend the following in relation to monitoring:

- *'A program of continuous monitoring and progressive modification might be necessary to correct design flaws and deficiencies, and to adjust the system as more complete information on the site becomes available, accommodating changes in operation over time.'* Section 1.4.
- *'An effective effluent irrigation system will include:*
 - ▶ *a monitoring system to measure, record and identify any action to ensure the environmental performance of the system'*. Section 5.

Section 5.3 of the guidelines provides detailed recommendations for effluent irrigation monitoring programs, including monitoring design and frequency parameters.

The REF should also define impact triggers, reporting and review requirements and response actions for soil and groundwater monitoring for effluent irrigation.

Long-term sustainability of effluent irrigation

The REF does not examine the potential for failure of vegetation in the irrigation areas to maintain adequate levels of transpiration and nutrient absorption. If prolonged period of inactive plant growth occurs, high nutrient loads may percolate to the groundwater table or reach sensitive environments in surface water run-off.

The potential for seasonal use of the subdivision and high fluctuations in effluent flow may make it hard to sustain a crop in irrigation areas. There is no mention of the planting and harvesting cycles and how fluctuations could be managed. For example, would higher summer population sewage inflows balance high irrigation demands in the hotter summer months? The REF also does not address how green waste from irrigation areas would be managed, such as whether grass crops would be slashed regularly and green waste removed (thus removing nutrients from the site) or if a mulching system would be used that would retain nutrients to enrich the soil.

A1.1.2 Offsite discharge

The land capability assessment appended to the REF identifies that the proposed works include a two megalitre wet weather storage that will overflow in approximately 38% of years due to wet weather flows. The high level of rainfall in the area means that a substantial number of days would be unavailable each year for irrigation. Further to this, as identified in Section 6.3.3 of the integrated water management plan appended to the REF, overflows from the reverse osmosis water balance ponds are predicted to occur in 6% of years.

This impact is not stated or considered in the REF. Table 5 of the REF states that all wastewater would be managed *'by irrigation with no discharge to waterways'* and this is further supported by Section 8.4 (b) Intergenerational Equity, that states *'The proposed development... does not require discharges of sewerage into the environment'*.

These impacts need to be properly identified and considered in the REF. Discharge points associated with the STP and sewerage system should be identified, designed so that impacts such as scouring are minimised and potential impacts reviewed and mitigated where required. Potential impacts from overflows could include impacts to sensitive wetlands and coastal environments located in adjacent areas and public health risks.

There is also the potential for dry weather overflows from the proposed works, should the STP suffer an accidental malfunction or the sewerage system becomes blocked. These issues should be identified and considered in the REF.

The REF does not provide an alternative to effluent disposal via irrigation, which may be required if effluent irrigation is found to result in soil or groundwater impacts, or if crops in the irrigation area fail. The REF should therefore include commitments for regular reviews of monitoring data, to ensure impacts are identified early and treatment or alternative disposal methods developed and effectively implemented.

An appendix of the land capability assessment mentions that "MEDLI modelling indicated the 10 ML (wet weather storage tank) did not overflow based on 100-year of historic climate data". This is contradicted in the body of the report, which describes only 2 ML of wet weather storage and predicts overflows in 38% of years. This should be reviewed and the land capability assessment updated as appropriate.

A1.1.3 Limitation of overall subdivision development

The proposed works will provide sewerage treatment services for Stages 1 to 5 of the subdivision, requiring areas for Stages 6 and 7 to be used for effluent irrigation. The REF states that further development of the

STP (referred to as Stage 3) will occur, resulting in offsite discharge of treated effluent and additional environmental impacts.

The proposed works will therefore limit the full development potential of the subdivision, as approved under MP10_0204. This may alter the overall impacts and benefits of the subdivision, as were considered by the Department of Planning and Environment and Planning and Assessment Commission during assessment and approval of MP10_0204. This issue should be considered by the approval authority in consultation with the Department of Planning and Environment.

A1.1.4 Statutory matters

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) is considered under Section 5.3.5 of the REF which concludes that as the proposal is for a sewage treatment plant and sewerage reticulation system and is to be carried out [by a body to be licenced under the *Water Industry Competition Act 2006*], development consent under Part 4 of the EP&A Act is not required.

Solo Water are not yet licenced under the WIC Act and cannot undertake any work permitted by the ISEPP prior to such a licence being obtained.

The proposed works will be undertaken on land zoned both SP2 (for the STP) and R2 (for the recycled water reticulation system and effluent irrigation, as show on the figure below.

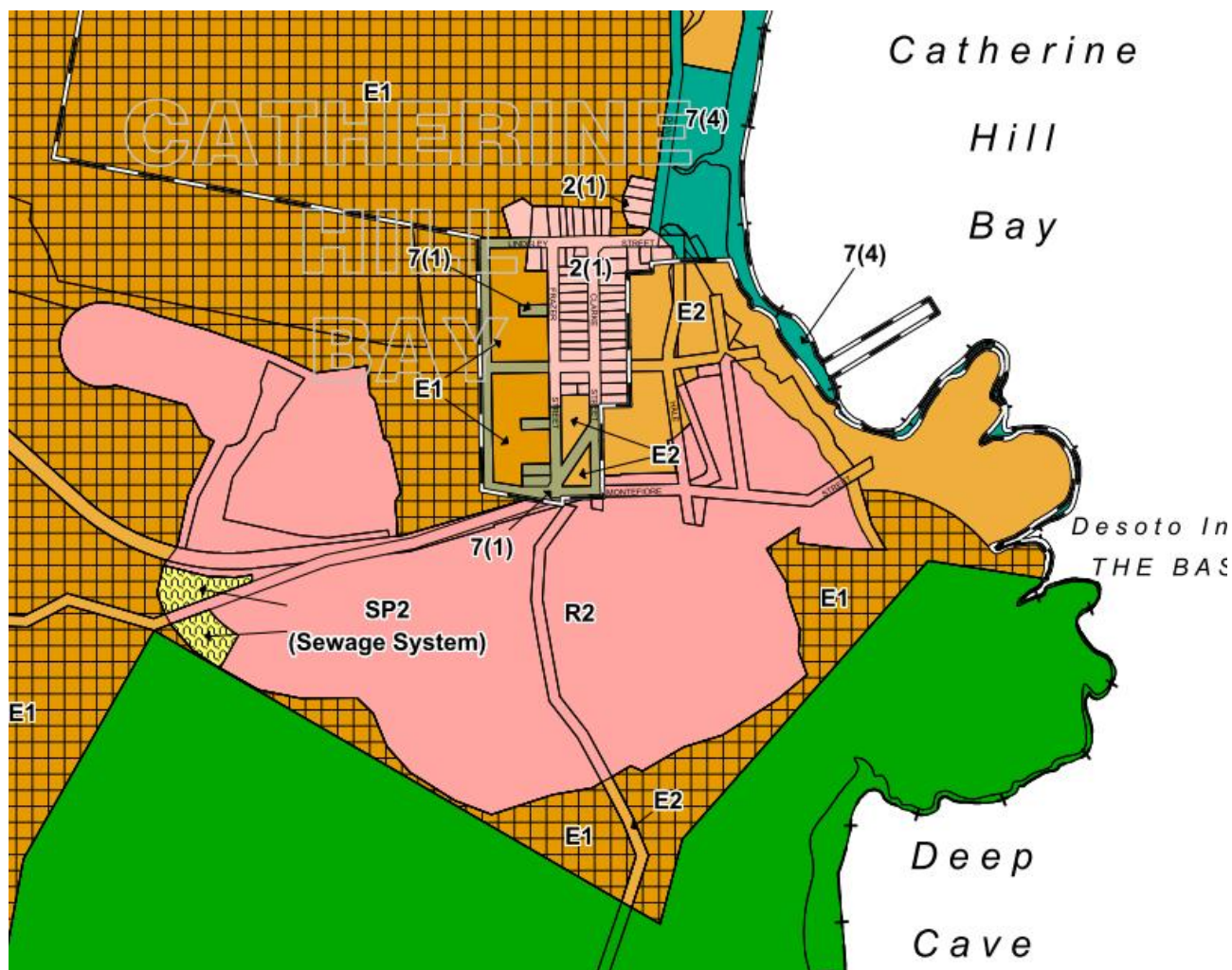


Figure A1.1 Lake Macquarie Local Environmental Plan 2004, South Wallarah Peninsula Part 11

Under Clause 106(1) and (2) of the ISEPP, development for the purposes of sewage treatment plants and water recycling facilities may only be carried out without development consent on land in a prescribed zone or any land that is ancillary to an existing land use. Prescribed zones include land zoned SP2, but not R2 under the ISEPP.

The use of land zoned R2 for irrigation of wastewater effluent generated by residences in the subdivision may be considered an ancillary land use, however; no residences have been built in the subdivision and therefore it may be considered there is no existing land use. It is recommended that legal advice is sought regarding the permissibility of the proposed works in areas zoned R2 and that this issue is clarified in the REF.

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development (SEPP 33) provides for the definition and assessment of industries that may be hazardous or offensive. Section 5.3.1 of the REF provides consideration of SEPP 33 and concludes that the *operation of the STP will use minimal chemical storages and is not consistent with any of the definitions contained within SEPP 33.*

SEPP 33 defines a potentially offensive industry as:

development for the purposes of an industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would emit a polluting discharge (including for example, noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land, and includes an offensive industry and an offensive storage establishment.

As the STP would emit offensive odours if odour controls were not installed, the proposed works are considered to meet the definition of a potentially offensive industry. This is supported by Section 8.1.2 of the REF which states '*in the absence of any mitigation measures*' the proposed development has the '*potential for odour*'.

The odour assessment included in the REF indicates the proposed works can be controlled so that odour impacts are not significant and therefore the STP does not represent an 'offensive industry'. Nevertheless, the assessment and exhibition requirements of SEPP 33 are considered to be applicable (for potentially offensive industry) and the REF should be amended to reflect this.

State Environmental Planning Policy No 71 – Coastal Protection (SEPP 71) applies to the coastal zone in NSW, which includes the site of the proposed development as shown on the figure below.

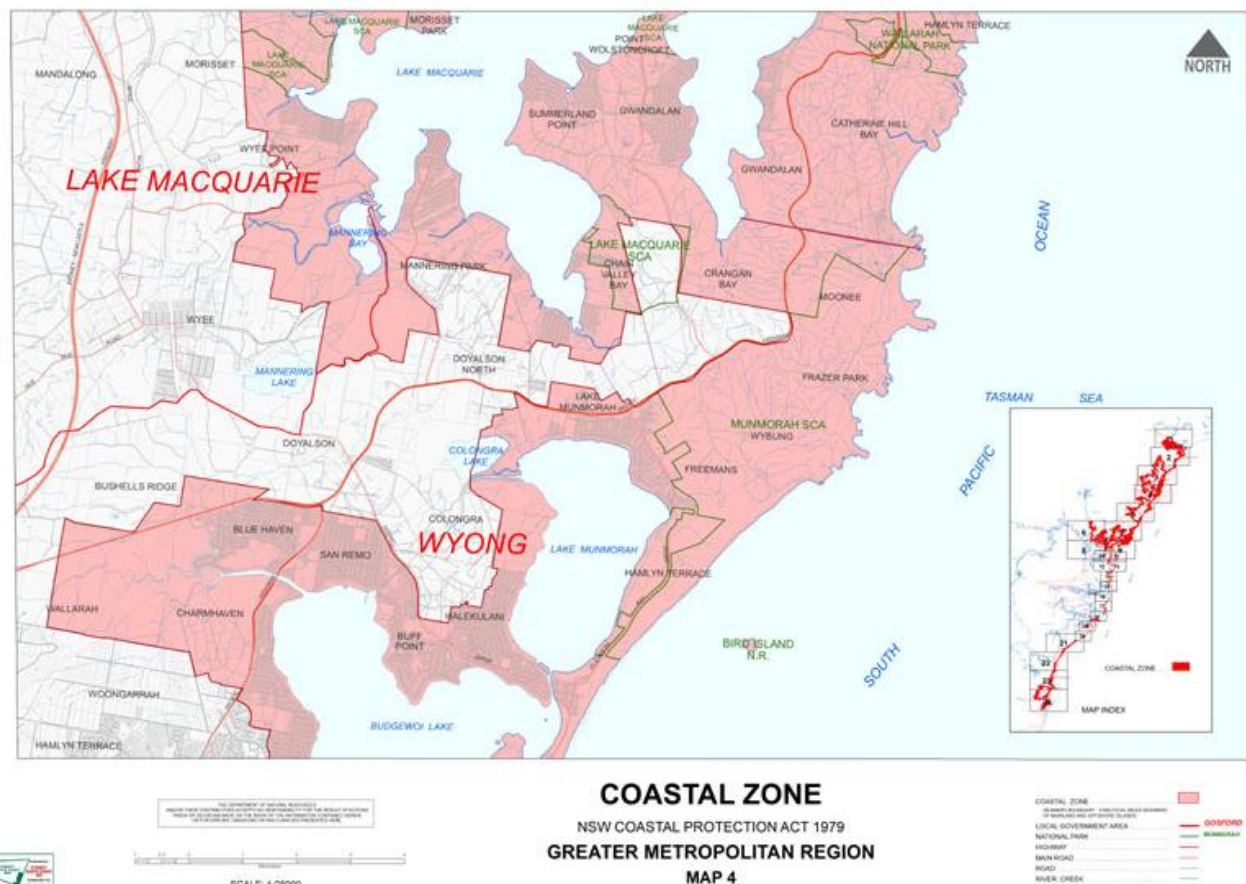


Figure A1.2 NSW Coastal Protection Act 1979, Map 4

Part 2 of SEPP 71 outlines matters for consideration by consent authorities when determining an application to carry out development on land in the coastal zone. These include considerations such as impacts to public access to coastal foreshores, amenity impacts, impacts to coastal processes and the likely impacts of the development on the water quality of coast waterbodies.

In particular, Clause 15 of SEPP 71 states:

The consent authority must not consent to a development application to carry out development on land to which this Policy applies in which effluent is proposed to be disposed of by means of a non-reticulated system if the consent authority is satisfied the proposal will, or is likely to, have a negative effect on the water quality of the sea or any nearby beach, or an estuary, a coastal lake, a coastal creek or other similar body of water, or a rock platform.

The REF has not considered SEPP 71, or the potential for overflows, accidental discharges or pollution of nearby waterways and coastal waterbodies from the proposal. The REF should be amended to consider SEPP 71.

National Parks and Wildlife Act 1974

Section 2.1.3.2 of the REF states that ‘the proposal includes a small run of services across the R2 zoned portion of Lot 204, DP1164883’ and that ‘Appropriate easements will need to be negotiated with the Office of Environment and Heritage to allow these services to cross Lot 204, DP1164883. This requirement is included within the summary of project mitigation measures required’.

It is assumed this commitment is required as the Office of Environment and Heritage (now part of the Department of Planning and Environment) is the owner of this lot. However, Lot 204, DP1164883 is partly

zoned as national park. If the proposed works are located within a national park, then concurrence for the planning approval is required from the National Parks and Wildlife Service.

As the proposed works are located adjacent to Munmorah State Conservation Area, consultation with the National Parks and Wildlife Service is required under Clause 16(2)(a) of the ISEPP. Section 6.3 of the REF shows that this agency was not consulted with in accordance with that policy. National Parks and Wildlife Services need to be consulted with in accordance with the provisions of the ISEPP and any issues raised addressed in the REF.

Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Section 5.1.1 and Appendix B of the REF provide consideration of the EPBC Act and conclude that the proposed works are unlikely to have a significant impact on relevant matters of national environmental significance (MNES) as listed under that act. It is not clear what this conclusion is based on as no details of any MNES relevant to the area are discussed.

It is common for the author of an REF to use the online MNES search tool to identify such issues and append the report produced by the search tool to the REF. It is not clear if the author of the REF used the search tool, but it is recommended that potential impacts to MNES are reconsidered for the REF, particularly as part of consideration of offsite impacts associated with overflows and discharges.

