Submissions	AdelaideAqua Responses
Submission 1 Seawater desalination plants should not be operated in Australia as these do not comply with five criteria required for adaptation to climate change, outlined below, and given that there are sustainable and low-cost alternatives such as stormwater harvesting. "Barnett and O'Neill (2009) define "maladaptation" as: *Action taken ostensibly to avoid or reduce vulnerability to climate change that impacts adversely on, or increases the vulnerability of other systems, sectors or social groups*	AdelaideAqua do not believe this issue to be relevant to the Licence application process, on the basis that: • An EIS process has been undertaken • A Development Approval for the facility has been approved and issued • The plant has been designed to meet all requirements and conditions contained within the DA and EIS documents On this basis, we do not believe this comment requires a formal response.
Furthermore, Barnett and O'Neill (2009) use the Wonthaggi desalination project as an example of maladaptation to climate change on the basis of the following five criteria: 1. Increasing emissions of greenhouse gases (enhanced energy requirements) 2. Disproportional burdening the. most vulnerable (increases in water & electricity costs, negative marine impacts, etc.) 3. High opportunity costs (there are cheaper alternatives) 4. Reduce incentive to adapt (continued high water usage) 5. Path dependency (commitment of capital and institutions, future changes difficult)	AdelaideAqua do not believe this issue to be relevant to the Licence application process, on the basis that: • An EIS process has been undertaken • A Development Approval for the facility has been approved and issued • The plant has been designed to meet all requirements and conditions contained within the DA and EIS documents On this basis, we do not believe this comment requires a formal response.
The maladaptation concept proposed by Barnett and O'Neill (2009) is designed as a general tool for use in decision-making. Some developments do not meet one of these criteria, others more. Interestingly, the Wonthaggi desalination project and, equally, the other Australian desalination projects do meet all of these fundamental criteria.	AdelaideAqua do not believe this issue to be relevant to the Licence application process, on the basis that: • An EIS process has been undertaken • A Development Approval for the facility has been approved and issued • The plant has been designed to meet all requirements and conditions contained within the DA and EIS documents On this basis, we do not believe this comment requires a formal response.

Given the approval of the Port Stanvac desalination plant by the South Australian Government, which ignored the above criteria, other important environmental considerations come into play. The most important requirement is the adequate choice of location for the inlet and outlet of a seawater desalination plant (Lattemann and Hopner, 2008). Regions of exposed open-ocean flushing (if not an upwelling region) should be preferred over more sheltered regions (such as estuaries). Marine regions of ecological significance should be avoided. The overwhelming consensus of scientists involved in the Adelaide Coastal Water Study is that pollutant inputs into Gulf St. Vincent should be substantially reduced in order to improve the health of the system (Fox et al., 2007).The existence of weak neap tidal flows (dodgetides) in South Australian gulfs are of particular concern supporting the built-up of point-source pollutants (Kampf, 2008; 2009; Kampf et al., 2009). Previous expert advice has widely been ignored. Clearly, South Australian gulfs do not qualify as a suitable candidate for desalination brine discharges and the decision to build desalination plant at Port Stanvac in close vicinity to Adelaide's swimming beaches is a strategic mistake of enormous economical, ecological and social consequences.	AdelaideAqua do not believe this issue to be relevant to the Licence application process, on the basis that: • An EIS process has been undertaken • A Development Approval for the facility has been approved and issued • The plant has been designed to meet all requirements and conditions contained within the DA and EIS documents On this basis, we do not believe this comment requires a formal response.
The license application by the Adelaide Aqua consortium is an important part of Adelaide's Desalination Project. On the basis of the above argumentation, the license should not be granted since the project violates many important principles of significance to sustaining Adelaide's marine and social environment.	The plant has been designed and constructed in accordance with all necessary legislative and contractual requirements, including a DA and EIS, as part of a broader strategy to address the water challenges of Adelaide and South Australia. Development Approval implies the expectation that a licence to operate the plant will be issued, with appropriate management and monitoring guidelines.
If a license approval is unavoidable under the current political circumstances, I strongly recommend a strict and regular monitoring of key water quality parameters of both the desalination brine before it enters the sea and the seawater surrounding the discharge pipeline. According to approval conditions set by the South Australian Government (see EPA Annual Report 2008-2009), key conditions included requirements for an Operational Environment Management and Monitoring Plan, which has not been provided as part of the license application. The application should be dismissed until such a plan has been	EPA licensing guidelines do not require an OEMMP to be developed prior to submitting an operating licence application. Rather, an OEMMP is being developed as part of the licensing process, which is required to be approved by the EPA before a licence can be granted. This document will detail the monitoring regime deemed appropriate by the EPA.

