TDV-FS-0031-00

MARINE ENVIRONMENTAL MANAGEMENT

Q: What processes have been put in place to ensure the project doesn't impact on the environment?

A multi-pronged approach is being taken to safeguard the environment during the plant's operations. This includes

- Designing and engineering out key environmental risks (such as siting the marine structures to avoid sensitive habitats) and implementing world's best practice technologies in design, construction and operation
- A strict regulatory framework including contractual performance requirements and statutory processes that dictate how the plant must operate
- Developing and implementing an Operations and Maintenance Environmental Management Plan (O&M EMP) to ensure compliance with the Project's environmental performance requirements and other applicable legislation
- Implementing a world-class ecological marine monitoring program designed to detect any potential impacts from the operation of the desalination plant
- Rigorous auditing, reporting to and supervision by external parties to ensure compliance with contractual and regulatory performance requirements

Q: What are the performance requirements for the project?

The project's performance requirements are an outcome of the Environment Effects Statement (EES) and assessment undertaken by the Minister for Planning before the contract for the project was awarded. The performance requirements have been incorporated into AquaSure's contract.

The Project must comply with 221 strict environmental performance requirements across 38 areas, including flora and fauna, wetlands and waterways, cultural and historical heritage, waste management, acid sulphate soils, resource efficiency, air quality and visual amenity.

These requirements have been addressed in the Environmental Management Plans (EMPs) that have been developed for the design, construction, operation and maintenance phases of each of the project's four main components – the plant, the marine works, the water transfer pipeline and the power supply.

The EMPs identify the key environmental issues across the facility and provide strategies for managing them effectively. They also define the legal requirements and identify the regulatory permits and licences required for project activities.

Management systems address issues such as waste treatment and disposal, marine flora and fauna protection, surface and ground water quality, waterway protection, air quality, traffic, erosion control and noise and vibration control.

**WATER NOW
AND FOR THE FUTURE.
FOR SURE.**

The EMPs are publicly available documents and can be found on the AquaSure website: **www.aquasure.com.au**

Details on the performance requirements for the project can be viewed at *http://www.tenders.vic.gov.au/tenders/contract/view.do?id=9265&returnUrl=%252Fcontract%252Flist.do%253F%2524%257Brequest.queryString%257D*

Q: What is in the discharge that goes back out to sea?

The discharge that goes back out to sea is filtered concentrated seawater, known as the brine. The seawater concentrate contains seawater not used in the desalination process, salt and other elements that already occur naturally in seawater.

Q: What happens to the chemicals that are used in the water treatment process? Will they end up in the seawater concentrate that goes back to the ocean?

Only seawater concentrate is returned to the ocean. The desalination process involves the use of a number of chemicals at different stages, each for a different reason. They are the same chemicals used in drinking water treatment facilities in Australia and around the world. They are removed or completely neutralised at each stage of the process and before the seawater concentrate is discharged.

Q: What is being done to make sure the plant doesn't impact on the marine environment?

The Plant operates as an 'EPA Licenced Premises'. This means that the plant is subject to conditions set by EPA that aim to control operation of the premises so that there is no adverse effect on the environment.

Siting and design of the Plant's marine intake and outlet ensured that sensitive marine areas have been avoided. A state of the art computerised control system which includes instantaneous real-time monitoring and numerous control points across the entire plant gives complete control over the discharge to the marine environment. The ability to instantly shut off the marine discharge if water quality approaches unacceptable levels ensures failsafe operation of the discharge to the marine environment.

In addition to this an Operations and Maintenance Environmental Management Plan (O&M EMP) has been developed to manage all environmental aspects of the project and this plan has approved by the Minister for Environment and Climate Change.

The O&M EMP describes the systems for controlling and managing the limited and minor environmental risks associated with O&M activities. It is designed to ensure compliance with the Project's environmental performance requirements and other applicable environmental legislation throughout the plant's operation.

Q: What monitoring is being done in the marine environment?

An Operational Marine Monitoring Program (OMMP) is in place to detect any changes in the marine environment that may be caused by operations of the plant. The program which is a key component of the EPA Discharge Licence involves independent marine experts and considerable oversight by regulatory authorities and includes:

- Marine ecosystem monitoring
- Salinity logging
- In-Plant discharge monitoring
- Toxicity testing
- An independent review process, verification and signoff

Q: What sort of monitoring is done on the discharge that goes back out to sea?