Ancillary licencing and approvals

Requirements of additional or subsequent licencing and approvals are not made clear in the REF. Table 10 lists requirements for approvals as: Road Occupancy Licence, Section 143 notice under the POEO Act, requirement for a Construction Certificate, approval under the *Heritage Act 1977* and a controlled activity approval under the *Water Management Act 2000*. Yet these approvals only appear to relate to activities already approved under the MP10_0204 and are not associated with an impact that is addressed specifically by the REF.

For example, approval under the *Heritage Act 1977* is associated with an impact to a heritage relic or site yet Section 7.8.2 of the REF states that heritage impacts are unlikely and no specific heritage impacts are identified. A controlled activity approval under the *Water Management Act 2000* is associated with works within a waterfront area or waterway, yet Section 7.6.2 of the REF states the only surface water or hydrological impacts from the works would be potential impacts from erosion and sedimentation during construction.

Other licence requirements are listed in the REF, but not included in Table 10. These include approval under the *Mine Subsidence Compensation Act 1961* and a licence under the WIC Act.

The approval requirements for the proposed works need to be confirmed and specified correctly in Table 10 of the REF which is intended to provide a list of all licences and approvals required for the proposed works.

A1.1.5 Terrestrial Flora and Fauna Assessment

Section 2.0 of the Terrestrial Flora and Fauna Assessment appended to the REF states the purpose of the assessment is to assess the 'existing approved development footprint' and covers 'The Waste Water Treatment Plant and Recycled Water 'third pipe' Network – which is located within the existing approved development footprint. Section 7.1.1 of the REF states that: 'The proposed site of the STP is to be cleared in accord with the existing approvals and will be provided as a vacant cleared site for construction of the STP'.

As the STP can or has been cleared under existing approvals, the purpose of the Terrestrial Flora and Fauna Assessment is unclear. The assessment does not cover the proposed effluent irrigation areas, although the clearing of these areas would be covered by existing approvals according to the REF.

The reliance of the Terrestrial Flora and Fauna Assessment on existing approvals is stated on page 128 as follows:

'A seven part test has not been performed for the two scheduled flora species recorded on the site as their removal through the approved residential estate has been permitted and management plans produced for these'.

A review of the Terrestrial Flora and Fauna Assessment against relevant ecology guidelines, procedures and statutory requirements found the following:

- Surveys have not been undertaken in accordance with appropriate flora and fauna survey guidelines (e.g.: Lack Macquarie Council Flora and Fauna Guidelines, 2012, Wyong Shire Council Flora and Fauna Guidelines 2014 or DEC draft working guidelines 2004). On Page 25 reference is made to the DEC guidelines, although no compliance with these guidelines is documented within the report.
- Specific survey dates are not provided, only indicative months.
- No weather data is provided.
- No flora species data or list is provided.
- Flora surveys appear to have been conducted post fire event (as per photos in report). Such surveys would be deemed unreliable due to fire damage to vegetation.
- Limitations (page 48) appear to be referencing a different assessment project (i.e.: ~5 ha site)
- Atlas of Living Australia searches relied on for species local occurrence rather than actual OEH records.
- Surveys for threatened orchid species have not been conducted during recognised flowering period (i.e.: *Caladenia tessellata*, *Cryptostylis hunteriana*, *Diuris praecox*, *Genoplesium insignis*).
- Potential indirect impacts on *Tetratheca juncea* and its habitat have not been considered.
- No Section 5A assessments on threatened flora species have been completed.
- Section 5A assessments are limited to the Squirrel Glider, Grey-headed Flying-fox, Eastern Freetail Bat, Little Bentwing-bat, Eastern Bentwing Bat (Page 128) whilst on Page 79 it is stated that Section 5A assessments will also include the Southern Myotis.
- Section 5A assessments should also be completed for the Wallum Froglet, Glossy Black-Cockatoo, Regent Honeyeater, Swift Parrot, Powerful Owl, Masked Owl, Eastern Pygmy Possum, Yellow-bellied Sheathtailed Bat, Eastern False Pipistrelle and Greater Broad-nosed Bat.
- Table 8 (page 49) states hollow bearing trees are absent from the STP site although the Ecological Features Map (page 12) within the subdivision's Flora & Fauna Management Plan (RPS, January 2014) identifies a hollow bearing tree within this area.
- No arboreal trapping was conducted for the Squirrel Glider or Eastern Pygmy Possum.
- Squirrel Glider was spotlighted during survey. This species was not recorded previously in the 2010 ecological assessment prepared by RPS, so this could be a significant issue.
- Page 4 states that the assessment has regard to Guidelines for developments adjoining land and water managed by the Department of Environment, Climate Change and Water although nowhere within the report is this clearly demonstrated. This is particularly important given the proposed activity is to construct and operate a STP and on-site disposal directly adjoining and upslope of Munmorah State Recreation Park.
- No assessments of significance under the EPBA Act were undertaken for *Caladenia tessellata*, *Cryptostylis hunteriana*, *Tetratheca juncea*, Grey-headed Flying-fox etc.

It is recommended that the Terrestrial Flora and Fauna Assessment is amended to address these issues.

A1.1.6 Definition of impacts

The REF assesses a proposed STP and sewage reticulation network and provides details of lots that will be affected by the proposed works, but does not provide clear figures or descriptions for construction works that may cause disturbance and/or impacts. This is particularly evident for construction activities associated with the proposed sewage reticulation network. The description of the proposed works associated with the sewerage network is provided in Section 3.3 of the REF and is limited to stating that additional pipe networks would be installed. The activities and impacts that the REF is meant to be addressing are not covered by the existing approvals and the REF should be amended to reflect this.

A1.2 Engineering considerations

A1.2.1 Design review

The proposed works, as designed, is a highly efficient and sustainable form of sewage collection, treatment and of effluent reuse. This type of scheme compares positively to a traditional centralised system alternative, as it places an emphasis on source control and inflow reduction, promotes recycled water reuse, minimises discharges to the environment, and uses less energy by treating and recycling locally rather than transferring wastewater long distances.

Such a system does, however, rely on a greater level of control, customer buy-in and operator involvement to ensure it runs as-per design, compared to traditional systems, in all four areas (reticulation, treatment, irrigation and dual reticulation).

The design flow for this system is relatively low compared to traditional sewerage systems. The reticulation and transfer system is partly operated by gravity and partly low pressure. To ensure that inflows to such a system are minimised and that diurnal flows are balanced, it would have to rely on a high level of equipment controls and high construction quality.

Mechanisms proposed for the proposed works include:

- central control of pumps and prioritisation system
- 24 hours storage in pump stations
- alarms and a duty/standby pump configuration that allows for failure of one pump, combined with common pump types with spares readily available nearby
- pressure and flow monitoring at each pump station that will enable the operator to identify leaks and illegal connections.

Stage 1 of the STP provides for six times the predicted average dry weather flow (ADWF) and Stage 2, 1.4 times this flow for wastewater treatment and 1.8 times for recycled water. This approach will allow for gradual proving of the system using monitoring, prior to an application for Stage 3.

The REF describes that if demand for recycled water is less than the assumed 85 kilolitres (kL) per day, then the AWTP process flow would be reduced and MBR and ultraviolet (UV) treated effluent would be used to irrigate the additional irrigation area. The additional irrigable area available is for 1.5 times the Stage 2 design irrigation flow.

A1.2.2 Key issues

The following issues were noted through the design review of the proposed works:

- The REF does not discuss a sensitivity analysis of higher inflows to the pumping stations (i.e. greater than ADWF) for example due to higher summer populations or higher inflows than expected. The Land Capability Assessment risk assessment mentions tanker pump-out at the pump stations. If, however,

the pumps are designed for average rather than peak flows it would be useful to know whether the pumps can be replaced with higher flow pumps within the same pump station. This may be required if inflows occur than are expected following commissioning of the system.

- The construction quality of the low pressure system is described as 'sealed', using fully welded polyethylene (PE) pipe. However there is no mention of the gravity system specification. A 'low infiltration' gravity system is also likely to be required for this system. Rigorous quality testing of the constructed system has been described and should be adhered to, for both the gravity and low pressure components.
- During peak diurnal periods, proper functioning of the proposed sewerage reticulation and treatment system relies on remotely controlling the pump stations. If the communications network fails (whether it is mobile phone network, radio, or cable), local control of pumps overrides. Presumably the local controls would prioritise the pumps to continue to pump sewage to the STP due to the additional capacity of the STP.
- There is no mention of an STP bypass that would be used for emergencies. Instead, the land capability assessment risk assessment refers to tankering from the pump stations, which would be preferable to raw sewage overflows. Although it is not clear if this would be possible to implement.
- The terrain slope of the irrigation area of 10% on average can be limiting for spray irrigation, however the risks of overland flow are acceptably mitigated with the diversion drains, catch drains, buffers etc. These are not specifically shown in the REF.
- The UV system described achieves a high level of disinfection. The land capability assessment suggests the effluent can be chlorinated in the event of UV failure, which may be preferable to an overflow of undisinfected effluent and should be considered in further assessments of overflow impacts for the REF.

A1.3 Other findings

This environmental assessment also identified a number of findings, which are considered to have been inadequately addressed in the REF. The impact of these findings are not as significant as the issues identified in Section A1.1, however it is recommended that the REF address these issues.

- Traffic – the REF considered operational traffic impacts only. Impacts to residents of existing nearby residential areas of increased construction traffic are not considered.
- Aboriginal heritage – the REF bases its assessment of Aboriginal heritage impacts on an Aboriginal Cultural Heritage Management Plan (ACHMP) prepared for MP10_0204, although a specific reference is not provided and this document is not appended to the REF. The REF states that one Aboriginal artefact occurs within the site of the STP, but does not confirm if this site is CHB1 and does not refer to impacts which are assumed to be required for construction of the STP. The ACHMP is based on studies undertaken by ERM in 2007 and Insite Heritage in 2009 and were not included with the Environmental Assessment (EA) for the overall subdivision and hence were not reviewed for this assessment. No additional consultation was undertaken with Aboriginal stakeholders for the REF. The REF should be revised to clarify Aboriginal heritage impacts from the proposed works.
- Consultation should be undertaken with relevant fire authorities and any issues they raise addressed in the REF.
- The Mine Subsidence Board (MSB) has not been consulted with, despite the site being located within a mine subsidence district. The requirement for approval from the MSB is identified in Section 5.2.4 of the REF, but potential issues associated with mine subsidence are not considered. Such issues could include geotechnical instability, mass ground movements and enhanced connectivity with groundwater. Mine subsidence issues should be considered further in the REF.

- Insufficient assessment of potential for cumulative impacts such as other clearing and construction works for the proposed subdivision. The proposed works will provide an essential service for the development of the subdivision, however, the REF provides no details regarding the scheduling of construction works for the STP. The STP and irrigation areas will be constructed in locations that were previously scheduled to be developed after the construction of other Stages of the subdivision. If construction of these areas is to occur simultaneously, cumulative impacts such as enhanced traffic, noise, air quality impacts etc. may affect nearby residents. This should be further assessed in the REF.
- In Section 5.4 and 5.5 of the REF, the maximum height of the STP was stated to be 7.2 metres. Yet in the Visual Impact Assessment included in the REF, states the highest structure for the proposed works is 'Storage Tanks' which are shown to have a maximum height of 6 metres. The Visual Impact Assessment including a detailed viewshed analysis, is based on this maximum height of 6 metres and therefore, if the maximum height of an STP structure is 7.2 metres, would be incorrect. The maximum height of the STP should be clarified in the REF and the Visual Impact Assessment revised accordingly.
- Waste management is not specifically considered in the REF, although offsite disposal of substantial quantities of waste are proposed. For example, the reverse osmosis plant will produce approximately 6,400 litres per day of liquid waste which will require offsite disposal when the STP's evaporation ponds are not available (such as during wet weather). Issues associated with waste management including aims to minimise waste and re-use materials wherever possible should be considered in the REF.

A1.4 Administrative matters

This section details administrative matters identified with the REF that the assessment team consider to be important to address to avoid confusion or make matters clearer in future versions of the REF. These issues include:

- Details of mitigation measures from specialist studies undertaken for the REF are not included or are overly summarised in the REF document. This may cause oversight of these recommendations for future users of the REF. Section 9 includes a summary of commitments and mitigation measures for the proposed works and this should include all commitments made in the supporting studies appended to the REF.
- The REF uses acronyms, technical terms and abbreviations that are not explained in the text. These should be spelt out in full the first time they are used and possibly summarised in a glossary and/or list of abbreviations.
- The REF should provide a clearer map of where the proposed works will be undertaken and more clearly summarise the activities being assessed specifically by the REF. For example, if vegetation clearing and site development activities are covered by an existing approval, the REF should state it relates to a change in land use and different construction activities associated with the proposed works. Clearer maps are provided for the proposed works in the technical documents appended to the REF.
- The REF should consistently refer to the proposed works using the same term such as 'project', 'proposal' or 'activity' for example. The REF was found to use multiple terms for this, which may cause confusion.
- The REF should provide clearer cross reference to appended documents and correctly quote them. For example, in Section 7.4.4. of the REF reference is provided to '*the measures recommended within the construction noise management plan prepared by Vipac Engineers and Scientists*'. This document was found to be an Appendix of a document appended to the REF (Appendix F).
- Cross referencing throughout the REF should be checked and updated where required. For example, the reference to Section 2.6.2 under Section 7.8.1 of the REF is incorrect (it should be 2.6.5).
- The first letter of 'Aboriginal' should always be capitalised. Refer to NSW Department of Community Services '*Use of appropriate language when working with Aboriginal communities in NSW*' (July 2007) for more details.

A1.5 Consideration of Environmental Planning and Assessment Regulation 2000

Appendix B of the REF provides consideration of the factors that must be taken into account concerning the impacts of an activity on the environment listed under Clause 228 of the Environmental Planning and Assessment Regulation 2000. This part of the REF should be revised following consideration of the issues raised in this environmental assessment, as some of the impacts identified in this section are understated.

Specifically, the following factors for consideration should be revised:

- *c. Any environmental impact on the ecosystems of the locality?, f. Any impact on the habitat of protected fauna (within the meaning of the National Parks and Wildlife Act 1974)?, g. Any endangering of any species of animal, plant or other form of life, whether living or on land, in water or in the air? –* these factors should be reviewed following further assessment of potential offsite impacts from overflows and discharges (refer to Section A1.1.2).
- *h. Any long-term effects on the environment? –* the potential for long-term impacts to soil and groundwater from effluent irrigation need to be reviewed and addressed (refer to Section A1.1.1).
- *i. Any degradation of the quality of the environment? –* the impacts of offsite discharges need to be further reviewed and addressed (refer to Section A1.1.1.).
- *j. Any risk of safety to the environment? –* the REF does not clearly identify public safety issues or define measure to manage these (refer to Section A1.1.1.).
- *l. Any pollution of the environment? –* the potential for impacts to on- and offsite areas from effluent irrigation and overflows has not been adequately addressed (refer to Sections A1.1.1. and A1.1.2).
- *m. Any environmental problems associated with the disposal of waste? –* the REF does not provide specific consideration of waste disposal or identify issues that may be associated with disposal of all waste streams (refer to Section A1.2).
- *o. Any cumulative environmental effect with other existing or likely future activities? –* the REF does not adequately consider the potential for cumulative impacts associated with other development activities for the overall subdivision (refer to Section A1.2).