established. To demonstrate excellence, the operators should be obliged to draft a detailed Plan as part of their application. .	
Another key requirement set by the South Australian Government (see EPA Annual Report 2008-2009) is "a 50 to 1 dilution of the brine discharge when it reaches the sea floor in all locations and under all tidal and sea condition". This implies that operators must regularly measure and report a number of water quality parameters for calculation of dilution ratios. Firstly, this monitoring must be undertaken at least on a weekly basis in order to capture the tidal cycle with compulsory measurements during dodge tides. Secondly, calculations of dilution require knowledge of the salinity of the brine concentrate before it enters the water column together with measurements of salinity anomalies in the ambient water.	Monitoring requirements will be developed by the EPA during the licensing process, based on a thorough understanding of the plant design and operation, and giving due consideration to the nature of the discharge and the potential risk of environmental harm. These requirements will be documented within the OEMMP developed by AdelaideAqua and approved by the EPA; the nature and frequency of all monitoring will be in accordance with this document.
In addition to this, measurements of dissolved oxygen levels readily give indications of marine impacts and spatial scales of the brine plume. Hence, dissolved oxygen measurements should be compulsory ~s well together with specification of critical dissolved oxygen levels in the license. These measurements must cover the near field (within 100 m from the discharge pipeline) and, in case of any indication of critical salinity/oxygen levels, far beyond this (impacts can spread over several kilometres). The use of state-of-the-art accurate marine instruments is a standard requirement, but I recommend establishment of an independent scientific panel for quality control of the data.	Monitoring requirements will be developed by the EPA during the licensing process, based on a thorough understanding of the plant design and operation, and giving due consideration to the nature of the discharge and the potential risk of environmental harm. These requirements will be documented within the approved OEMMP; the nature and frequency of all monitoring will be in accordance with this document. The OEMMP will include references to appropriate instrumentation and quality control procedures, and AdelaideAqua believe an independent scientific panel would not provide any benefit over and above the experience of the EPA in this area.

lt is alarming to find reference to "safe dilution values" of around 20 to 1 in the license application. Such alarmingly low dilutions, being in conflict with key requirements, should not be permitted under any circumstances .These values remind the author of the softening of license conditions for the Perth desalination plant. Following the observed bad performance of the discharge design, safe dilution requirements were reduced from the initial target value of 45 to l to an adjusted value of 20 to 1, implying enhanced stress on the marine environment. To avoid this, the safe dilution value in this license needs to be fixed at an absolute and unchangeable value of 50 to 1.	The definition of safe dilution factor has been misinterpreted. Safe dilution values indicate the *minimum* dilution required to protect 95% of the marine species, in accordance with the ANZECC guidelines for slight to moderate ecosystems. This figure was determined following ecotoxicity testing of the discharge samples by an accredited laboratory. Modelling of the ADP design indicates the diffusers will achieve the initial dilution ratio of 50:1 (adjusted to 58:1 to account for increased recovery) as stated within the Gazette, indicating a substantial factor of safety inherent in the design of the plant.
Discharge of untreated backwash can cause widespread damage to the marine environment and should strictly be prohibited in Australia. The applicants should be asked to provide detailed information on the treatment and discharge of backwash, which has been excluded from the application text despite its high significance. Certainly, chemical analyses of the backwash are an important requirement in conjunction with reporting of times and quantities of discharges into the sea. My understanding is that the backwash treatment will be done by external agencies. However, backwash is a product of the desalination process and therefore must be addressed in the license. This is to avoid the situation that the bashwash is later re-added to the same brine discharge operated by Aqua Adelaide without any binding regulations.	The design and operation of the backwash system was discussed in detail with the EPA during the design of the desalination facility to ensure an appropriate process was developed. In summary, backwash waste from the disc filters and UF pre-treatment system will be treated via a dedicated solids waste treatment stream, with the concentrated solids removed from site. All chemicals from the Clean in Place system are treated/neutralised prior to discharge through the outfall. AdelaideAqua has conducted extensive ecotoxicity studies on the various waste streams to ensure they do not pose a risk of harm to the environment. These studies concluded that the treated waste streams are suitable for discharge via the outfall system, with the exception of one cleaning solution (EDTA/SDS) which has been determined as unsuitable for outfall discharge, and which will instead be disposed of via trade waste.
Transparency of the monitoring efforts implies that data be made instantly available to the EPA for public release on their Website. Publication of dissolved oxygen levels and dilution ratios should be a minimum requirement. In addition to the above, independent scientists (like myself) should be given unlimited access to undertake own measurements in vicinity of the discharge location.	Discussions on publishing monitoring results will be undertaken between the EPA, SA Water and AdelaideAqua during the licensing process. The intake and outfall risers will be protected by a marine exclusion zones in accordance with DTEI requirements, and any access will be subject to relevant maritime regulations.
Another important point is that any monitoring task required detailed knowledge of the baseline' ecologic conditions prior to the discharge. I am uncertain whether this baseline information exists or whether additional scientific studies are required. An independent expert scientific panel needs to be established to	Baseline monitoring was conducted for the EIS, the results of which are readily available to the respondent, and this monitoring has continued through the design and construction phases of the project. AdelaideAqua do not believe an independent expert scientific panel is necessary or