The discharge is continuously monitored for pH, salinity (electrical conductivity), turbidity, temperature and dissolved oxygen to ensure it meets the required parameters. The plant's automated control system is able to detect and if necessary treat any changes to bring concentrated seawater quality levels back to the required target range, or if required initiate the failsafe shutdown process, preventing the discharge reaching the ocean.

Q: Who determines the quality parameters for the water that is discharged back to the ocean?

The EPA Discharge Licence stipulates the discharge limits that are allowed to the marine environment.

Q: Doesn't the seawater concentrate impact the marine environment?

Seawater concentrate (brine) is returned to Bass Strait through two outlet structures. The structures have been located in an area where they will have minimal impact and are specially designed to rapidly dilute seawater concentrate into the ocean.

Under the terms of the Discharge Licence, the seawater concentrate must be returned to background levels within an area specified by the EPA, called the mixing zone.

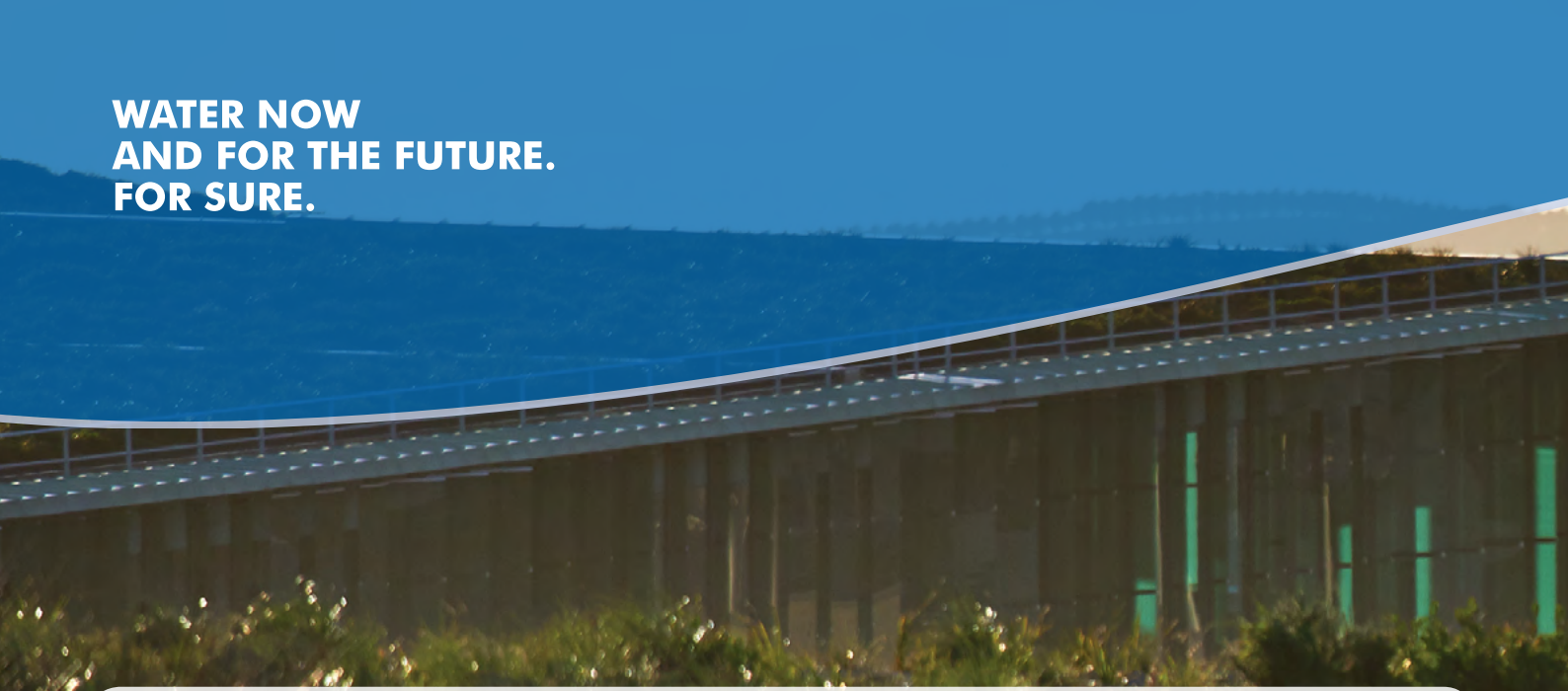
Q: What is a mixing zone?