A1.6 Issues raised during public consultation

Table A1.1 Response to issues raised in public consultation

No.	Summary of submissions	Parsons Brinckerhoff's comments
1. Lake Macquarie City Council (LMCC)		
1a	The State Environmental Planning Policy (Infrastructure) (SEPP Infrastructure) provides that a sewage treatment plant and a sewage reticulation system may be carried out on the land by any person licensed under the <i>Water Industry Competition Act 2006</i> (NSW) (WIC Act), without consent.	<ul style="list-style-type: none"> ■ Agreed
	If CHBWU obtains a licence under the WIC Act, no development consent is required under Part 4 of the <i>Environmental Planning and Assessment Act 1979</i> (NSW) (EPA Act) for a <i>sewage treatment plant</i> or a <i>sewage reticulation system</i> .	<ul style="list-style-type: none"> ■ Agreed

No.	Summary of submissions	Parsons Brinckerhoff's comments
	<p>CHBWU's proposal includes the irrigation of treated effluent on land zoned R2, as part of the <i>water recycling facility</i>.</p> <p>The Infrastructure SEPP provides that on land zoned R2, a 'water recycling facility' may only be carried out <i>with</i> consent if it is ancillary to an existing land use.</p> <p>As there is no relevant existing land use where the irrigation scheme is proposed, this aspect of the proposal does not appear to benefit from the Infrastructure SEPP.</p>	<ul style="list-style-type: none"> Agreed, refer to Section A1.1.1. of this assessment
1b	<p>LMCC considers that CHBWU should submit an EIS.</p> <p>For the purposes of section 112 of the EP&A Act and Clause 228 of the EP&A Regulation, it is considered appropriate that reference be made to the provisions of Schedule 3 of the EP&A Regulation – Designated Development.</p> <p><i>29 Sewerage systems and sewer mining systems.</i></p> <p><i>(1) Sewerage systems or works...:</i></p> <p><i>(b) that have an intended processing capacity of more than 20 persons equivalent capacity or 6kL per day and are located:</i></p> <p><i>(iv) within 100m of a natural waterbody or wetland.</i></p> <p>The NSW Government's Hydro-line mapping information shows a watercourse crossing the site, and that the site is within close proximity to a coastal wetland.</p> <p>Where a proposal is designated development, an EIS is required under Part 4 of the EP&A Act. It is considered appropriate that this level of assessment be undertaken under Part 5 of the EP&A Act, and it is suggested that IPART request an EIS of the applicant.</p>	<ul style="list-style-type: none"> Refer to comments under 'Statutory Matters' under Section A1.1.1 of this assessment. It is recommended that further advice is sought regarding the permissibility of the proposed works under the ISEPP. If the proposed works are found to be permissible without development consent under the ISEPP, approval and assessment can occur under the WIC Act. If the proposed works require development consent, then they would meet the definition of 'designated development' under Schedule 3 of the Environmental Planning and Assessment Regulation 2000 and would require development consent and assessment under an EIS.
1c	<p>Air quality and odour:</p> <p>Odour impact on sensitive receptors was assessed using methodology that was broadly consistent with that described in the EPA Approved Methods for the Modelling and Assessment of Air Pollutants in NSW. The impact assessment indicated that sensitive receptors are not likely to be impacted by odour emanating from the development.</p> <p>LMCC notes that control factors were excluded in the odour impact model, and control factors (such as watering, engineering controls, etc.) are often used to reduce the predicted impact of pollutants. Given that control factors will be implemented during operation of the facility, the predicted odour impacts were likely artificially high. It is also noteworthy that the most stringent odour impact criteria of two odour units were used.</p> <p>LMCC has raised concerns regarding the odour emissions factors that were extracted from a paper published by Frechen (2002). The publication was not available for review, and its citation is suspected to be incorrect. Considering the emission rates underpin the assessment, a review of the sources of these rates is recommended. CHBWU should confirm the citation, and more importantly, the validity of the emission rates for the location under investigation, and to ensure that the emissions rates are still considered appropriate given that the study as cited is 13 years old.</p>	<ul style="list-style-type: none"> The Odour Impact Assessment should be revised to address the issues raised in this submission.

No.	Summary of submissions	Parsons Brinckerhoff's comments
1d	<p>Effluent irrigation:</p> <p>CHBWU's proposal to irrigate treated effluent over future residential land (stages 6 and 7) is not a desirable outcome as there is the potential for public health and safety to be compromised by irrigating the treated effluent over land that will subsequently be developed for residential use.</p> <p>In addition, LMCC raises concern regarding the transfer of the reserves and natural areas surrounding stages 6 and 7 of the subdivision. The 'vegetated buffers' are key inclusions in the control of any risk associated with the treated effluent</p>	<ul style="list-style-type: none"> Agreed, refer to comments in Section A1.1.1. of this assessment under 'Public health and safety'.
1e	<p>Stage 3:</p> <p>LMCC does not support the exclusion of Stage 3 from the current assessment. Stage 3 will involve the activation of Stages 6 and 7 of the subdivision, which is likely to require additional treated effluent irrigation area (unidentified at this stage). By excluding Stage 3 assessment, the proponent is unable to demonstrate that the utility can effectively function in the longer term. LMCC's concern is that the water balances for Stage 3 will result in a surplus treated effluent with no available mechanism for disposal.</p>	<ul style="list-style-type: none"> Agreed, mechanisms for transitioning to Stage 3 and impacts associated with Stage 3 are not defined at this stage and therefore the overall impacts of the subdivision are uncertain. We have assumed that the potential exists for Stages 1 and 2 of the STP to be used continually in the long term. The REF provides insufficient means for the long-term analysis and management of impacts from these stages. Refer to Section A1.1.1 of this assessment under 'Effluent Irrigation'.
2. Environmental Protection Authority (EPA)		
2a	<p>EPA has no knowledge of whether CHBWU has breached the <i>Protection of the Environment Operations Act 1997 (POEO Act)</i>.</p>	<ul style="list-style-type: none"> Noted.
2b	<p>EPA advises that if Solo Water intend on irrigating excess wastewater as their disposal option, it is not a scheduled activity under the POEO Act and as a result does not require an Environment Protection Licence (EPL). An EPL is only required if excess wastewater is disposed of to waters, as defined by the POEO Act.</p> <p>The proposal is estimated to have a treatment capacity of 330kL per day or 556EP. An EPL is only required for sewage treatment if the activity has a processing capacity that exceeds 2,500EP or 750kL/day. As a result LMCC becomes the appropriate regulatory authority for environmental issues.</p>	<ul style="list-style-type: none"> Noted. An EPL is not required as the STP will not have a capacity exceeding 750 kilolitres per day or service 2,500 EPs. The STP is designed to overflow in 38% of years during wet weather events. Although the REF does not make is clear where overflows will be directed to, offsite discharges to waterways or the ocean will clearly occur. Offsite discharges will also occur intermittently from dry weather overflows associated with pipe and pump failures and blockages.
2c	<p>If granted, the EPA advise that the WIC Act licence should contain, but is not limited to:</p> <ul style="list-style-type: none"> (i) monitoring and reporting conditions in relation to appropriate soil moisture testing (ii) appropriate rainfall triggers to prevent irrigation during high rainfall periods (iii) annual soil monitoring reports to ensure that the sustainability of the irrigation application area (iv) monitoring of volume and quality at the discharge point to the irrigation area and establishment of water quality and volumetric limits (v) water quality monitoring of any nearby waterways considered at high risks to impacts from the irrigation application area to ensure that impacts are not occurring (vi) definition of the extent and size of the appropriate irrigation application area 	<ul style="list-style-type: none"> It is the responsibility of IPART to determine conditions for any licence approval under the WIC Act. It is suggested Solo Water adopt these requirements and specify that they are implemented in the REF.

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	<p>(vii) surface and groundwater quality monitoring up gradient and down gradient from the irrigation application area to monitor status of surface and groundwater to ensure that irrigation of wastewater is not polluting waters</p> <p>(viii) conditions to ensure that runoff to waters does not occur from the irrigation areas such as limitations on ponding and bunding to prevent any offsite migration or irrigated wastewaters.</p>	
2d	<p>EPA advises you to contact LMCC with regard to their assessment of the risks and local planning requirements with respect to the proposed irrigation of effluent.</p> <p>EPA advises to contact Hunter New England Public Health Unit to seek advice on appropriate limits or conditions in relation to prevention of health impacts</p>	<ul style="list-style-type: none"> It is recommended that Solo Water consult with LMCC regarding environmental regulation of the proposed works, should they be approved. It is recommended that IPART and Solo Water consult with Hunter New England Health regarding the regulation and management of human health associated with the proposed works.
3. Department of Planning and Environment (DP&E)		
3a	DP&E is not aware of any breaches of the EP&A Act by CHBWU or Solo Water.	<ul style="list-style-type: none"> Noted.
3b	<p>A Part 3A approval has been granted for the residential subdivision at CHB. In September 2014, this approval was modified to consolidate some lots to accommodate future sewage infrastructure.</p> <p>This approval stated that the Proponent must separately obtain any relevant approvals and licenses to construct and operate sewage infrastructure. The need for further approvals is dependent on the provisions of the Infrastructure SEPP.</p> <p>The approval, as modified, also indicates that all water and sewer assets are to be designed and constructed as per the requirements of the Water Management Act 2000 and as authorised under the WIC Act.</p>	<ul style="list-style-type: none"> Noted. The REF considers the requirements of the <i>Water Management Act 2000</i> and states that a controlled activity approval may be required for works within 40 metres of a waterway. Although the REF does not identify any specific works that will occur within 40 metres of a waterway.
4. Department of Primary Industries – NSW Office of Water		
4a	The Recycled Water Management Plan to be prepared following DA consent should be prepared in consultation with the NSW Office of Water.	<ul style="list-style-type: none"> It is the responsibility of IPART to determine conditions for any licence approval under the WIC Act. It is suggested Solo Water adopts this requirement and specifies that it is to be implemented in the REF.
4b	<p>Monitoring plans should be developed for Effluent Quality, Recycled Water Quality and the Irrigation Scheme (including monitoring of soil, surface water and groundwater), and should identify thresholds, triggers and response plans for exceedances of thresholds.</p> <p>The plans should enable identification of trends in relation to changing water quality of ground water and surface water, and identify actions to protect the water sources.</p>	<ul style="list-style-type: none"> Agreed. The REF does not include adequate requirements for the monitoring of soils and groundwater in effluent irrigation areas. Refer to Section A1.1.1. under 'Effluent Irrigation'.
4c	<p>Riparian corridors should be established and maintained in accordance with the NSW Office of Water's Guidelines for Riparian Corridors.</p> <p>It is requested that a Vegetation Management Plan be prepared for the riparian corridors in accordance with the NSW Office of Water's Guidelines for Vegetation Management Plans.</p>	<ul style="list-style-type: none"> The REF does not specify where riparian corridors would be established for the proposed works. The REF should be amended to identify any riparian areas that would be established for the proposed works, and adopt this requirement.

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4d	<p>The evaporation ponds associated with the Reject Reverse Osmosis plant are modelled to overflow in 6% of years.</p> <p>Management measures are required to be implemented to avoid/minimise overflows, and to minimise impacts to groundwater, surface water and waterfront land resulting from overflows.</p>	<ul style="list-style-type: none"> It is agreed that a further assessment of offsite discharges should be undertaken and measures are developed to mitigate any impacts. This should be detailed in a revised REF. Refer to Section A1.1.1. under 'Offsite discharge'.
4e	<p>The proposed 2ML wet weather storage tank for treated effluent is predicted to overflow in 38% of years.</p> <p>Management measures are required to be implemented to avoid/minimise overflows, and to minimise impacts to groundwater, surface water and waterfront land resulting from overflows.</p>	<ul style="list-style-type: none"> It is agreed that a further assessment of offsite discharges should be undertaken and measures are developed to mitigate any impacts. This should be detailed in a revised REF. Refer to Section A1.1.1. under 'Offsite discharge'.
4f	<p>The proposal refers to potential offsite discharge of surplus recycled water to either trade waste or the environment, including potential discharge to ocean, sand dunes, groundwater, or Middle Camp Creek.</p> <p>The proponent should provide detailed assessment to show that the proposed discharge option does not result in more than minimal harm to the environment.</p> <p>Appropriate monitoring and reporting parameters must also be determined.</p>	<ul style="list-style-type: none"> It is agreed that a further assessment of offsite discharges should be undertaken and measures are developed to mitigate any impacts. This should be detailed in a revised REF. Refer to Section A1.1.1. under 'Offsite discharge'.
4g	<p>Condition B(24) of the Consent for the subdivision may require modification as Hunter Water will no longer be the Water Supply Authority servicing the site.</p> <p>The proponent may be required to lodge an application for Modification of Minister's Approval under the EP&A Act.</p>	<ul style="list-style-type: none"> It is recommended that Solo Water consults with the Department of Planning and Environment regarding this.
5. Catherine Hill Bay Progress Association – Sue Whyte		
5a	<p>The wastewater treatment plant will impact Catherine Hill Bay (CHB)'s waterways and beach:</p> <p>Stages 6&7 lie above a creek which flows directly onto the Bay's beach.</p> <p>The area designated for spraying is on the northern side of Montefiore Street which slopes down to CHB Creek which flows into the sea at the main swimming beach at CHB. The local Dunecare group has worked along CHB Creek for over a decade removing weeds and planting endemic plants. Also, children swim in this creek!</p> <p>This beach is the only patrolled beach in the area and will remain so as Moonee Beach is considered dangerous.</p> <p>The existence of this creek and the impacts on it are not mentioned in the Review of Environmental Factors. The Association considers this to be a serious omission.</p>	<ul style="list-style-type: none"> It is agreed that a further assessment of offsite discharges and public health risks should be undertaken and measures are developed to mitigate any impacts. This should be detailed in a revised REF. Refer to Section A1.1.1. under 'Offsite discharge'. Further assessments of this issue should include the consideration of impacts from wet and dry weather overflows of sewage to sensitive adjacent areas and public health risks.

No.	Summary of submissions	Parsons Brinckerhoff's comments
	<p>Also of concern is that the stormwater runoff for all of Stage 3 and the proposed shops is to be directed into a detention pond in the village green (located east of the houses on the sea side of Clarke Street in the heritage village). This stormwater runoff also flows directly into the same creek which exits onto the beach and then into the sea.</p> <p>Why does the Review of Environmental Factors not consider the potential for possible contaminated (pollutants, minerals and fertilisers) surface water to flow into this creek and onto the beach, as well as into the ocean?</p>	<ul style="list-style-type: none"> ■ Impacts associated with stormwater discharge and development of Stage 3 of the overall subdivision were subject to an environmental assessment which has been assessed and approved by the NSW Planning and Assessment Commission (PAC) under the <i>Environmental Planning and Assessment Act 1979</i> (refer to majorprojects.planning.nsw.gov.au MP 10-0204). ■ As these issues have been previously assessed and approved, they were not reviewed for this assessment.
5b	<p>Contradictory height figures:</p> <p>The Application states a number of times "No structure associated with the STP will exceed 7.2m in height".</p> <p>Whereas the Visual Impact Assessment, Catherine Hill Bay Development WWTP Site and Associated Infrastructure prepared for Rosegroup Pty Ltd by Planit Consulting Pty Ltd, June 2014 states, "The physical structures located within the northern portion of the WWTP site consist of a shed (5.10m above pad level), and storage/treatment tanks with a maximum height of 6.0m".</p> <p>This height of 6.0m is mentioned a number of times within this document and is used as the basis for shed analysis, "This height data has been used to generate a view shed analysis of the WWTP. Elevation data (Aster GDEM Elevation data 2012) has been used to determine the potential view shed for these elements" (Figure 5).</p> <p>Such contradictory figures bring into question the accuracy of the view shed analysis.</p>	<ul style="list-style-type: none"> ■ It is not clear where the reference to a 7.2 metre height restriction has come from. A height limit of 9 metres applies to the area of the subdivision that the STP will be constructed on. ■ As the visual impact assessment for the REF indicates that a maximum height of 6.0 metres was used for its detailed visual analysis, the maximum height of the STP should be confirmed in the REF and the visual impact assessment amended if required.
5c	<p>Incorrect assessment of the potential visual impact on the State Heritage Listed Town of Catherine Hill Bay.</p> <p>"The Area of investigation (AOI) is located on the southern side of Montefiore Street at the western edge of the proposed development footprint ...The AOI is bound to the south by the Munmorah State Conservation Area and to the east by the proposed residential lots of the CHB development (Stage 6&7)"</p> <p>Stages 6 & 7 are north, not east, and are overlooked by a high ridgeline further to the north that separates the two villages of Catherine Hill Bay.</p> <p>This ridgeline is included in the heritage curtilage and yet views from this ridgeline are excluded from this Visual Impact Statement.</p> <p>It is incorrect to say "The visual catchments for the CHB are made up of two distinct primary regions, VCA1 Catherine Hill Bay VCA and VCA2 Moonee VCA. These regions are defined largely through topography with the main site ridgelines acting as the perimeter of VCA2.'</p> <p>It is acknowledged that there is "an additional VIA referred to as Middle Camp Landscape Unit 'to the north of VC1. Given the distance of this VIA from the area of investigation (1.62km), coupled with the topographic features and existing vegetation characteristics of the "Catherine Hill Bay VCA (VCA2) the VCA of Middle Camp is not investigated further in this report."</p>	<ul style="list-style-type: none"> ■ This assessment is based on a desktop review of the studies undertaken for the proposed works, which include a detailed Visual Impact Assessment. The Visual Impact Assessment is based on three-dimensional modelling of terrain data, which concludes that visual impacts from development of the STP site will not be visible from the existing Catherine Hill Bay village due to intervening topography. It is beyond the scope of this assessment to check if this conclusion is correct. It is recommended that Solo Water provide a response to the issues raised in this submission.