address this important point and to avoid future uncertainties and unnecessary debates of damages done.	appropriate for this activity, given that the protocols being adopted have been agreed with the EPA.
Summary of specific requirements: 1. License applicants to produce a draft Operational Environment Management and Monitoring Plan as part of the application 2. Free site access for scientists for independent measurements 3. Public release of monitoring data 4. Specify safe dilution value of 50 to 1& dissolved oxygen threshold in licence 5. License applicants to provide detailed information of backwash treatment 6. Include specific conditions for backwash treatment/discharge in-the license 7. Establish independent scientific expert panel to oversee monitoring program	AdelaideAqua do not believe it is appropriate for a respondent to nominate specific requirements of the operating licence, as this will be developed by the EPA during the licensing process, based on a thorough understanding of the plant design and operation, and giving due consideration to the nature of the discharge and the potential risk of environmental harm. However, our response to each point is as follows: 1. This is currently being undertaken 2. Monitoring will be undertaken by approved organisations, with appropriate and agreed environmental, safety and quality protocols and procedures. 3. This will be determined by SA Water, the owner of the facility and the EPA. 4. Any performance criteria deemed necessary as a licence condition will be determined by the EPA. However, AdelaideAqua believe it is appropriate to consider describing the performance of the plant in terms of both salinity and DO thresholds, as this is both easier to monitor and report, as well as being most relevant to managing the risk of environmental harm. 5. This has been provided to the EPA, and submitted with the licence application 6. We understand the EPA intends to license CIP chemicals that are authorised for discharge based on the information supplied and the results of the ecotoxicity testing. 7. We believe the EPA is the appropriate body to oversee the monitoring program, and see no reason or benefit of introducing a separate independent scientific panel.

Submission 2	
The-Independent Technical Review Panel (ITPR) considered the Environmental Impact Statement (EIS) of November 2008 and the Response Document of January 2009 for the proposed Adelaide desalination plant. As one of its key attributes of the project's Concept Design the ITRP states: "10. The ITRP supports long term monitoring of marine conditions in the region of Port Stanvac to expand and improve knowledge of the local marine environment to enable a regular assessment to be made of any effects from the construction and operation of the desalination plant." Given that the South Australian interim study results indicate that, as in the simulated saline concentrate tests, salinity was the major toxicant; it is thought that it would be proper (and desirable) to allow easy public scrutiny of the continuous seawater test results when the desalination plant begins operating.	While AdelaideAqua are not opposed to public scrutiny of any test results, this is a matter to be determined by the EPA and the facility owner, SA Water. We are therefore unable to comment, other than to say we believe it has no relevance to the licence application.
It would be an easy task to allow continuous web access (at least) for public scrutiny of some of the key sea water test results such as salinity (ppt), dissolved oxygen (DO), water temperature, and key heavy metals. To allow this 'scrutiny' would allay any potential public mistrust of due diligence when operating the desalination plant and testing for environmental harm test result triggers. It would be nice to explain to the public (in simple terms) what test result parameters apply, what they mean, and what constitutes a 'pass', 'fail', or need for management 'action'.	Refer above
The ANZECC AND ARMCANZ (2000) guidelines provide the accepted method for deriving ecological trigger values and safe dilutions for the disposal of waste streams in an aquatic environment ,and that these guidelines recognise that the implementation of trigger values for discharges is not a simple pass or fail. But, when a trigger value is exceeded it triggers predefined management action(s). The management action(s)should be developed and agreed to prior to the operation of the plant 'and discharge of its waste stream	An OEMMP will be developed and submitted to the EPA for their approval prior to operation of the plant. This OEMMP will identify appropriate trigger values, and define the management actions to be implemented should these trigger points be reached.