No.	Summary of submissions	Parsons Brinckerhoff's comments
	<p>This is a convoluted way of saying that the heritage township which includes the 2 villages and the high ridge that separates them, itself part of the heritage township, is not worth examining. This analysis is incomplete. This should be one of the major areas of analysis in this study if it is to have any validity.</p> <p>This Visual Impact Assessment is only looking at the visual impact on the Rosegroup residential development. It is completely ignoring the fact that this development is adjacent to a State Heritage Listed Township which has always sought to be visually separate from this new development.</p> <p>The State Government approval for this new residential development makes it absolutely clear that there must not be a visual impact on the Heritage Listed Town of Catherine Hill Bay.</p> <p>The proposed waste treatment plant dimensions show there will be a most noticeable visual impact on the heritage township.</p> <p>Because of the potential visual impact of the proposed waste water treatment plant on the State Listed Heritage Town of Catherine Hill Bay, we ask that the Visual Impact Assessment prepared by Planit for Rosegroup Pty Ltd be forwarded to the Heritage Office for their consideration."</p>	

Attachment B

Review of Rev D of the REF

B1. Review of Rev D of the REF

Table B1.1 Review of revised REF

No.	Required amendment to REF (from initial review)	Background information and IPART comments (from initial review)	Adequately revised?	Comments (based on Parsons Brinckerhoff's review of the revised REF)
1. Engineering design (refer to Section 4.2 of Parsons Brinckerhoff's report in Attachment C)				
1a	<p>The construction quality of gravity pipes should be confirmed in the REF, as has been done for low-pressure pipes.</p> <p>The REF should include commitments for quality testing of the proposed works during commissioning.</p>	<p>The system relies on a high level of control, customer buy-in and operator involvement to ensure it runs as-per design, compared to traditional systems, in all four areas (reticulation, treatment, irrigation and dual reticulation).</p> <p>The design flow for this system is relatively low compared to traditional sewerage systems. The reticulation and transfer system is partly operated by gravity and partly low pressure. To ensure that inflows to such a system are minimised and that diurnal flows are balanced, it would have to rely on a high level of equipment controls and high construction quality.</p> <p>The construction quality of the low pressure system is described as 'sealed', using fully welded polyethylene (PE) pipe. However, there is no mention of the gravity system specification. A 'low infiltration' gravity system is also likely to be required for this system. Rigorous quality testing of the constructed system has been described and should be adhered to, for both the gravity and low pressure components.</p>	Yes	<ul style="list-style-type: none"> ■ Details of construction quality for gravity pipes and commitment for quality testing provided in Section 3.2.2. ■ Concept designs for the reticulation network provided in Appendix R of the REF. ■ Inspection and test plan to be used for the proposed works is provided in Appendix S of the REF.
	<p>The REF does not discuss a sensitivity analysis of higher inflows to the pumping stations (i.e., greater than ADWF) for example due to higher summer populations or higher inflows than expected.</p>	<p>The Land Capability Assessment risk assessment mentions tanker pump-out at the pump stations. If, however, the pumps are designed for average rather than peak flows it would be useful to know whether the pumps can be replaced with higher flow pumps within the same pump station. This may be required if inflows occur than are expected following commissioning of the system.</p>	Yes	<ul style="list-style-type: none"> ■ Response from Solo Water: <i>'Each E-one pump is capable of delivering approximately 0.5 L/s on an instantaneous basis, which is substantially higher than ADWF. At ADWF the pumps will run for approximately 1 to 2 hours per day, hence the network is capable of delivering substantially higher than ADWF to the WWTP if required'.</i>

No.	Required amendment to REF (from initial review)	Background information and IPART comments (from initial review)	Adequately revised?	Comments (based on Parsons Brinckerhoff's review of the revised REF)
	<p>The REF should address issues associated with equipment failures, such as communication and electricity supply failures. Pump station operation, Sewage Treatment Plant (STP) bypass and emergency pump out locations should be clarified for this issue.</p>	<p>During peak diurnal periods, proper functioning of the proposed sewerage reticulation and treatment system relies on remotely controlling the pump stations. If the communications network fails (whether it is mobile phone network, radio, or cable), local control of pumps overrides. Presumably the local controls would prioritise the pumps to continue to pump sewage to the STP due to the additional capacity of the STP.</p> <p>There is no mention of an STP bypass that would be used for emergencies in the REF. Instead, the land capability assessment risk assessment refers to tankering from the pump stations, which would be preferable to raw sewage overflows. Although it is not clear if this would be possible to implement.</p>	Yes	<ul style="list-style-type: none"> Table 4 of the revised REF provides detailed consideration of infrastructure failure for each component of the proposed scheme. This table also includes details of how contingency for infrastructure failure has been built into the design for the scheme, for each component considered. Also provided is a commitment for development of Emergency Response Plan(s) for each item. Table 4 states that sewerage system design would mitigate power or communication system failure by providing 24 hour storage at each pump station, fail safe mode and ability for pump out by tanker at each pump station. Solo Water have further clarified: <i>'During a control system failure the E-One pumps have a standard fail safe that ensures the pumps still operate at high level. If too many pumps operate simultaneously, the pumps have an automatic high pressure cut out using a metallic heat strip that will restrict the number of pumps in operation simultaneously. E-one pumps were selected because they have an inherent fail safe included as standard so the system can function during a control system or communications systems failure'.</i> Table 4 shows that a designated bypass or overflow would not be constructed at the STP, instead in emergencies, road tanker pump-out would be used and the STP would have spare capacity ('0.5 m freeboard') to reduce the risk of overflow. Solo Water have further clarified that in the event of an uncontrolled overflow (which would be unlikely due to design contingencies), overflows would be collected by the site's stormwater management system, enabling it to be collected rather than discharged to off-site locations. Pump out points are identified in Section 3.7.3.1 of the REF. Discharge points are identified in Section 3.7.3.2.

No.	Required amendment to REF (from initial review)	Background information and IPART comments (from initial review)	Adequately revised?	Comments (based on Parsons Brinckerhoff's review of the revised REF)
2. Effluent irrigation (refer to Section 4.1.1 of Parsons Brinckerhoff's report in Attachment C)				
2a	<p>Vegetated buffer areas, fencing and access to the proposed for irrigation areas are not reliably defined and this needs to be addressed in the REF. Fencing type and any other security measures to be undertaken need to be specified.</p> <p>The REF should specify where operational flow controls, such as diversion and catch drains will be located in or adjacent to irrigation areas.</p>	<p>The REF states that public health risks will be minimised through the implementation of vegetated buffers and perimeter fencing around effluent irrigation areas and the STP. Figure 1 of the REF shows these areas, although a footnote to the figure states the figure is '<i>Illustrative only. Not to scale</i>'. The figure presented is very small (approximately 20% of an A4 page) and is low resolution, with text that cannot be read. An A3 copy of this plan is included in the Integrated Water Management Plan appended to the REF, although this plan states it is '<i>Concept Not for Construction</i>'. Neither copy of the plan identifies where perimeter fencing will be placed or where access to the irrigation areas will be achieved. No other details of buffer areas and fencing are provided in the REF.</p>	Yes	<ul style="list-style-type: none"> ■ Appendix R of the revised REF includes a detailed Irrigation Area plan that defines vegetated buffer areas, clean diversion water drains, catch drains, scour protection sites, gates and security fences. Surface and groundwater monitoring locations are also specified. ■ Appendix R also provides specifications for safety signage providing warning of effluent irrigation areas.
2b	<p>Measures to educate and warn members of the public about risks of coming into contact with effluent need to be implemented, particularly for future residents immediately adjacent to the irrigation fields. Long-term issues associated with constructing residential developments on areas previously used for effluent irrigation also need to be considered, although it is acknowledged that this may be more appropriate to consider during the assessment of Stage 3 of the STP.</p>	<p>It is assumed that public access to the effluent irrigation areas will be restricted, however; this is not adequately demonstrated and the risk of members of the public coming into contact with effluent in irrigation areas is not considered in the REF.</p>	Yes*	<ul style="list-style-type: none"> ■ Sections 3.4 and 3.5 provide details of site security that would be implemented for irrigation areas. Appendix R provides detailed plans for fencing of irrigation areas. ■ The measures specified in the REF rely on signage on boundary fencing to inform residents or visitors to the subdivision that the area is used for effluent irrigation. ■ Solo Water have further clarified that the risk of irrigated effluent coming into contact with adjacent residential areas is low due to the use of spray drift controls, physical separation of at least 70 metres and irrigation scheduling. ■ Nevertheless, it is considered possible that residents of adjacent areas could enter the restricted irrigation areas and come into contact with effluent and hence in the reviewers opinion, all adjacent residents should be informed of the risks of this and what to do if they come in contact with effluent (i.e. wash, monitor their health and seek medical assistance if required).

No.	Required amendment to REF (from initial review)	Background information and IPART comments (from initial review)	Adequately revised?	Comments (based on Parsons Brinckerhoff's review of the revised REF)
				Recommendation <ul style="list-style-type: none"> Residents living in areas adjacent to irrigation areas should be provided with specific information about the risks of coming into contact with irrigation effluent and what to do if this occurs. This could be in the form of a letter, pamphlet or similar. This letter should be provided to any new residents moving into areas adjacent to irrigation areas. As recommended by the EPA in their response to public exhibition of the original REF, consultation should be undertaken with Hunter New England Health regarding the prevention of public health issues from the project.
2c	<p>As the predicted effluent quality from the STP does not meet all the criteria for 'low strength effluent' and under these guidelines and will have a water salinity rating of 'medium', it is recommended that the adequacy of the wet weather storage of the STP be reviewed and confirmed with the Environmental Protection Authority (EPA). The use of the guideline recommendations for 'low strength effluent' in the land capability assessment should also be reviewed and the study revised as appropriate.</p> <p>The DEC 2004 guidelines are not entirely specific in providing limits for effluent overflows. The overflow frequency limit is loosely described within an appendix explaining how DEC's Effluent Re-use Irrigation Model (ERIM) was constructed. A limit of overflows in 50% of years could be appropriate considering the quality of the effluent, but this will depend on further assessment of the impact of overflows on the receiving environments.</p>	<p>Section 7.1 of the land capability assessment outlines the quality of the produced effluent used for irrigation. This section states that the water meets the definition of 'low strength effluent' under the <i>Guidelines for Effluent Irrigation</i> (Department of Environment and Conservation (DEC) 2004)).</p> <p>The effluent is expected to have a Total Dissolved Solid (TDS) concentration of up to 1,000 mg/L, which exceeds the DEC 2004 guideline definition for low strength effluent of 600 mg/L. Section 7.1 of the land capability assessment states that, under the DEC 2004 guidelines, 'schemes involving irrigation of 'low strength' effluent are permitted to an overflow discharge from the wet weather storage in 50% of years'.</p>	Yes	<ul style="list-style-type: none"> The revised REF includes is based on a revised TDS concentration of the MBR effluent, of 600 mg/L on average (all figures revised, in REF and in Land Capability Assessment). This is appropriate for domestic sewage through an MBR, and is consistent with the criteria for 'low strength effluent' in the Guidelines. Solo Water have further clarified: <i>"The TDS concentrations in the NSW Effluent Irrigation Guideline are average annual concentrations. The concentration of up to 1000mg/L TDS in the (original) REF, IWMP and Land Capability Assessment is a maximum value, not an average annual.</i> <i>CHB is a residential catchment with no industrial inputs or potential for sea water intrusion into the sewers, hence the average annual TDS will be below 600mg/L when measured from the MBR permeate tank.</i> <i>Short term spikes in TDS are possible for short periods of time and will occur, as is the case with all sewerage systems, however on an average annual basis the TDS will be below 600mg/L, which is consistent with the EPA guideline.</i>

No.	Required amendment to REF (from initial review)	Background information and IPART comments (from initial review)	Adequately revised?	Comments (based on Parsons Brinckerhoff's review of the revised REF)
				<p><i>TDS will be continuously monitored and recorded on the permeate discharge line from the MBR as well as in the 2ML Wet Weather Storage Tank. If the average annual TDS is above 600mg/L TDS will be controlled by potable water shandyng, or in Stage 2 through operation of the Reverse Osmosis plant included in the WWTP."</i></p> <ul style="list-style-type: none"> ■ Solo Water have clarified that the water balance model for CHB showing overflows in 38% of years is in line with interpretations of the DEC 2004 Guidelines that has been accepted previously by the EPA.
2d	<p>The REF should further consider the potential for impacts to groundwater aquifers, and surface and groundwater users in the area from irrigation of effluent. Impacts such as increased salinity or nutrient load and changes to water table levels should be quantified.</p>	<p>Section 7.5.1 of the REF states that 'Groundwater is expected to occur at depth in the rock strata that underlies the site '. The depth to rock strata is not stated. Section 7.5.2 of the REF highlights that the proposed works have the potential for 'deep percolation' of 'reject RO storage' and 'irrigated wastewater' to groundwater aquifers and this may result in anaerobic soil conditions.</p> <p>No measures are proposed to mitigate or measure these impacts. It is assumed that the anaerobic soil conditions referred to in this section would be a result of elevated groundwater levels.</p>	Yes	<ul style="list-style-type: none"> ■ The REF has been revised to include an assessment of the existing ground water depth and quality, from two boreholes. There is little difference between the quality of the deep percolated irrigation effluent compared to the existing groundwater for TDS, Total N, Total P: <ul style="list-style-type: none"> ▶ For Total Nitrogen: quality of deep percolation irrigation water (0.1mg/L of deep recharge; refer MEDLI results) similar to existing groundwater (0.01 to 0.7mg/L) ▶ For Total Phosphorus: quality of deep percolation irrigation water (0.0mg/L of deep recharge; refer MEDLI results) similar to existing groundwater (<0.05mg/L) ▶ For TDS: quality of deep percolation irrigation water (600mg/L treated effluent quality, assuming no uptake by plants) similar to existing groundwater (590-890mg/L) <p>This demonstrates that groundwater contamination impacts from irrigation water, assessed as negligible in Table 5.1 of Appendix L, are justified.</p>

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				<ul style="list-style-type: none"> ■ The REF states that <i>'The potential to contaminate the aquifer with salts due to irrigation activities is therefore negligible given the irrigation effluent will have a similar Total Dissolved Solids to the background water conditions'</i>. This section of the REF also states <i>'Irrigation activities are not expected to impact on nutrient concentrations in groundwater given the average rate of 1mm/day and plant uptake accounts for all nutrients applied'</i>. Further to this, the MELDI modelling undertaken as part of the Land Capability Assessment for Effluent Irrigation indicates that all nutrients applied through irrigation will be managed through plant uptake and soil absorption, with no nutrients going into groundwater, as long as irrigation scheduling controls are applied. ■ Section 7.5 and Appendix C of the revised REF include more discussion on groundwater conditions, mitigation measures for perched water storage and irrigation rates. ■ Section 7.6 and Appendix C of the revised REF include more discussion of surface water conditions and irrigation rates and measures to ensure perched water storage will not overtop. ■ Anaerobic soil conditions and or groundwater contamination are unlikely to occur from the RO reject storage because the RO Reject ponds are HDPE lined with level sensors. ■ Anaerobic soil conditions are unlikely to occur as a result of irrigation activities because the soil is never irrigated up to the point of soil saturation.
2d	This should include consideration of the NSW <i>Aquifer Interference Policy</i> and Water Sharing Plan for the Central Coast Unregulated Water Sources 2009.		No	<ul style="list-style-type: none"> ■ The revised REF does not provide consideration of the NSW <i>Aquifer Interference Policy</i> and Water Sharing Plan for the Central Coast Unregulated Water Sources 2009.

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				<p><i>Aquifer Interference Policy</i></p> <ul style="list-style-type: none"> ■ The Aquifer Interference Policy applies to projects that have the potential to intercept or interfere with water in an aquifer. As the project is considered to have potential groundwater impacts, the policy needs to be considered. ■ The policy states that '<i>an assessment of aquifer interference activities seeking approval under the Environmental Planning and Assessment Act 1979 will be made on a case by case basis for each particular project in accordance with this policy</i>'. As stated in Section 5.2.1 of the REF, assessment of the project is required in accord with Part 5 of the EP&A Act, and therefore the policy applies to the project. ■ The project may meet the definition of a minimal impact activity under this policy, although this should be confirmed in the REF. <p><i>Water Sharing Plan for the Central Coast Unregulated Water Sources 2009.</i></p> <ul style="list-style-type: none"> ■ This plan applies to the project site and this should be confirmed in the REF. ■ The objectives of this plan include the protection of river flow dependent ecosystems and equitable sharing between water users. ■ The revised REF does not show evidence that impacts to existing water users have been considered. Existing water users have not been identified (within or outside the subdivision). This should be reviewed by Solo Water and confirmed in the REF. <p>Recommendation</p> <ul style="list-style-type: none"> ■ Solo Water should consider the applicability of the Aquifer Interference Policy and Water Sharing Plan for the Central Coast Unregulated Water Sources 2009 to the project, address this in the REF and consult with NOW if required.

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2d	<p>The REF should be amended to include commitments for the monitoring and review of soils, surface water and groundwaters in areas potentially affected by effluent irrigation, including downstream environments. This should include background monitoring and consider the DEC 2004 effluent irrigation guidelines which recommend the following in relation to monitoring:</p> <p>'A program of continuous monitoring and progressive modification might be necessary to correct design flaws and deficiencies, and to adjust the system as more complete information on the site becomes available, accommodating changes in operation over time.' Section 1.4.</p> <p>'An effective effluent irrigation system will include:</p> <p>a monitoring system to measure, record and identify any action to ensure the environmental performance of the system'. Section 5.</p> <p>Section 5.3 of the guidelines provides detailed recommendations for effluent irrigation monitoring programs, including monitoring design and frequency parameters.</p> <p>The REF should also define impact triggers, reporting and review requirements and response actions for soil and groundwater monitoring for effluent irrigation.</p>	<p>Section 7.5.1 of the REF states that '<i>Groundwater is expected to occur at depth in the rock strata that underlies the site</i>'. The depth to rock strata is not stated. Section 7.5.2 of the REF highlights that the proposed works have the potential for '<i>deep percolation</i>' of '<i>reject RO storage</i>' and '<i>irrigated wastewater</i>' to groundwater aquifers and this may result in anaerobic soil conditions. No measures are proposed to mitigate or measure these impacts. It is assumed that the anaerobic soil conditions referred to in this section would be a result of elevated groundwater levels.</p> <p>Appendix F of the land capability assessment (Sewerage Preliminary Risk Assessment), under <i>Stage 1 temporary, restricted access Irrigation System continued... Percolation to groundwater</i>, it is stated that '<i>No groundwater within 3 metres of geotechnical investigation</i>'. It is therefore assumed that groundwater may exist at depths of up to three metres below the irrigation area. The potential for increasing existing groundwater levels through the irrigation process are not adequately assessed in the REF. It is merely stated that this may occur.</p> <p>The land capability assessment shows that leaching of salts from irrigated effluent will occur, reducing build-up of salts in the soils of the irrigation area. The potential effects of this on underlying groundwater aquifers are not assessed. Groundwater and other water users that may exist in surrounding areas and be affected by these processes are not identified in the REF.</p>	Yes*	<ul style="list-style-type: none"> ■ Solo Water should confirm in the REF, the potential for impacts to existing surface and groundwater users in areas surrounding the project. ■ Section 7.5 of the REF has been revised to further consider potential groundwater impacts and impacts to water users. This includes consideration of additional geotechnical studies undertaken since the original REF was completed and data obtained from two groundwater monitoring bores installed to the north of the irrigation area. ■ The groundwater monitoring bore locations appear to have been selected as they are downgradient from the irrigation areas and will therefore show impacts to aquifers within and surrounding the irrigation areas. The DEC effluent irrigation guidelines recommend groundwater monitoring should occur within crop planting areas, although hydraulic gradients should be considered when determining monitoring locations. ■ The EPA submission to the original draft REF (refer to Table 2.2) states that the project should be required to undertake up-gradient and down-gradient groundwater monitoring. ■ Solo Water confirmed that the project is not considered to have potential to cause anaerobic soil conditions, as the irrigation process will not irrigate the soil to the point of saturation. ■ Sections 7.5.3, 7.6.3 of the revised REF and Section 9.3 of the Appendix C detail an environmental monitoring program that would be implemented for the project. This includes the following: <ul style="list-style-type: none"> ▶ Ongoing visual inspections of turf and irrigation area vegetation. ▶ Biomass analysis of irrigation area vegetation if plant health issues are observed.

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		<p>Nutrient modelling undertaken for the land capability assessment determined that the proposed irrigation has negligible potential to change soil nutrient levels, although it was noted this is dependent on soil moisture conditions and the final soil conditions following importation of fill material. Potential issues associated with soil contamination by pollutants that are not completely removed by the wastewater treatment process are not considered in the REF.</p> <p>The REF provides no measures for the long-term monitoring of soil and groundwater that may be affected by the proposed irrigation process. No measures are proposed to monitor potentially affected sensitive environments that may be located adjacent to or downstream of irrigation areas.</p> <p>No commitments for soil, effluent or groundwater monitoring are provided in the REF, although a commitment is made to adhering to the recommendations of the land capability assessment.</p>		<ul style="list-style-type: none"> ▶ Quarterly groundwater monitoring at the two monitoring bores installed to the north of the irrigation area (to include water chemistry, faecal coliforms, conductivity and water levels). ▶ Quarterly surface water monitoring at Dams 1 and 2 to the north of the irrigation area (assumed to be sedimentation dams) (to include water chemistry, faecal coliforms, BOD and conductivity). ▶ Annual soil monitoring within irrigation areas (to include: basic soil chemistry, CEC, total carbon and indicators of salinity). <ul style="list-style-type: none"> ■ The DEC 2004 effluent irrigation guidelines specify monitoring requirements, and these are currently not met by the revised REF, these include: <ul style="list-style-type: none"> ▶ Surface water: oxidised Nitrogen and ammonia, plant available Phosphorous ▶ Groundwater: cations, nitrate, plant available Phosphorous ▶ Soils: nitrate, available Nitrogen (after 3 years), heavy metals and pesticides (after 10 years), Phosphorous sorption capacity (after 3 years, if results indicate this is required). ■ A commitment is included in Section 9.3 of Appendix C for an annual review of all monitoring data by an appropriately qualified environmental consultant to determine the impacts of the project on the environment. This will be informed by baseline data currently being obtained. The revised REF includes commitments for this report to be implemented. ■ The revised REF does not define impact trigger values or responses. As a baseline water quality monitoring program is currently in progress, it is recommended that these be developed based on the outcomes of this program and included in the projects' Operational Management Plan or Recycled Water Management Plan.

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				Recommendations <ul style="list-style-type: none"> Up-gradient groundwater monitoring should be undertaken as part of groundwater monitoring. The REF should be revised to include the commitment to analyse the full suite of analytes required under Section 5.3 of the DEC 2004 Effluent Irrigation Guidelines. Impact trigger levels for surface water, groundwater, soil chemistry, salinity, and groundwater levels should be developed based on the results of the baseline monitoring program currently being undertaken. Procedures for responding to and reporting exceedances of these trigger values should be developed and specified in the Operational Management Plan or Recycled Water Management Plan for the project.
2e	<p>The REF should include consideration of the risk of failure of vegetation in irrigation areas. This may include prolonged periods of inactive plant growth, during which enhanced percolation of nutrients and water may occur to groundwater, or run-off of effluent to adjacent areas may occur.</p> <p>Issues associated with seasonality of sewage inflows and plant growth should be addressed.</p> <p>Vegetation management practices in irrigation areas also needs to be detailed, such as how vegetation would be monitored, managed and any green waste disposed of.</p>	<p>The REF does not examine the potential for failure of vegetation in the irrigation areas to maintain adequate levels of transpiration and nutrient absorption. If prolonged period of inactive plant growth occur, high nutrient loads may percolate to the groundwater table or reach sensitive environments in surface water run-off.</p> <p>The potential for seasonal use of the subdivision and high fluctuations in effluent flow may make it hard to sustain vegetation in irrigation areas. There is no mention of the planting and harvesting cycles and how fluctuations could be managed.</p> <p>The REF also does not address how green waste from irrigation areas would be managed, such as whether grass crops would be slashed regularly and green waste removed (thus removing nutrients from the site) or if a mulching system would be used that would retain nutrients to enrich the soil.</p>	Yes	<ul style="list-style-type: none"> Crop failure is partially addressed in the Environmental and Public Health Risk Assessment contained within Appendix F of Appendix L of the revised REF, although it is noted that a mitigated risk ranking is not provided. The unmitigated risk ranking is assessed as 'high'. The consideration of crop failure provided in the revised REF focuses on low water availability and states that MEDLI modelling, high rainfall at the site and the use of potable water for watering during dry periods will sustain crops. No consideration is given to seasonality of growth or seasonal inflows. Although Solo Water state that ongoing monitoring will verify water balance assumptions and if required, adjustments will be made as the system develops. Section 3.5.3 of the revised REF provides a brief description of irrigation area green waste and states that irrigation areas will be moved and maintained. Green waste will be disposed of at the nearest composting facility.

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				<ul style="list-style-type: none"> ■ Section 9 of Appendix L of the revised REF provides a more detailed description of the maintenance and monitoring activities that would be undertaken in the irrigation areas, which would include: <ul style="list-style-type: none"> ▶ Frequent mowing ▶ Weekly inspections of irrigation system ▶ Weekly inspections for run-off, surface ponding or drainage issues ▶ Weekly inspections of vegetation for signs of plant stress – if plant stress is observed, a specialist would be engaged and a biomass analysis undertaken to identify the cause ▶ Weekly inspections of fencing and signage ▶ Weeding of the area and buffer zones.
3. Offsite discharge (refer to Section 4.1.2 of Parsons Brinckerhoff's report in Attachment C)				
3a	<p>Discharge points associated with the STP and sewerage system should be identified and potential impacts reviewed and mitigated where required. Potential impacts from overflows could include impacts to sensitive wetlands and coastal environments located in adjacent areas and public health risks.</p> <p>Backup treatment processes, such as chlorination in the event of UV failure (as referred to in the land capability assessment), should be assessed for minimising overflow impacts.</p> <p>There is potential for dry weather overflows from the proposed works, should the STP suffer an accidental malfunction or the sewerage system becomes blocked. These issues should be identified and considered in the REF.</p>	<p>The terrain slope of the irrigation area of 10% on average can be limiting for spray irrigation, however the risks of overland flow are acceptably mitigated with the diversion drains, catch drains, buffers etc. These are not specifically shown in the REF.</p> <p>The UV system described achieves a high level of disinfection. The land capability assessment suggests the effluent can be chlorinated in the event of UV failure, which may be preferable to an overflow of non-disinfected effluent.</p>	No	<ul style="list-style-type: none"> ■ Controlled wet weather overflows of irrigation quality effluent are still predicted to occur from the project in 38% of years, due to the unavailability of irrigation areas in wet weather. Overflows are assumed to occur from the wet weather balance tanks, however the discharge point for these overflows is not defined in the revised REF. Potential impacts from controlled releases of effluent are not considered in the REF. It is likely that controlled wet weather overflows will discharge into the development's drainage system, which, as identified by Solo Water, drains to Munmorah State Conservation Area and discharges at Moonee Beach. However, the REF does not define which water course the drainage system discharge to, or consider issues associated with this such as impacts to receiving water quality, public health or ecology. ■ Section 3.7.3.2 of the revised REF identifies points within the system where uncontrolled discharges would occur in the result of a system failure, or emergency response failure (such as failure to adequately pump out to road tankers). These points include the reverse osmosis reject evaporation ponds and wells of the sewer pumps.

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				<ul style="list-style-type: none"> ■ Solo Water have clarified that if such an event occurred, discharged sewage or recycled water would be captured by the subdivisions stormwater management system and collected in one or more of the sedimentation ponds that these discharge to. This would potentially enable collection and clean-up of any discharged sewage or recycled water before it is discharged from the site. ■ The revised REF includes commitments for developing Emergency Response Plans for operation of the project and a procedure, including procedures for clean-up and disinfection should sewage leaks occur and for automated monitoring and alarms of various components, such as the UV disinfection system. ■ In Solo Water's response to the review of the original REF, it is stated that disinfection will always be undertaken on effluent. Critical spare parts for the UV system will be stored on-site and chlorination will occur if the UV system fails, through manual application of chlorine tablets. ■ A detailed irrigation area plan is provided in Appendix C of the revised REF, showing the location of clean water diversions, catch drains and sedimentation dams that would capture drainage water from the site. <p>Recommendation</p> <ul style="list-style-type: none"> ■ Controlled wet weather overflows of irrigation quality effluent are predicted to occur in 38% of years from the project. The location for these overflows needs to be defined in the REF and the destination of these overflows assessed for impacts such as surface water quality, public health and ecology.

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	<p>The land capability assessment should be reviewed to ensure that all assumptions used in the assessment are correct (e.g., the statement that MEDLI modelling indicated that the 10ML wet weather storage tank would not overflow is not correct).</p>	<p>Overflows from the reverse osmosis water balance ponds are predicted to occur in 6% of years. These impacts need to be properly identified and considered in the REF.</p> <p>An appendix of the land capability assessment mentions that "MEDLI modelling indicated the 10ML (wet weather storage tank) did not overflow based on 100-year of historic climate data". This is contradicted in the body of the report, which describes only 2 ML of wet weather storage and predicts overflows in 38% of years.</p>	Yes	<ul style="list-style-type: none"> ■ Appendix L of the revised REF (the Land Capability Assessment) has been revised to remove the reference to the 10 ML wet weather storage. ■ In Solo Water's response to comments on the original REF, it is stated that 'the RO reject evaporation ponds will not overflow' and that the prediction of overflows in 6% of years was 'a theoretical statistical result from the water balance'. It goes on to state that means for ensuring overflows will not occur are outlined in Section 3.3 of the Appendix J of the revised REF. ■ Overflows would generally not occur from the sewage treatment plant under normal or excessive wet weather conditions, as the storage ponds and tanks would be managed by plant operators and excess wastewater removed by road tankers. ■ Section 3.3 of Appendix J states that, under normal operating conditions, the evaporation ponds would operate such that only one pond would receive inflows at any time, leaving the other two to dry out. If prolonged periods of heavy rainfall occur and all ponds become filled, excess effluent will be removed by road tanker, or other methods would be used to reduce water in the ponds (such as transfer between ponds etc.). ■ Automated alarms would be installed on the evaporation ponds to alert plant operators of excess storage volumes and the potential for overfilling.
		<p>The REF does not provide an alternative to effluent disposal via irrigation, which may be required if effluent irrigation is found to result in soil or groundwater impacts, or if vegetation in the irrigation area fail.</p>	Yes*	<ul style="list-style-type: none"> ■ In Solo Water's response to the review of the original REF, it is stated that <i>'in the unlikely event that the irrigation area is proven to be not sustainable, a portion or all of the surplus recycled water would be removed by road tanker to the nearest licenced facility and Stage 3 of the scheme would be implemented.'</i> <p>Recommendation</p> <ul style="list-style-type: none"> ■ This commitment should be added to the REF.