Public perceptions/expectations- It is disconcerting to note that when the S.A. Desalination Plant concept was initially being discussed within the South Australian public realm, little was being reported about the operation and monitoring of the newly started Kwinana Desalination Plant near Perth. The fact that that plant had to cut its production for about a week because sea water tests in Cockburn Sound showed low levels of oxygen (that triggered predefined management actions, and production curtailment) was not reported in the South Australian media for some time, led some of our public to question whether there might be a deliberate media 'clamp' --so as not to jeopardize our acceptance of a similar plant within our enclosed and low tidal flow Gulf S1. Vincent. Eventually, the Kwinana plant's temporary 'closure' was very briefly reported on an inside page of The Advertiser ~ once.. When visiting the Perth plant (2.10.08) a visiting group was told that the plant had, in fact, reduced production twice –and further opinion suggested that oxygen level test results had' failed' expectations on several more occasions. .	AdelaideAqua cannot comment on what was being reported within the public realm during the initial discussion of the SA Desalination Plant concept, nor do we believe this to be relevant to the licence application. The design, construction and operational conditions between the ADP and the Perth Desalination Plant are not comparable, particularly given the different topographical, ecological, receiving environment conditions between Cockburn Sound and the Gulf St Vincent.
There remain members of the public and so-called' experts' who, given the topography of Gulf St Vincent and its unique circumstances (including 'flushing characteristics'), still seriously doubt whether the concentrated brine produced by the Port Stanvac Desalination plant can be adequately dispersed back into the marine environment without detriment, utilising the methods proposed.	Significant near, mid and far field modelling has been undertaken as part of the design of the ADP in order to evaluate the likely performance of the outfall system, taking proper account of the 'flushing characteristics' of Gulf St Vincent. The results of these studies were compared to published guidelines, as well as ecotoxicity test results on localised marine flora and fauna species, in order to establish the risk of harm to the environment from the saline discharge into the Gulf. This information has all been supplied to the EPA as part of the licence application, and indicates that the plant can indeed achieve the dispersion necessary to ensure the risk of environmental harm is minimised. Additionally, marine monitoring surveys have been undertaken prior to and during construction, and will continue through operation as required by the EPA to monitor the actual performance and environmental impacts of the desalination plant. This monitoring will be described in the OEMMP, which will be approved by the EPA prior to operation of the plant.
It is therefore requested that the SA Environment Protection Authority write to both SA Water and Adelaide Aqua, requiring that the results of monitoring associated with the brine dispersal and the marine environment be made	While AdelaideAqua are not opposed to public scrutiny of any test results, this is a matter to be determined by the EPA and the facility owner, SA Water. We are therefore unable to comment, other than to say we believe it

available to the public utilising the Internet and (ww)web technologies; and by doing so the parties would show innovation and commitment to open communication to the public and specifically those groups and individuals who remain concerned about the proposed brine dispersal.	has no relevance to the licence application.
Submission 3	
Submission to the South Australian Environmental Protection Authority, in regard to the application for a licence to operate the Adelaide Desalination Plant. To quote the CSIRO; "The Adelaide Coastal Waters Study (ACWS) was established early in 2001 by the South Australian Environment Protection Agency (now Authority). This was in response to on-going concerns about the decline in coastal water quality, as well as the loss ofmorethan4000hectares of shallow subtidal seagrass along the metropolitan coast since the late 1940s." As the City of' Onkaparinga has 31 kilometres of coastline, a major estuary and two aquatic reserves including the Port Noarlunga reserve (soon to be part of Encounter marine park) Owing to Port Noarlunga reserve being approximately 2 kilometres south of the Desalination plant and having in excess of 170 000 visitors per year *http://www*.sardi.sa.gov.au/aquatic/aquatic_sciences/education_and _extension/port _noarlunga _reef_underwater_trail	No comment required
One would hope that ongoing monitoring would be conducted on the northern most boundary of the current Port Noarlunga Aquatic reserve and that these results associated with the brine dispersal and the marine environment be made available to the public on an ongoing basis. Thus by doing so, the parties would show innovation and commitment to open communication with the public and specifically those groups and individuals who remain concerned about the proposed brine dispersal within the Gulf	Monitoring requirements will be developed by the EPA during the licensing process, based on a thorough understanding of the plant design and operation, and giving due consideration to the nature of the discharge and the risk of environmental harm. These requirements will be documented within the OEMMP developed by AdelaideAqua and approved by the EPA; the nature and frequency of all monitoring will be in accordance with this document.

	While AdelaideAqua are not opposed to public scrutiny of any test results, this is a matter to be determined by the EPA and the facility owner, SA Water. We are therefore unable to comment, other than to say we believe it has no relevance to the licence application.
Submission 4	
Our Federation is the peak recreational SCUBA diving body of South Australia. As a key stakeholder in the marine environment, we submit the following comments in relation to the above application. In a forum held by the City of Onkaparinga, key speaker Dr Jochen Kaempf, Senior Lecturer of Oceanography at Flinders University stated that there is a gulf-wide "trapping" of gulf water during summer. Dr Kaempf also stated that the gulf experiences so called 'dodge tides' where there are periods of little or no tidal movement within Gulf St Vincent. Given the trapping issue and dodge tides, the operation of a desalination plant must have safeguards in place, such as a real-time monitoring of salinity and oxygen levels around the discharge zone, at multiple locations and depths, before commissioning as a condition of the licence to ensure that there is minimal effect on the marine environment. The monitoring system should automatically reduce or stop the output of desalination brine to protect the surrounding marine environment until salinity and oxygen levels return to levels that will have minimal effect on the marine environment. The locations and depths of monitoring devices and 'safe' salinity/oxygen levels should be determined by independent experts such as those at Flinders University.	Significant near, mid and far field modelling has been undertaken as part of the design of the ADP in order to evaluate the likely performance of the outfall system, taking proper account of the flushing characteristics of Gulf St Vincent (including 'dodge tides'). The results of these studies will be considered by the EPA to determine appropriate operating conditions and monitoring requirements for the plant, and these procedures will be contained within the OEMMP (to be approved by the EPA prior to operation of the plant), such that the actual performance and environmental impact of the plant is understood. Further, the OEMMP will identify appropriate monitoring points and trigger values, and define the operational management actions to be implemented should these trigger points be reached.
We have grave concerns in relation to the detrimental effect the heavy low oxygen desalination brine may have on the seabed and marine life. The brine discharged from the desalination plant at Cockburn in WA has experienced such problems with brine mixing/ dispersal, requiring a reduction in its output.	Significant near, mid and far field modelling has been undertaken as part of the design of the ADP in order to understand the likely performance of the outfall system, taking proper account of the 'flushing characteristics' of Gulf St Vincent. The results of these studies were compared to published guidelines, as well as ecotoxicity test results on localised marine flora and fauna species, and indicate that the plant is not expected to have a detrimental effect on the seabed or marine life.

	Further, the design, construction and operational conditions between the ADP and the Perth Desalination Plant are not comparable, particularly given the different topographical, ecological, receiving environment conditions between Cockburn Sound and the Gulf St Vincent.
We request that the results of a study/studies of the surrounding marine environment before the licence is granted be made available to us and members of the public, as a condition of the licence.	All relevant studies performed by AdelaideAqua were supplied to the EPA with the licence application, and are available to the public. Additional studies performed as part of the EIS are also available to the public.
Further, that constant monitoring of the effects of the Adelaide desalination plant on the surrounding marine environment must be undertaken. We request that the results of these studies and monitoring be made available to us and members of the public as condition of the licence.	Monitoring of the effects of the ADP on the surrounding marine environment will be undertaken in accordance with the approved OEMMP. While AdelaideAqua are not opposed to public scrutiny of any test results, this is a matter to be determined by the EPA and the facility owner, SA Water. We are therefore unable to comment, other than to say we believe it has no relevance to the licence application.
The City of Onkaparinga's submission on the environmental Impact Statement of the Adelaide desalination plant states: "The city of Onkaparinga has engaged Dr Jochen Kaempf of Flinders University to independently review brine discharge issues. Dr Kaempf's report forms Appendix 1 to this submission. His findings conflict directly with the modelling undertaken in the EIS. A review of modelling work around brine discharges should be undertaken in response to Dr Kaempf's findings". We request that the review of modelling work recommended by the City of Onkaparinga be undertaken and the results utilised to determine the licence conditions to ensure the best possible mixing and dispersal of the saline brine such as to minimise damage to the surrounding marine environment, in particular in the immediate vicinity of the discharge. This modelling should also be used to assist with determining the location of aforementioned oxygen/salinity monitoring devices.	A review of the modelling done by AdelaideAqua has been undertaken by an independent technical review panel, and the comments have been provided to the EPA. AdelaideAqua expects the EPA will consider these comments when establishing the relevant licence conditions and OEMMP requirements.

It is noted that in the "Adelaide Coastal Waters Study" published by the South Australian Environmental Protection Agency (now Authority) in February 2008, a number of key recommendation appear to have close correlation with the discharge of the aforementioned brine, primarily: *"Recommendation 1:* As a matter of priority, steps must be taken to reduce the volumes of wastewater, stormwater and industrial inputs into Adelaide's coastal environment. This should be done within the context of an overaching strategy designed to remediate and protect the metropolitan coastal ecosystem." Our Federation strongly urges the EPA to consider the key recommendations of the aforementioned study when determining the conditions of the licence, as the outcomes of this study clearly speak against the additional discharge of desalination brine and the pollutants it contains into the Gulf. Taking these recommendations lightly will likely cause permanent damage to our State's marine environment.	AdelaideAqua believe this recommendation is referring to "wastewater, stormwater and industrial inputs" and therefore question the relevance to the licence application for the ADP. Regardless, the key recommendations were taken into account in the granting of EIS and conditions of Development Approval for the ADP (see 4.1.4.4., 4.1.4.5., 4.2.2.2., 4.3.2.1 of the 'The Proposed Adelaide Desalination Plant Environmental Impact Statement - Response Document January 2009'; and the EIS Chapter 7), and the ADP has been designed to meet all requirements of the DA and EIS.
Submission 5	
Please accept this as the submission of the Cheltenham Park Residents Association Inc (CPRA) in regards to the application by Acciona Agua Adelaide Pty Ltd, McConnell Dowell Constructors Pty Ltd and Abigroup Contractors Pty Ltd (trading as AdelaideAqua) for a licence to operate the Adelaide Desalination Plant. CPRA is a member of the Conservation Council of South Australia, and is aligned with the environmental groups Save Our Gulf Goalition and Friends of Gulf St Vincent. CPRA adopts the submissions made by those organisations regarding the discharge of brine into Gulf St Vincent and the resultant negative impacts on the Gulfs marine ecology. CPRA refers to the studies undertaken by Dr. Jochen Kaempf, Senior Lecturer of Oceanography Flinders University, and Dr Kirsten Benkendorff, Senior Lecturer. School of Biological Sciences Flinders University and asks that the EPA gives full weight to those studies in making its determination regarding AdelaideAqua's licence.	AdelaideAqua believe the more relevant and appropriate studies for the EPA to consider is the information provided with the licence application, including the detailed near, mid and far field modelling, which has been subject to review and scrutiny of the Independent Technical Review Panel, and the ecotoxicity testing, which has also been independently reviewed.
CPRA puts on record its contention that large-scale, stormwater harvesting is a	AdelaideAqua do not believe this issue to be relevant to the Licence