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4. State Environmental Planning Policy Infrastructure (ISEPP) (refer to Section 4.1.4 of Parsons Brinckerhoff's report in Attachment C)				
4a	<p>CHBWU should seek legal advice regarding the permissibility of the proposed works in areas zoned R2 clarify this issue in the REF.</p> <p>As the proposed works are located adjacent to Munmorah State Conservation Area, consultation with the National Parks and Wildlife Service is required under Clause 16(2)(a) of the ISEPP. Section 6.3 of the REF shows that this agency was not consulted with in accordance with that policy. National Parks and Wildlife Services need to be consulted with in accordance with the provisions of the ISEPP and any issues raised addressed in the REF.</p>	<p>CHBWU has proposed works to be undertaken on land zoned both SP2 and R2.</p> <p>Under Clause 106(1) and (2) of the Infrastructure SEPP, development for the purposes of sewage treatment plants and water recycling facilities may only be carried out without development consent on land in a prescribed zone or any land that is ancillary to an existing land use. Prescribed zones include land zoned SP2, but not R2 under the Infrastructure SEPP.</p> <p>The use of land zoned R2 for irrigation of wastewater effluent generated by residences in the subdivision may be considered an ancillary land use, however, no residences have been built in the subdivision and therefore it may be considered there is no existing land use.</p>	Yes	<ul style="list-style-type: none"> Legal advice was sought regarding the issue of permissibility in the R2 zone and is included in Appendix Q of the REF. In Solo Water's response to the original REF review, it states <i>'It is noted that Clause 16 of the SEPP Infrastructure requires a public authority of someone undertaking works on behalf of a public authority to undertake consultation in accord with that part. The proposal is not being undertaken by a public authority or on behalf of a public authority'</i>. The reviewer accepts this. Details of consultation with Lake Macquarie City Council (LMCC) and National Parks & Wildlife Services have been added to Section 6.3 of the revised REF. It is stated that two meetings were held with LMCC to discuss the project and as the project will have a minimal impact on Council infrastructure. Section 6.3 of the revised REF states that the Office of Environment and Heritage were consulted as part of the assessment of Modification 2 of the project approval for the subdivision (MOD 2), which resulted in rezoning of the site of the STP to SP2. It is stated that OEH provided comments in writing in a letter dated 18 October 2013, in which all issues raised have been considered in the REF. Although as the REF does not include the information provided to, or received from OEH, it is not possible to assess the outcomes of this consultation. The MOD 2 application documents are available on the Department of Planning and Environment's major projects website and were examined during this review. It was found that no reference to effluent irrigation adjacent to Munmorah State Conservation Area in any of the publicly available documents.

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				Recommendation <ul style="list-style-type: none"> In the absence of binding consultation requirements as would typically apply to a developer under Part 4 of the <i>Environmental Planning and Assessment Act 1979</i> or to a public authority under the Infrastructure SEPP, IPART should make sure it is satisfied that adequate consultation has been undertaken as part of determining the REF.
5. State Environmental Planning Policy No. 33 (SEPP 33) (refer to Section 4.1.4 of Parsons Brinckerhoff's report in Attachment C)				
5a	The odour assessment included in the REF indicates that the proposed works can be controlled so that odour impacts are not significant and therefore the STP does not represent an 'offensive industry'. Nevertheless, the assessment and exhibition requirements of SEPP 33 are considered to be applicable (for potentially offensive industry) and the REF should be amended to reflect this.	<p><i>Hazardous and Offensive Development (SEPP 33)</i> provides for the definition and assessment of industries that may be hazardous or offensive. Section 5.3.1 of the REF provides consideration of SEPP 33 and concludes that the <i>operation of the STP will use minimal chemical storages and is not consistent with any of the definitions contained within SEPP 33.</i></p> <p>As the STP would emit offensive odours if odour controls were not installed, the proposed works are considered to meet the definition of a potentially offensive industry. This is supported by Section 8.1.2 of the REF which states 'in the absence of any mitigation measures' the proposed development has the 'potential for odour'.</p>	Yes	<ul style="list-style-type: none"> Section 5.3.1 of the revised REF provides detailed consideration of SEPP 33 and concludes that the project does not meet the definition of an 'industry' or 'storage establishment' and therefore does not need consideration under this SEPP.
6. State Environmental Planning Policy No. 71 (SEPP 71) (refer to Section 4.1.4 of Parsons Brinckerhoff's report in Attachment C)				
6a	The REF has not considered SEPP 71, or the potential for overflows, accidental discharges or pollution of nearby waterways and coastal waterbodies from the proposal. The REF should be amended to consider SEPP 71.	<p><i>Coastal Protection (SEPP 71)</i> applies to the coastal zone in NSW, which includes the site of the proposed development.</p> <p>Part 2 of SEPP 71 outlines matters for consideration by consent authorities when determining an application to carry out development on land in the coastal zone. These include considerations such as impacts to public access to coastal foreshores, amenity impacts, impacts to coastal processes and the likely impacts of the development on the water quality of coast waterbodies.</p>	Yes	<ul style="list-style-type: none"> Section 5.3.4 of the revised REF provides consideration of SEPP 71 and concludes that the SEPP does not apply through application of Clause 135 of Lake Macquarie Local Environment Plan 2004, which specifically excludes SEPPs 1, 4, 60 and 71 from applying to the subdivision site.

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7. National Parks and Wildlife Act 1974 (refer to Section 4.1.4 of Parsons Brinckerhoff's report in Attachment C)				
7a	If the proposed works are located within a national park, then concurrence for the planning approval is required from the National Parks and Wildlife Service.	<p>Section 2.1.3.2 of the REF states that 'the proposal includes a small run of services across the R2 zoned portion of Lot 204, DP1164883' and that 'Appropriate easements will need to be negotiated with the Office of Environment and Heritage to allow these services to cross Lot 204, DP1164883. This requirement is included within the summary of project mitigation measures required.</p> <p>It is assumed this commitment is required as the Office of Environment and Heritage (now part of the Department of Planning and Environment – DP&E) is the owner of this lot. However, Lot 204, DP1164883 is partly zoned as national park. If the proposed works are located within a national park, then concurrence for the planning approval is required from the National Parks and Wildlife Service.</p> <p>As the proposed works are located adjacent to Munmorah State Conservation Area, consultation with the National Parks and Wildlife Service is required under Clause 16(2)(a) of the ISEPP. Section 6.3 of the REF shows that this agency was not consulted with in accordance with that policy.</p> <p>CHBWU should consult with National Parks and Wildlife Services in accordance with the provisions of the ISEPP and any issues raised addressed in the REF.</p>	Yes	<ul style="list-style-type: none"> Solo Water advises that the project has been amended to remove any works within National Parks controlled areas. The revised REF and plans reflects this.
8. Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) (refer to Section 4.1.4 of Parsons Brinckerhoff's report in Attachment C)				
8a	CHBWU should consider potential impacts to MNES for the REF, particularly as part of consideration of offsite impacts associated with overflows and discharges.	Section 5.1.1 and Appendix B of the REF provides consideration of the EPBC Act and conclude that the proposed works are unlikely to have a significant impact on relevant matters of national environmental significance (MNES) as listed und that act. It is not clear what this conclusion is based on as no details of any MNES relevant to the area are discussed.	Yes	<ul style="list-style-type: none"> Section 5.1.1. of the revised REF provides consideration of the applicability of the EPBC Act to the project and refers to the EPBC approval for disturbance of the site. The approval is provided as Appendix I of the revised REF. The revised REF does not identify any additional MNES that would be impacted by the project.

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		It is common for the author of an REF to use the online MNES search tool to identify such issues and append the report produced by the search tool to the REF. It is not clear if the author of the REF used the search tool.		
9. Licensing and approvals (refer to Section 4.1.4 of Parsons Brinckerhoff's report in Attachment C)				
9a	The approval requirements for the proposed works need to be confirmed and specified correctly in Table 10 of the REF which is intended to provide a list of all licences and approvals required for the proposed works.	<p>Requirements of additional or subsequent licencing and approvals are not made clear in the REF.</p> <p>Table 10 lists requirements for approvals as: Road Occupancy Licence, Section 143 notice under the <i>Protection of the Environment Operations Act 1997 (POEO Act)</i>, requirement for a Construction Certificate, approval under the Heritage Act 1977 and a controlled activity approval under the Water Management Act 2000. Yet these approvals only appear to relate to activities already approved under the MP10_0204 and are not associated with an impact that is addressed specifically by the REF.</p> <p>For example, approval under the Heritage Act 1977 is associated with an impact to a heritage relic or site yet Section 7.8.2 of the REF states that heritage impacts are unlikely and no specific heritage impacts are identified. A controlled activity approval under the Water Management Act 2000 is associated with works within a waterfront area or waterway, yet Section 7.6.2 of the REF states the only surface water or hydrological impacts from the works would be potential impacts from erosion and sedimentation during construction.</p> <p>Other licence requirements are listed in the REF, but not included in Table 10. These include approval under the Mine Subsidence Compensation Act 1961 and a licence under the WIC Act.</p>	Yes	<ul style="list-style-type: none"> Table 15 of the revised REF has been revised to include all applicable licences and approvals required for the project.

No.	Required amendment to REF (from initial review)	Background information and IPART comments (from initial review)	Adequately revised?	Comments (based on Parsons Brinckerhoff's review of the revised REF)
10. Terrestrial flora and fauna assessment (refer to Section 4.1.5 of Parsons Brinckerhoff's report in Attachment C)				
10a	<p>As the STP can or has been cleared under existing approvals, the purpose of the Terrestrial Flora and Fauna Assessment is unclear. The assessment does not cover the proposed effluent irrigation areas, although the clearing of these areas would be covered by existing approvals according to the REF.</p> <p>The Terrestrial Flora and Fauna Assessment should be amended to address the following issues:</p> <p>Surveys have not been undertaken in accordance with appropriate flora and fauna survey guidelines (e.g., Lake Macquarie Council Flora and Fauna Guidelines, 2012, Wyong Shire Council Flora and Fauna Guidelines 2014 or DEC draft working guidelines 2004). On Page 25 reference is made to the DEC guidelines, although no compliance with these guidelines is documented within the report.</p> <p>Specific survey dates are not provided, only indicative months.</p> <p>No weather data is provided.</p> <p>No flora species data or list is provided.</p> <p>Flora surveys appear to have been conducted post fire event (as per photos in report). Such surveys would be deemed unreliable due to fire damage to vegetation.</p> <p>Limitations (page 48) appear to be referencing a different assessment project (i.e.: ~5ha site)</p>	Nil	Yes	<ul style="list-style-type: none"> An addenda has been added to Appendix E of the revised REF to clarify the issues raised in the review of the original REF. This addenda states: <i>The purpose of the Terrestrial Flora and Fauna Assessment conducted for the WWTP was to verify information from previous surveys conducted for the development site with additional contemporary surveys performed to potentially record additional species previously not recorded in the preceding surveys.</i> ... <i>It is noted that the development site has recently been cleared of all vegetation (including the WWTP footprint) in accordance with existing approvals issued for the development.</i> Further to this, Solo Water states in its response to the review of the original REF that 'The comments provided on the report are now academic as the site has been cleared as permitted by Project Approval MP 10_0204.' The addenda was reviewed and found to provide an adequate response to the issues raised in the review of the flora and fauna assessment. The flora and fauna assessment remains as a stand-alone assessment of the flora and fauna impacts of construction of the STP, which were previously assessed and approved under MP 10_0204. Its inclusion in the REF is confusing as it addresses impacts that have already occurred. Section 7.7.2 of the revised REF addresses the additional flora and fauna impacts of the project, which are the potential for additional weed invasion of adjacent areas, such as national parks land.

No.	Required amendment to REF (from initial review)	Background information and IPART comments (from initial review)	Adequately revised?	Comments (based on Parsons Brinckerhoff's review of the revised REF)
	<p>Atlas of Living Australia searches relied on for species local occurrence rather than actual OEH records.</p> <p>Surveys for threatened orchid species have not been conducted during recognised flowering period (i.e.: <i>Caladenia tessellata</i>, <i>Cryptostylis hunteriana</i>, <i>Diuris praecox</i>, <i>Genoplesium insignis</i>).</p> <p>Potential indirect impacts on <i>Tetratheca juncea</i> and its habitat have not been considered.</p> <p>No Section 5A assessments on threatened flora species have been completed.</p> <p>Section 5A assessments are limited to the Squirrel Glider, Grey-headed Flying-fox, Eastern Freetail Bat, Little Bentwing-bat, Eastern Bentwing Bat (Page 128) whilst on Page 79 it is stated that Section 5A assessments will also include the Southern Myotis.</p> <p>Section 5A assessments should also be completed for the Wallum Froglet, Glossy Black-Cockatoo, Regent Honeyeater, Swift Parrot, Powerful Owl, Masked Owl, Eastern Pygmy Possum, Yellow-bellied Sheath-tailed Bat, Eastern False Pipistrelle and Greater Broad-nosed Bat.</p> <p>Table 8 (page 49) states hollow bearing trees are absent from the STP site although the Ecological Features Map (page 12) within the subdivision's Flora & Fauna Management Plan (RPS, January 2014) identifies a hollow bearing tree within this area.</p>			<p>Recommendation</p> <ul style="list-style-type: none"> ■ The inclusion of the 2013 flora and fauna assessment and addenda in the REF is unnecessary and may be confusing to future users or reviewers of the REF. These documents should be removed from the REF and Section 7.7 of the REF updated to reflect that clearing of the site is covered by MP 10_0204, and address the additional impacts of the project on flora and fauna (i.e. enhanced potential for weed invasion).

No.	Required amendment to REF (from initial review)	Background information and IPART comments (from initial review)	Adequately revised?	Comments (based on Parsons Brinckerhoff's review of the revised REF)
	<p>No arboreal trapping was conducted for the Squirrel Glider or Eastern Pygmy Possum.</p> <p>Squirrel Glider was spotlighted during survey. This species was not recorded previous in the 2010 ecological assessment prepared by RPS, so this could be a significant issue.</p> <p>Page 4 states that the assessment has regard to Guidelines for developments adjoining land and water managed by the Department of Environment, Climate Change and Water although nowhere within the report is this clearly demonstrated. This is particularly important given the proposed activity is to construct and operate a STP and on-site disposal directly adjoining and upslope of Munmorah State Recreation Park.</p> <p>CHBWU has not undertaken any assessments of significance under the EPBA Act for <i>Caladenia tessellata</i>, <i>Cryptostylis hunteriana</i>, <i>Tetratheca juncea</i>, Grey-headed Flying-fox etc.</p>			
11. Definition of impacts (refer to Section 4.1.6 of Parsons Brinckerhoff's report in Attachment C)				
11a	<p>The activities and impacts that the REF is meant to be addressing that are not covered by the existing approvals are not clear and CHBWU should amend the REF to reflect this.</p>	<p>The REF assesses a proposed STP and sewage reticulation network and provides details of lots that will be affected by the proposed works, but does not provide clear figures or descriptions for construction works that may cause disturbance and/or impacts.</p> <p>This is particularly evident for construction activities associated with the proposed sewage reticulation network.</p> <p>The description of the proposed works associated with the sewerage network is provided in Section 3.3 of the REF and is limited to stating that additional pipe networks would be installed.</p>	Yes	<ul style="list-style-type: none"> Section 2.3.1 of the revised REF provides a clear summary of the elements of the project that are not covered by existing approvals.