cheaper and more environmentally responsible option than desalination, and that the Adelaide Desalination Plant would not be necessary if stormwater harvesting opportunities in the Adelaide plains (such as exists at Cheltenham Park Race course) and across the greater Adelaide region were maximised.	application process, on the basis that: • An EIS process has been undertaken • A Development Approval for the facility has been approved and issued • The plant has been designed to meet all requirements and conditions contained within the DA and EIS documents On this basis, we do not believe this comment requires a formal response.
CPRA notes the EPA's contention that "the Adelaide Desalination Plant has received approval as a Major Development, which means it has already demonstrated it can meet a range of environmental criteria and has prepared an Environmental Impact Statement". CPRA also notes the discrepancies between the Environmental Impact Statement and the studies of Dr Kaempf. CPRA asks that the EPA be fully aware of the latest available data before making its determination about the licence.	The project has been granted Development Approval. Dr Kaempf's studies were considered as part of the DA process, as evidenced by 'The Proposed Adelaide Desalination Plant Environmental Impact Statement - Response Document January 2009' (4.1.3).
CPRA contends that the EPA can and must withhold the licence if the latest data indicates serious adverse effects on the marine environment resulting from the operation of the desalination plant. If the EPA determines to issue a licence, CPRA asks that the most stringent conditions possible be imposed, and adopts any submissions made by the Conservation Council of South Australia, Save Our Gulf Coalition and Friends of Gulf St Vincent in regards to those conditions.	AdelaideAqua have undertaken significant near, mid and far field modelling has been undertaken as part of the design of the ADP in order to evaluate the likely performance of the outfall system, as well as ecotoxicity testing, which indicate that the plant is not expected to have a detrimental effect on the marine environment, and that this is what should be considered by the EPA. Further, AdelaideAqua believes that any conditions included in the operating licence should not be "the most stringent possible", but rather be appropriate and in response to clear evidence of a risk of harm to the environment.
Submission 6	
I wish to be advised that the discharge conditions of concentrated salt and treatment chemicals will not add to the deterioration of sea grasses in Gulf St Vincent.	Site selection for the ADP was discussed within the EIS and EIS Response Documents. The ADP site and discharge 'zone' was selected due to the minimal ecological impact from plant operation. Marine monitoring surveys have indicated there is little to no seagrasses present within the discharge zone.

I have been encouraged by the thorough investigations undertaken under the Adelaide Coastal Waters Study Overview and note that the first 3 recommendations of this SA Government Study, being led by EPA, indicate that: *"*As a matter of priority steps must be taken to reduce the volumes of wastewater, stormwater and industrial inputs into Adelaide's coastal environment.---" "The total nitrogen discharged to the marine environment should be-reduced by 600tonnes per annum (representing a 75% reduction from the 2003 level---" "Commensurate with efforts to reduce the 'nitrogen load, steps should be taken to progressively reduce the load of particulate matter----a 50% reduction (from 2003 levels) would be sufficient to maintain adequate light levels above seagrass beds---"	AdelaideAqua do not believe this comment to be relevant to the licence application for the ADP.
I understand from reading the main report of the Adelaide Coastal Waters Study Overview that any discharges into the Gulf St Vincent in the area of Adelaide have been shown to move along the coast and do not move into the centre of the Gulf. As the discharge from the desalination plant will be large and continuous I am concerned that we are only adding to the problems we have created. The alternative as I would understand it is to construct a pipeline to take the discharge down towards Cape Jervis away from the protected waters of the Gulf.	Port Stanvac was selected as the site for the plant in part due to the accessibility of relatively deep seawater and optimal marine dispersion characteristics. The location of the outfall and intake are in the near-mid benthic zones is detailed in the document 'Report –Intake and Outfall Systems Environmental Performance Summary' sections 2, 3.2 and 4.2. Further, the design of the diffuser system, including placement of outfall diffusers, takes into consideration the tidal and current movements of the Gulf St Vincent, to enhance mixing properties within the Gulf, and is supported by extensive near, mid and far field modelling.
When the long term nature of the enterprise and impact is considered I would have thought this would be a much more reasonable approach. Instead the approach seems to be to justify the impacts on the Gulf of the discharges at Lonsdale. This can only add to the difficulty in maintaining a Gulf St Vincent that we could be proud of in its ability to sustain a vibrant marine environment.	AdelaideAqua do not believe this comment to be relevant to the licence application for the ADP.
Submission 7	
The Environmental management practices and infrastructure employed at the site	No comment

to reduce potential environmental harm arising from the operation include: • Diffuser design • Bypass System • Diffuser modification • Clean in place, safe dilution levels • Marine Habitat monitoring	
Referring to the Statement of Independent Technical Review Panel (ITRP) on EIS and Response document Jan 2009 several points remain concerning to residents along the coastline adjacent to the desalination plant. This coastline adjacent is used extensively for professional and recreational pursuits including fishing, surfing, diving, sailing, swimming and walking.	No comment
These concerns include potential damage to the marine environment by releasing high saline brine and the costs of the desalination plant operation which will be powered by electricity.	Environmental concerns are addressed in the various modelling studies and ecotoxicity testing that accompanied the licence application.
The ITRP was endorsed using EIS modelling for the Concept Design. The desalination plant is situated in Gulf St Vincent which has unique tidal movements caused by currents, landforms, water depths, winds and the Coriolis effect. Due to this, tides and currents in the southern hemisphere flow predominately rotate counter clockwise. This will move the discharged brine northwards and in the gulf that may impact on the adjacent coastline arid marine environment. The predictive models used in the EIS were matched to the desalination plant built in WA at Kwinana on Cockburn Sound, which has quite different tidal movements to that of Gulf St Vincent. Cockburn Sound opens beyond Garden Island to the Indian Ocean. The impact on Perth's desalination plant is still uncertain as documented in The International Desalination & Water Reuse Industry (01/06/09). The plant has been shut down twice in 12 months and the marine environment of Cockburn Sound continues to be under stress.'	The ITRP are an independent panel of recognised scientists engaged to review and provide comment on the Intake out Outfall systems. The relevance of references to tidal movement in the Gulf St Vincent versus the general comment on tides and currents in the southern hemisphere is not clear. AdelaideAqua can confirm that tide and current movements specific to the Gulf were incorporated into the modelling and design of the ADP outfall. The relevance of the reference to the Kwinana desalination plant is similarly unclear, but AdelaideAqua reiterate our earlier comments that the design, construction and operational conditions between the ADP and the Perth Desalination Plant are not comparable, particularly given the different topographical, ecological, receiving environment conditions between Cockburn Sound and the Gulf St Vincent.

The ITRP does however, accept that there is likely to be localised effects on the marine environment, including entrainment of plankton and a small salinity increase around the area of discharge. Although most of the dissolved matter in seawater is common salt, it also contains the salts of many metals including copper, nickel, iron and zinc, The problem with saline discharge contacting the seabed sediment reacting with what may be in the sediment has been identified by Dr Ian Dyson but was not included in the EIS. Disturbance of the sediment may impact of the levels of turbidity and light levels.	The intake is located in the mid-benthic zone, an area characterised by bare sand interspersed with red macroalgae and a mixed intervebrate community, approximately 700m from the nearest subtidal reef. Further, the metal salts referenced, where they occur naturally, will be returned to the same environment by the very nature of the RO process rejecting these salts and returning them via the saline discharge. Disturbance of the sediments on the seabed has been considered in the design of the outfall system, to ensure turbidity or light levels are not affected.
It has been documented that a saline increase of 45 parts per 1000 can cause the demise of squid eggs, which may lie close to the seabed.	Noted. However, it is also relevant to note that: 1. Near and mid field modelling and ambient salinity measurements indicate that the plant will not cause an increase in salinity of 45ppt at the seabed 2. The area in which the outfall lies is not known as a squid spawning area.
Whilst long term monitoring of the marine conditions in the region of Port Stanvac will be undertaken to improve knowledge of the local marine environment, any assessment on the effects the desalination plants construction and operation may have will be after the plant is in operation. The effects, if any, may be irreparable.	The site selection and design of the outfall system have both been undertaken to evaluate and minimise and risk of harm to the environment. The modelling studies and ecotoxicity testing that has been undertaken indicates that the plant will achieve safe dilution factors suitable for protection of the environment, inclusive of sufficient “buffer” to account for anomalies in either modelling or plant operation, or natural variability in ambient salinity. Note that previous studies, unrelated to the ADP project, have demonstrated that marine communities are remarkably robust, and are able to acclimatise to long term, gradual changes in environmental conditions.
The decision to use of electricity to power the operation of the plant is neither carbon neutral sustainable and will be expensive both in the short and long term. There may be irregularities of supply to the desalination plant during periods of high demand placing strain on infrastructure.	This application for an EPA operating licence is for the outfall and intake for the ADP; it does not cover the electricity source. In this respect AdelaideAqua does not believe this comment is relevant and would suggest that queries of this nature are better directed to AGL and SA Water.