No.	Required amendment to REF (from initial review)	Background information and IPART comments (from initial review)	Adequately revised?	Comments (based on Parsons Brinckerhoff's review of the revised REF)
12. Construction traffic (refer to Section 4.3 of Parsons Brinckerhoff's report in Attachment C)				
12a	CHBWU should consider impacts to residents of existing nearby residential areas of increased construction traffic in the REF.	CHBWU only considers operational traffic impacts in the REF. Impacts to residents of existing nearby residential areas of increased construction traffic are not considered.	Yes	<ul style="list-style-type: none"> Sections 3.5.7 and 7.3 of the revised REF identifies how construction traffic will access the subdivision site and provides estimates of construction and operational traffic. A commitment to developing a traffic management plan and part of the CEMP for the project is also provided.
13. Aboriginal heritage (refer to Section 4.3 of Parsons Brinckerhoff's report in Attachment C)				
13a	CHBWU should clarify Aboriginal heritage impacts from the proposed works in the REF.	<p>CHBWU bases its assessment of Aboriginal heritage impacts on an Aboriginal Cultural Heritage Management Plan (ACHMP) prepared for MP10_0204. A specific reference is not provided and this document is not appended to the REF.</p> <p>The REF states that one Aboriginal artefact occurs within the site of the STP, but does not confirm if this site is CHB and does not refer to impacts which are assumed to be required for construction of the STP.</p> <p>The ACHMP is based on studies undertaken by ERM in 2007 and Insite Heritage in 2009 and were not included with the Environmental Assessment (EA) for the overall subdivision and hence were not reviewed for this assessment.</p> <p>No additional consultation was undertaken with Aboriginal stakeholders for the REF.</p>	Yes	<ul style="list-style-type: none"> Section 2.6.5.1 of the revised REF provides more clarity regarding the Aboriginal heritage site that is to be disturbed, but does not use the terminology for the site (CHB1) that is used in the ACHMP. It is considered that the revised REF provides enough clarity to determine that it is referring to the same site however.
14. Bushfire management (refer to Section 4.3 of Parsons Brinckerhoff's report in Attachment C)				
14a	CHBWU should consult with relevant fire authorities and clarify any issues they raise addressed in the REF	Nil	Yes	<ul style="list-style-type: none"> Consultation requirements for fire authorities for the project are clarified under Section 6.3 of the revised REF, which concludes that consultation with fire authorities is not required. MP 10_0204 requires a bushfire management plan to be developed in consultation with the RFS for the overall subdivision.

No.	Required amendment to REF (from initial review)	Background information and IPART comments (from initial review)	Adequately revised?	Comments (based on Parsons Brinckerhoff's review of the revised REF)
15. Mine subsidence (refer to Section 4.3 of Parsons Brinckerhoff's report in Attachment C)				
15a	CHBWU should consider mine subsidence issues in the REF	<p>The Mine Subsidence Board (MSB) has not been consulted with, despite the site being located within a mine subsidence district.</p> <p>The requirement for approval from the MSB is identified in Section 5.2.4 of the REF, but potential issues associated with mine subsidence are not considered. Such issues could include geotechnical instability, mass ground movements and enhanced connectivity with groundwater.</p>	Yes	<ul style="list-style-type: none"> ■ Section 5.2.4 of the revised REF provides further consideration of MSB approval requirements and concludes that approval is required from the MSB for the construction of the STP. ■ Potential issues associated with mine subsidence areas, such as ground subsidence and enhanced connectivity between surface and groundwater are not considered in the REF. However, in its response to the REF comments, Solo Water points out that the STP and irrigation area were subject to consideration of mine subsidence issues as part of the MP 10_0204 approvals process. ■ The establishment of a groundwater monitoring program as committed to in the revised REF will identify any surface and groundwater connectivity issues. ■ The requirement for further consideration of these issues in the REF is therefore not considered necessary.
16. Cumulative impacts (refer to Section 4.3 of Parsons Brinckerhoff's report in Attachment C)				
16a	Cumulative impacts from other activities in the subdivision may affect nearby residents. This should be further assessed in the REF.	<p>CHBWU has not sufficiently assessed the potential for cumulative impacts, such as other clearing and construction works for the proposed subdivision, in the REF.</p> <p>The proposed works will provide an essential service for the development of the subdivision, however; the REF provides no details regarding the scheduling of construction works for the STP.</p> <p>The STP and irrigation areas will be constructed in locations that were previously scheduled to be developed after the construction of other Stages of the subdivision. If construction of these areas is to occur simultaneously, cumulative impacts such as enhanced traffic, noise, air quality impacts etc. may affect nearby residents.</p>	Yes	<ul style="list-style-type: none"> ■ Section 7.13 of the revised REF has been expanded to include further consideration of cumulative impacts and concludes that the project will result in lower impacts during construction and operation when compared to the original subdivision plan. The original plan would have resulted in more residential lot development and off-site impacts associated with construction of sewer mains and pumping stations.

No.	Required amendment to REF (from initial review)	Background information and IPART comments (from initial review)	Adequately revised?	Comments (based on Parsons Brinckerhoff's review of the revised REF)
17. Visual impacts (refer to Section 4.3 of Parsons Brinckerhoff's report in Attachment C)				
17a	CHBWU should clarify the maximum height of the STP in the REF and revise the Visual Impact Assessment to reflect the maximum STP height.	<p>In Section 5.4 and 5.5 of the REF, the maximum height of the STP was stated to be 7.2m. Yet in the Visual Impact Assessment (VIA) included in the REF, CHBWU states the highest structure for the proposed works is 'Storage Tanks' which are shown to have a maximum height of 6m.</p> <p>The VIA, including a detailed viewshed analysis, is based on this maximum height of 6 m. Therefore, if the maximum height of an STP structure is 7.2m, the VIA would be incorrect.</p>	Yes	<ul style="list-style-type: none"> The revised REF and revised visual impact assessment clarify that the maximum height of structures relating to the project are 6 metres which is the maximum height of the storage tanks (6.9 metres if measured to the top of an access ladder required for inspections).
18. Waste management (refer to Section 4.3 of Parsons Brinckerhoff's report in Attachment C)				
18a	CHBWU should consider issues associated with waste management including aims to minimise waste and re-use materials wherever possible in the REF.	<p>Waste management is not specifically considered in the REF, although offsite disposal of substantial quantities of waste are proposed.</p> <p>For example, the reverse osmosis plant will produce approximately 6,400 litres per day of liquid waste which will require offsite disposal when the STP's evaporation ponds are not available (such as during wet weather).</p>	Yes	<ul style="list-style-type: none"> The revised REF provides consideration of waste management issues associated with the project under Sections 3.5.3, 7.12 and 7.13.
19. Administrative issues (refer to Section 4.4 of Parsons Brinckerhoff's report in Attachment C)				
19a	CHBWU should consider making the following matters clearer in the REF: Details of mitigation measures from specialist studies undertaken for the REF are not included or are overly summarised in the REF document. This may cause oversight of these recommendations for future users of the REF. Section 9 includes a summary of commitments and mitigation measures for the proposed works and this should include all commitments made in the supporting studies appended to the REF.	Nil	Yes	<ul style="list-style-type: none"> While a detailed review of all administrative changes throughout the REF and supporting documents has not been undertaken, it is acknowledged that the REF has been revised to adopt the suggested administrative changes. This will make the REF easier to review for future users of the document.

No.	Required amendment to REF (from initial review)	Background information and IPART comments (from initial review)	Adequately revised?	Comments (based on Parsons Brinckerhoff's review of the revised REF)
	<p>The REF uses acronyms, technical terms and abbreviations that are not explained in the text. These should be spelt out in full the first time they are used and possibly summarised in a glossary and/or list of abbreviations.</p> <p>The REF should provide a clearer map of where the proposed works will be undertaken and more clearly summarise the activities being assessed specifically by the REF. For example, if vegetation clearing and site development activities are covered by an existing approval, the REF should state it relates to a change in land use and different construction activities associated with the proposed works. Clearer maps are provided for the proposed works in the technical documents appended to the REF.</p> <p>The REF should consistently refer to the proposed works using the same term such as 'project', 'proposal' or 'activity' for example. The REF was found to use multiple terms for this, which may cause confusion.</p> <p>The REF should provide clearer cross reference to appended documents and correctly quote them. For example, in Section 7.4.4 of the REF reference is provided to '<i>the measures recommended within the construction noise management plan prepared by Vipac Engineers and Scientists</i>'. This document was found to be an Appendix of a document appended to the REF (Appendix F).</p> <p>Cross referencing throughout the REF should be checked and updated where required. For example, the reference to Section 2.6.2 under Section 7.8.1 of the REF is incorrect (it should be 2.6.5).</p>			

No.	Required amendment to REF (from initial review)	Background information and IPART comments (from initial review)	Adequately revised?	Comments (based on Parsons Brinckerhoff's review of the revised REF)
	The first letter of 'Aboriginal' should always be capitalised. Refer to NSW Department of Community Services <i>'Use of appropriate language when working with Aboriginal communities in NSW'</i> (July 2007) for more details.			
Table A2: Out of scope recommendations on the REF made by Parsons Brinckerhoff but not required by IPART				
20. Limitation of subdivision development (refer to Section 4.1.3 of Parsons Brinckerhoff's report in Attachment C)				
20a	The proposed works will limit the full development potential of the subdivision, as approved under MP10_0204. This may alter the overall impacts and benefits of the subdivision, as were considered by DP&E and the Planning and Assessment Commission during assessment and approval of MP10_0204. This issue should be considered by the approval authority in consultation with DP&E.	CHBWU does not need to address this matter because it is outside the scope of the WIC Act licence application. We will refer this matter to DP&E for its consideration.	NA	■ This matter is for consideration by IPART.

* subject to adoption of the recommendation provided.

Table B1.2 provides a review of responses provided by Solo Water to issues raised in community and agency consultation.

Table B1.2 Summary of responses to community consultation

No.	Summary of submissions	Summary of response by Solo Water	Parsons Brinckerhoff Comments
1. Lake Macquarie City Council (LMCC)			
1a	<p>The State Environmental Planning Policy (Infrastructure) (SEPP Infrastructure) provides that a sewage treatment plant and a sewage reticulation system may be carried out on the land by any person licensed under the <i>Water Industry Competition Act 2006</i> (NSW) (WIC Act), without consent.</p> <p>If CHBWU obtains a licence under the WIC Act, no development consent is required under Part 4 of the <i>Environmental Planning and Assessment Act 1979</i> (NSW) (EPA Act) for a <i>sewage treatment plant</i> or a <i>sewage reticulation system</i>.</p> <p>CHBWU's proposal includes the irrigation of treated effluent on land zoned R2, as part of the <i>water recycling facility</i>.</p> <p>The Infrastructure SEPP provides that on land zoned R2, a 'water recycling facility' may only be carried out <i>with</i> consent if it is ancillary to an existing land use.</p> <p>As there is no relevant existing land use where the irrigation scheme is proposed, this aspect of the proposal does not appear to benefit from the Infrastructure SEPP.</p>	<ul style="list-style-type: none"> REF has been amended to clarify this. 	<ul style="list-style-type: none"> Revised REF reflects this.
	<p>CHBWU's proposal includes the irrigation of treated effluent on land zoned R2, as part of the <i>water recycling facility</i>.</p> <p>The Infrastructure SEPP provides that on land zoned R2, a 'water recycling facility' may only be carried out <i>with</i> consent if it is ancillary to an existing land use.</p> <p>As there is no relevant existing land use where the irrigation scheme is proposed, this aspect of the proposal does not appear to benefit from the Infrastructure SEPP.</p>	<ul style="list-style-type: none"> Not agreed as the project is not a 'water recycling facility', rather it is a 'sewage treatment plant' and 'sewage reticulation network'. Legal advice has been sought to address the irrigation issue and to outline that this is an ancillary process to the approved residential subdivision. 	<ul style="list-style-type: none"> Revised REF reflects Solo Water's views and includes independent legal advice supporting this. Residential development of the subdivision as approved, cannot occur without the development of a sewage treatment and effluent disposal system. Any delay to development of the irrigation system would result in the generation of effluent which would require off-site disposal, resulting in additional environmental impacts.
1b	<p>LMCC considers that CHBWU should submit an EIS.</p> <p>For the purposes of section 112 of the EP&A Act and Clause 228 of the EP&A Regulation, it is considered appropriate that reference be made to the provisions of Schedule 3 of the EP&A Regulation – Designated Development.</p> <p><i>29 Sewerage systems and sewer mining systems.</i></p> <p><i>(1) Sewerage systems or works...:</i></p> <p><i>(b) that have an intended processing capacity of more than 20 persons equivalent capacity or 6kL per day and are located:</i></p>	<ul style="list-style-type: none"> Solo Water have referred this matter to IPART, who do not consider an EIS to be necessary. 	<ul style="list-style-type: none"> This matter has been addressed by IPART.

No.	Summary of submissions	Summary of response by Solo Water	Parsons Brinckerhoff Comments
	<p>(iv) <i>within 100m of a natural waterbody or wetland.</i></p> <p>The NSW Government's Hydro-line mapping information shows a watercourse crossing the site, and that the site is within close proximity to a coastal wetland.</p> <p>Where a proposal is designated development, an EIS is required under Part 4 of the EP&A Act. It is considered appropriate that this level of assessment be undertaken under Part 5 of the EP&A Act, and it is suggested that IPART request an EIS of the applicant.</p>		
1c	The REF should reflect the assessment and exhibition requirements of SEPP 33.	<ul style="list-style-type: none"> Section 5.3.1 of the revised REF provides detailed consideration of SEPP 33 and concludes that the project does not meet the definition of an 'industry' or 'storage establishment' and therefore does not need consideration under this SEPP. 	<ul style="list-style-type: none"> As outlined in Section 5.3.1 of the revised REF, the project does not meet the definition of 'industry' under relevant planning instruments and therefore is not subject to SEPP 33.
1c	<p>Air quality and odour:</p> <p>Odour impact on sensitive receptors was assessed using methodology that was broadly consistent with that described in the EPA Approved Methods for the Modelling and Assessment of Air Pollutants in NSW. The impact assessment indicated that sensitive receptors are not likely to be impacted by odour emanating from the development.</p> <p>LMCC notes that control factors were excluded in the odour impact model, and control factors (such as watering, engineering controls, etc.) are often used to reduce the predicted impact of pollutants. Given that control factors will be implemented during operation of the facility, the predicted odour impacts were likely artificially high. It is also noteworthy that the most stringent odour impact criteria of two odour units were used.</p>	<ul style="list-style-type: none"> Solo Water consider the issues raised regarding the odour assessment to be comments and note that the assessment provided a worst case scenario, yet still demonstrated compliance. 	<ul style="list-style-type: none"> Based on the comments provided by LMCC and Solo Water, it appears that revision of the odour assessment would only reduce the predicted impacts of the worst case scenario (regarding odour) for the project. The assessed worst case scenario demonstrated compliance with relevant guidelines and therefore revision of the assessment is not considered necessary for the REF process. However, the concerns raised by LMCC regarding use of emission factors from Frechen (2002) that cannot be reviewed and is suspected to be incorrect should be addressed. <p>Recommendation</p> <ul style="list-style-type: none"> Solo Water should provide a direct response to LMCC addressing the concerns relating to the emissions factors used in the odour assessment.

No.	Summary of submissions	Summary of response by Solo Water	Parsons Brinckerhoff Comments
	LMCC has raised concerns regarding the odour emissions factors that were extracted from a paper published by Frechen (2002). The publication was not available for review, and its citation is suspected to be incorrect. Considering the emission rates underpin the assessment, a review of the sources of these rates is recommended. CHBWU should confirm the citation, and more importantly, the validity of the emission rates for the location under investigation, and to ensure that the emissions rates are still considered appropriate given that the study as cited is 13 years old.		
1d	<p>Effluent irrigation:</p> <p>CHBWU's proposal to irrigate treated effluent over future residential land (stages 6 and 7) is not a desirable outcome as there is the potential for public health and safety to be compromised by irrigating the treated effluent over land that will subsequently be developed for residential use.</p> <p>In addition, LMCC raises concern regarding the transfer of the reserves and natural areas surrounding stages 6 and 7 of the subdivision. The 'vegetated buffers' are key inclusions in the control of any risk associated with the treated effluent</p>	<ul style="list-style-type: none"> ■ The revised REF provides detailed security plans for the irrigation area. 	<ul style="list-style-type: none"> ■ Revised REF reflects this.
1e	<p>Stage 3:</p> <p>LMCC does not support the exclusion of Stage 3 from the current assessment. Stage 3 will involve the activation of Stages 6 and 7 of the subdivision, which is likely to require additional treated effluent irrigation area (unidentified at this stage). By excluding Stage 3 assessment, the proponent is unable to demonstrate that the utility can effectively function in the longer term. LMCC's concern is that the water balances for Stage 3 will result in a surplus treated effluent with no available mechanism for disposal.</p>	<ul style="list-style-type: none"> ■ Stage 3 will require discharge of effluent to the environment. The REF is clear on this. 	<ul style="list-style-type: none"> ■ Stage 3 will require further assessment and approval, including identification and assessment of suitable discharge or effluent disposal options and a water balance including Stages 6 and 7 of the subdivision.

No.	Summary of submissions	Summary of response by Solo Water	Parsons Brinckerhoff Comments
2. Environmental Protection Authority (EPA)			
2a	EPA has no knowledge of whether CHBWU has breached the <i>Protection of the Environment Operations Act 1997 (POEO Act)</i> .	<ul style="list-style-type: none"> Noted. 	<ul style="list-style-type: none"> Noted.
2b	<p>EPA advises that if Solo Water intend on irrigating excess wastewater as their disposal option, it is not a scheduled activity under the POEO Act and as a result does not require an Environment Protection Licence (EPL). An EPL is only required if excess wastewater is disposed of to waters, as defined by the POEO Act.</p> <p>The proposal is estimated to have a treatment capacity of 330kL per day or 556EP. An EPL is only required for sewage treatment if the activity has a processing capacity that exceeds 2,500EP or 750kL/day. As a result LMCC becomes the appropriate regulatory authority for environmental issues.</p>	<ul style="list-style-type: none"> Noted. 	<ul style="list-style-type: none"> Revised REF reflects this.
2c	<p>If granted, the EPA advise that the WIC Act licence should contain, but is not limited to:</p> <p>(i) monitoring and reporting conditions in relation to appropriate soil moisture testing</p> <p>(ii) appropriate rainfall triggers to prevent irrigation during high rainfall periods</p> <p>(iii) annual soil monitoring reports to ensure that the sustainability of the irrigation application area</p> <p>(iv) monitoring of volume and quality at the discharge point to the irrigation area and establishment of water quality and volumetric limits</p> <p>(v) water quality monitoring of any nearby waterways considered at high risks to impacts from the irrigation application area to ensure that impacts are not occurring</p> <p>(vi) definition of the extent and size of the appropriate irrigation application area</p>	<ul style="list-style-type: none"> Solo Water state that the REF and supporting documents include these items. 	<ul style="list-style-type: none"> The revised REF includes these items, with the exception of the installation of up-gradient groundwater monitoring. The plans included in the revised REF and Integrated Water Management Plan (Appendix C) confirm that two down-gradient groundwater monitoring bores have been installed adjacent to the northern side (down-gradient) of the irrigation area. No up-gradient monitoring bores are installed or proposed. It is considered advantageous that up-gradient groundwater monitoring bore(s) are installed as this will enable any impacts to groundwater from irrigation to be determined. This could also be achieved by comparing the result of down-gradient monitoring to baseline conditions, and to assess any long-term changes to groundwater conditions in the area.

No.	Summary of submissions	Summary of response by Solo Water	Parsons Brinckerhoff Comments
	<p>(vii) surface and groundwater quality monitoring up gradient and down gradient from the irrigation application area to monitor status of surface and groundwater to ensure that irrigation of wastewater is not polluting waters</p> <p>(viii) conditions to ensure that runoff to waters does not occur from the irrigation areas such as limitations on ponding and bunding to prevent any offsite migration or irrigated wastewaters.</p>		<p>Recommendation</p> <ul style="list-style-type: none"> ■ Solo Water should undertake up-gradient groundwater monitoring as part of its groundwater monitoring program.
2d	<p>EPA advises you to contact LMCC with regard to their assessment of the risks and local planning requirements with respect to the proposed irrigation of effluent.</p> <p>EPA advises to contact Hunter New England Public Health Unit to seek advice on appropriate limits or conditions in relation to prevention of health impacts</p>	<ul style="list-style-type: none"> ■ Solo Water notes this as a comment. 	<ul style="list-style-type: none"> ■ Section 6.3 of the REF outlines consultation undertaken by Solo Water with LMCC. ■ No consultation has been undertaken with Hunter New England Health. <p>Recommendation</p> <ul style="list-style-type: none"> ■ Solo Water should consult with Hunter New England Health regarding the regulation and management of human health issues associated with the project.
3. Department of Planning and Environment (DP&E)			
3a	DP&E is not aware of any breaches of the EP&A Act by CHBWU or Solo Water.	<ul style="list-style-type: none"> ■ Noted. 	<ul style="list-style-type: none"> ■ Noted.
3b	<p>A Part 3A approval has been granted for the residential subdivision at CHB. In September 2014, this approval was modified to consolidate some lots to accommodate future sewage infrastructure.</p> <p>This approval stated that the Proponent must separately obtain any relevant approvals and licenses to construct and operate sewage infrastructure. The need for further approvals is dependent on the provisions of the Infrastructure SEPP.</p> <p>The approval, as modified, also indicates that all water and sewer assets are to be designed and constructed as per the requirements of the Water Management Act 2000 and as authorised under the WIC Act.</p>	<ul style="list-style-type: none"> ■ The REF has been updated to identify that any work within 40 m of a waterway will require a controlled activity approval. 	<ul style="list-style-type: none"> ■ Revised REF reflects this.

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4.Department of Primary Industries – NSW Office of Water			
4a	The Recycled Water Management Plan to be prepared following DA consent should be prepared in consultation with the NSW Office of Water.	<ul style="list-style-type: none"> A Recycled Water Management Plan will be documented in consultation with NOW following approval of the IPART licence. 	<ul style="list-style-type: none"> This is not committed to in the REF. <p>Recommendation</p> <ul style="list-style-type: none"> The commitment to prepare a Recycled Water Management Plan in consultation with NOW should be added to the REF.
4b	<p>Monitoring plans should be developed for Effluent Quality, Recycled Water Quality and the Irrigation Scheme (including monitoring of soil, surface water and groundwater), and should identify thresholds, triggers and response plans for exceedances of thresholds.</p> <p>The plans should enable identification of trends in relation to changing water quality of ground water and surface water, and identify actions to protect the water sources.</p>	<ul style="list-style-type: none"> The revised REF and Integrated Water Management Plan (Appendix C) includes details of monitoring for effluent, recycled water quality and environmental surface/groundwater/soils. Baseline environmental monitoring has commenced. 	<ul style="list-style-type: none"> The revised REF details parameters to be monitored and monitoring locations. Annual review and reporting requirements are also specified. The revised REF does not specify threshold, triggers and response plans. As baseline monitoring is currently being undertaken, it is considered appropriate that these are developed as part of the Recycled Water Management Plan (to be prepared following approval of the REF). <p>Recommendation</p> <ul style="list-style-type: none"> Prepare monitoring triggers and response plans as part of the Recycled Water Management Plan.
4c	<p>Riparian corridors should be established and maintained in accordance with the NSW Office of Water's Guidelines for Riparian Corridors.</p> <p>It is requested that a Vegetation Management Plan be prepared for the riparian corridors in accordance with the NSW Office of Water's Guidelines for Vegetation Management Plans.</p>	<ul style="list-style-type: none"> Riparian areas within the subdivision are defined by the subdivision approval. 	<ul style="list-style-type: none"> An ephemeral drainage line bisects the irrigation area, but has been cleared and will be vegetated with the vegetation area cover crop under the plans provided in the REF and would not require specific management measures. The irrigation area is not expected to result in run-off of effluent as controls would be established such as prevent irrigation during wet periods. The REF includes a commitment to developing a Stormwater Management Plan.
4d	<p>The evaporation ponds associated with the Reject Reverse Osmosis plant are modelled to overflow in 6% of years.</p> <p>Management measures are required to be implemented to avoid/minimise overflows, and to minimise impacts to groundwater, surface water and waterfront land resulting from overflows.</p>	<ul style="list-style-type: none"> The RO Reject Evaporation Ponds will never overflow. If required, road tankering of RO reject will occur or the plant will simply be shut down to prevent overflows. 	<ul style="list-style-type: none"> Reflected in the revised REF.

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4e	<p>The proposed 2ML wet weather storage tank for treated effluent is predicted to overflow in 38% of years.</p> <p>Management measures are required to be implemented to avoid/minimise overflows, and to minimise impacts to groundwater, surface water and waterfront land resulting from overflows.</p>	<ul style="list-style-type: none"> A range of controls will be established to minimise overflows from the WWTP and associated network (as detailed in the revised REF). In the unlikely event of an overflow, the subdivision's stormwater system will capture overflows in detention basins, enabling the overflow to be cleaned up. 	<ul style="list-style-type: none"> Reflected in the revised REF.
4f	<p>The proposal refers to potential offsite discharge of surplus recycled water to either trade waste or the environment, including potential discharge to ocean, sand dunes, groundwater, or Middle Camp Creek.</p> <p>The proponent should provide detailed assessment to show that the proposed discharge option does not result in more than minimal harm to the environment.</p> <p>Appropriate monitoring and reporting parameters must also be determined.</p>	<ul style="list-style-type: none"> Offsite discharges are not predicated to occur. In the unlikely event of an overflow, the subdivision's stormwater system will capture overflows in detention basins, enabling the overflow to be cleaned up. 	<ul style="list-style-type: none"> Reflected in the revised REF.
4g	<p>Condition B(24) of the Consent for the subdivision may require modification as Hunter Water will no longer be the Water Supply Authority servicing the site.</p> <p>The proponent may be required to lodge an application for Modification of Minister's Approval under the EP&A Act.</p>	<ul style="list-style-type: none"> A modification application for PA 10_0204 has already been undertaken for this (MOD 2). 	<ul style="list-style-type: none"> It appears that this has been approved under MOD 2 of PA 10_0204.
5. Catherine Hill Bay Progress Association – Sue Whyte			
5a	<p>The wastewater treatment plant will impact Catherine Hill Bay (CHB)'s waterways and beach:</p> <p>Stages 6&7 lie above a creek which flows directly onto the Bay's beach.</p> <p>The area designated for spraying is on the northern side of Montefiore Street which slopes down to CHB Creek which flows into the sea at the main swimming beach at CHB. The local Dunecare group has worked along CHB Creek for over a decade removing weeds and planting endemic plants. Also, children swim in this creek!</p>	<ul style="list-style-type: none"> Offsite discharges are not predicated to occur. The previous (approved) model for the subdivision had a higher potential to pollute CHB Creek, as it had a sewage pumping station located adjacent to the creek that could potentially overflow. In the unlikely event of an overflow, the subdivision's stormwater system will capture overflows in detention basins, enabling the overflow to be cleaned up. 	<ul style="list-style-type: none"> Reflected in the revised REF.

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	<p>This beach is the only patrolled beach in the area and will remain so as Moonee Beach is considered dangerous.</p> <p>The existence of this creek and the impacts on it are not mentioned in the Review of Environmental Factors. The Association considers this to be a serious omission.</p>	<ul style="list-style-type: none"> ■ The revised REF and Integrated Water Management Plan (Appendix C) includes details of monitoring for effluent, recycled water quality and environmental surface/groundwater/soils. ■ Baseline environmental monitoring has commenced. 	
	<p>Also of concern is that the stormwater runoff for all of Stage 3 and the proposed shops is to be directed into a detention pond in the village green (located east of the houses on the sea side of Clarke Street in the heritage village). This stormwater runoff also flows directly into the same creek which exits onto the beach and then into the sea.</p> <p>Why does the Review of Environmental Factors not consider the potential for possible contaminated (pollutants, minerals and fertilisers) surface water to flow into this creek and onto the beach, as well as into the ocean?</p>	<ul style="list-style-type: none"> ■ As above. ■ Impacts from Stage 3 of the subdivisions are not within the scope of the REF. ■ There is no potential for impact on the creek or ocean. 	<ul style="list-style-type: none"> ■ The revised REF demonstrates that a high level of control and prevention will be established over the functioning of the proposed sewerage system and plant, reducing the risk of discharges to the environment to very low. ■ There will always remain some risk of accidental discharge from such a system, such as may be caused by pipe or pump failure, but such a discharge would generally be contained within the subdivision's stormwater management system. ■ Solo Water has committed to developing Emergency Response Plans that would detail procedures for containing and cleaning up a discharge from the system that would further reduce the risk of impacts to the surrounding environment.
5b	<p>Contradictory height figures:</p> <p>The Application states a number of times "No structure associated with the STP will exceed 7.2m in height".</p> <p>Whereas the Visual Impact Assessment, Catherine Hill Bay Development WWTP Site and Associated Infrastructure prepared for Rosegroup Pty Ltd by Planit Consulting Pty Ltd, June 2014 states, "The physical structures located within the northern portion of the WWTP site consist of a shed (5.10m above pad level), and storage/treatment tanks with a maximum height of 6.0m".</p>	<ul style="list-style-type: none"> ■ The reference to a maximum height of 7.2 m was made in error and has been corrected in the revised REF. 	<ul style="list-style-type: none"> ■ Reflected in the revised REF.

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	<p>This height of 6.0m is mentioned a number of times within this document and is used as the basis for shed analysis, "This height data has been used to generate a view shed analysis of the WWTP. Elevation data (Aster GDEM Elevation data 2012) has been used to determine the potential view shed for these elements" (Figure 5).</p> <p>Such contradictory figures bring into question the accuracy of the view shed analysis.</p>		
5c	<p>Incorrect assessment of the potential visual impact on the State Heritage Listed Town of Catherine Hill Bay.</p> <p>"The Area of investigation (AOI) is located on the southern side of Montefiore Street at the western edge of the proposed development footprint ...The AOI is bound to the south by the Munmorah State Conservation Area and to the east by the proposed residential lots of the CHB development (Stage 6&7)"</p> <p>Stages 6 & 7 are north, not east, and are overlooked by a high ridgeline further to the north that separates the two villages of Catherine Hill Bay.</p> <p>This ridgeline is included in the heritage curtilage and yet views from this ridgeline are excluded from this Visual Impact Statement.</p> <p>It is incorrect to say "The visual catchments for the CHB are made up of two distinct primary regions, VCA1 Catherine Hill Bay VCA and VCA2 Moonee VCA. These regions are defined largely through topography with the main site ridgelines acting as the perimeter of VCA2."</p> <p>It is acknowledged that there is "an additional VIA referred to as Middle Camp Landscape Unit 'to the north of VC1. Given the distance of this VIA from the area of investigation (1.62km), coupled with the topographic features and existing vegetation characteristics of the "Catherine Hill Bay VCA (VCA2) the VCA of Middle Camp is not investigated further in this report."</p>	<ul style="list-style-type: none"> ■ Solo Water does not agree. Visual catchments were determined using 3D topography models and the best data available. ■ The visual impact assessment identifies measures to ensure that visual impact will be managed and mitigated. 	<ul style="list-style-type: none"> ■ The revised Visual Impact Assessment is based on 3D geospatial analysis, which is a standard practice for developments that have the potential to create significant visual impacts to sensitive receivers. ■ The 3D geospatial analysis used in the visual impact assessment uses the ASTER Global Digital Elevation Model, which is publicly available topographical data collected by NASA. This data is considered to be appropriate for a visual catchment analysis. The overview of the visual catchment area shown in Figure 7 of the Visual Impact Assessment indicates that the data used for the assessment is representative of the actual topography of the area. ■ It is therefore considered that the conclusions made visual analysis undertaken for the visual impact assessment are valid.

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	<p>This is a convoluted way of saying that the heritage township which includes the 2 villages and the high ridge that separates them, itself part of the heritage township, is not worth examining. This analysis is incomplete. This should be one of the major areas of analysis in this study if it is to have any validity.</p> <p>This Visual Impact Assessment is only looking at the visual impact on the Rosegroup residential development. It is completely ignoring the fact that this development is adjacent to a State Heritage Listed Township which has always sought to be visually separate from this new development.</p> <p>The State Government approval for this new residential development makes it absolutely clear that there must not be a visual impact on the Heritage Listed Town of Catherine Hill Bay.</p> <p>The proposed waste treatment plant dimensions show there will be a most noticeable visual impact on the heritage township.</p> <p>Because of the potential visual impact of the proposed waste water treatment plant on the State Listed Heritage Town of Catherine Hill Bay, we ask that the Visual Impact Assessment prepared by Planit for Rosegroup Pty Ltd be forwarded to the Heritage Office for their consideration."</p>		