Submission 8	
Please be advised that Holden Hill Estate Pty Ltd strongly objects to the granting of a licence for the storage of water treatment chemicals at the Adelaide Desalination Plant, Chrysler Road, Lonsdale on the following grounds: 1. No information has been provided with the application as to the location, type, quantity, or methodology surrounding the storage of water treatment chemicals. 2. No information has been provided with the application in regards to any assessment or management of the potential impacts on neighbouring land holdings held by Holden Hill Estate Pty Ltd due to the presence, storage, delivery, operation or management of any incidences associated with the proposed water treatment chemicals.	AdelaideAqua do not believe the points noted are relevant to this licence application, nor do they constitute grounds not to grant an operating licence for the ADP. The procedures to appropriately manage the storage and use of chemicals, including incident management, will be resolved with the EPA during the licensing process, and incorporated into the plant operating procedures.
Holden Hill Estate Pty Ltd seeks assurance that the storage of water treatment chemicals at the Adelaide desalination Plant will not affect or limit in any way possible future activities or changes of land use to its neighbouring land holdings.	AdelaideAqua do not believe any such assurance is necessary or relevant to this licence application. However, it should be noted that chemical storage areas have been designed for the containment of spills during delivery, transfer, storage and use, in accordance with relevant Australian Standards, acts and regulations, including the EPA Bunding and Spill Management Guidelines.
Submission 9	
I wish to register my protest against the discharging of brine by the new desalination plant at Lonsdale. The brine will poison the Gulf, causing irreparable damage to the area while the plant will require one quarter of Adelaide's power to produce very expensive water, which will cost us all dearly. I am an age pensioner. I cannot afford this I am very concerned, as are many other people.	AdelaideAqua note the respondent's concern, and reiterates that extensive modelling and ecotoxicity testing has been conducted to ensure that such impacts do not occur; we would encourage the respondent to familiarise themselves with this work.

Submission 10	
As you identified in you presentation, monitoring requirements will form an important part of the licence. We strongly believe that marine monitoring results should be made publicly available via the internet. This would demonstrate a clear commitment to openness and transparency, including to those members of the community who still have concerns about the dispersal of brine within Gulf St Vincent. I wrote to the EPA in April 2009 on this matter and I will also be writing again to SA Water and Adelaide Aqua.	While AdelaideAqua are not opposed to public scrutiny of any test results, this is a matter to be determined by the EPA and the facility owner, SA Water. We are therefore unable to comment, other than to say we believe it has no relevance to the licence application.
In relation to the storage of water treatment chemicals, our submission on the Environmental Impact Statement in December 2008 included a number of recommendations that are relevant to the current application. These are: • That the emergency response management plans be developed which meet and exceed relevant Australian standards and that the relevant agencies be consulted during the development • That the plans have reference to gas as well as liquid spills • That the proposed chemical transport routes be referred to Council for comment.	Chemical storage areas, both liquid and gas, have been designed for the containment of spills during delivery, transfer, storage and use, in accordance with relevant Australian Standards, acts and regulations, including the EPA Bunding and Spill Management Guidelines. Specific guidelines for incident management and emergency response will be developed in conjunction with the EPA and incorporated into the plant operating procedures.
Submission 11	
On the 12th december 2008, the City of Marion provided a submission to the Department of Planning and Local Government in response to the Environmental Impact Statement on the Adelaide Desalination Plant. In response to the application by Adelaide Aqua to apply for an EPA license to operate the Adelaide Desalination Plant the City of Marion would like to draw attention to the comments already made in the submission on the Environmental Impact Statement. A copy of this submission (as received by the Department for Planning and Local Government) has been attached.	These queries addressed in the 'The Proposed Adelaide Desalination Plant Environmental Impact Statement - Response Document January 2009'. Subsequent to this, a Development Approval for the project was granted and the plant has been designed to meet all requirements of this DA, including relevant conditions from the EIS process.
The City of Marion would also like to emphasis and interest in seeing: • Real time monitoring of the plant – with immediate requirements to stop activity should there be changes detected outside accepted tolerance levels; • Results of ongoing environmental monitoring to be publicly reported on a regular basis; • Regular publicly reported independent verification of the overall	An OEMMP is being developed in collaboration with the EPA as part of the licensing process, which requires approval by the EPA before a licence can be granted. This document will detail the monitoring regime deemed appropriate by the EPA. While AdelaideAqua are not opposed to public scrutiny of any test results, this is a matter to be determined by the EPA and the facility owner, SA Water. We are therefore unable to comment, other than to say we believe it

monitoring program and results. • The licence also refers any requirement to control discharge from the pipeline Scour Valves directly to the Field River, in the event of plant stoppages.	has no relevance to the licence application. This licence application does not relate to the discharge from the pipeline Scour Valves directly to the Field River, and therefore this comment in not relevant to the application.