The mixing zone is a defined area inside which prescribed background levels for water quality are permitted to be exceeded according to State legislation and environmental policies. Whilst marine uses and values, including flora and fauna are not required to be fully protected inside this zone, all effects must still be minimised. Outside the mixing zone these uses and values (also described as beneficial uses) must be fully protected. The mixing zone for the desalination plant is a localised area around the outlet structures.

Q: What environmental impacts does the Operation Marine Monitoring Program (OMMP) cover?

The OMMP looks at all potential impacts from brine discharge and seawater intake. Inshore monitoring is undertaken to assess any impact on invertebrate and plant colonies as a result of larval entrainment in the region of the intake structures. Offshore monitoring is conducted at a number of sites inside and outside the mixing zone to determine any impact from the discharge of the seawater concentrate.

**WATER NOW
AND FOR THE FUTURE.
FOR SURE.**



Information is collected from:

- Settlement plates located just above the seafloor at numerous sites, varying in distance from the marine structures to identify flora and fauna types that are establishing in the area and understand what is happening more broadly in the highly variable marine environment
- Diver operated video survey of the reef canopy at a number of designated sites
- Photographic samples of the vertical or near vertical reef faces at designated in-shore sites
- Salinity logging (conductivity and temperature) at fixed locations on the seabed

This information is collected by marine experts, reviewed against the baseline data collected under the Baseline Marine Monitoring Program (BMMP) conducted since 2009, and assessed by an Independent Expert Panel who provides feedback/ recommendations.

Q: How are salinity levels being measured in the marine environment?

The seawater concentrate salinity levels are continuously measured online and controlled within the plant to ensure the discharge is compliant with the EPA Licence before the seawater concentrate enters the outfall. In addition salinity in the marine environment is continuously logged (through measurement of conductivity and temperature) at fixed locations on the seabed. This logged information is retrieved on a regular basis and analysed by the expert panel.

Q: Has the monitoring program been verified by any parties external to AquaSure?

Development and implementation of the BMMP and OMMP has been overseen by the Marine Monitoring Management Group (MMMG) whose members include Department of Environment and Primary Industries (DEPI), the EPA and an External Reviewer from the University of NSW, as well as AquaSure and Degremont Thiess Services Joint Venture.

Q: Does the VDP report against the OMMP?

Yes, the VDP is required to complete an annual performance statement to confirm compliance with the EPA Discharge Licence requirements. If the plant does not operate in accordance with the Discharge Licence requirements or the OMMP, then we are required to immediately report the issue to the EPA and the DEPI.

An annual report which details the condition of the marine environment and any impacts that have occurred outside of natural variable patterns as a result of the plant's operation is prepared by AquaSure and DTSJV. The EPA and DEPI with the support of the Environmental Auditor for the project will review compliance against Licence and contract requirements.

Q: Are the reports made available to the public?

Yes, once the annual report has been finalised by the MMMG and confirmed by the External Reviewer it will be made available on AquaSure's website.

Q: Will real time monitoring information be made available to the public?

When the plant is producing water, reports will be regularly published on the AquaSure website.

However, raw, real time monitoring data will not be supplied as it does not provide the community with useful information on plant performance – it has not been analysed or combined with longer term marine studies to determine if contractual or regulatory requirements have been met. This can be provided by regularly publishing reports on the AquaSure website when the plant is operational.

Q: Why is there no community representative on the MMMG?

The MMMG was a requirement under the BMMP as approved by the Minister for Environment and Climate Change. It is a highly technical, specialist group whose task is to analyse and report on scientific data. As described, independent, external review is provided by the University of NSW.

Q: How did you determine what surveys were required for the OMMP?

The EES provided information on potential impact pathways within the marine environment. Based on these potential impact pathways, the Baseline Marine Monitoring Program (BMMP) was developed and approved by the Minister for Environment and Climate Change. This program, overseen by the MMMG included:

- Site mapping (siting design of marine structures to minimise impacts)
- Collection of baseline marine data to benchmark operations against
- Monitoring of construction impacts
- Monitoring of commissioning impacts
- Refinement of monitoring techniques and locations

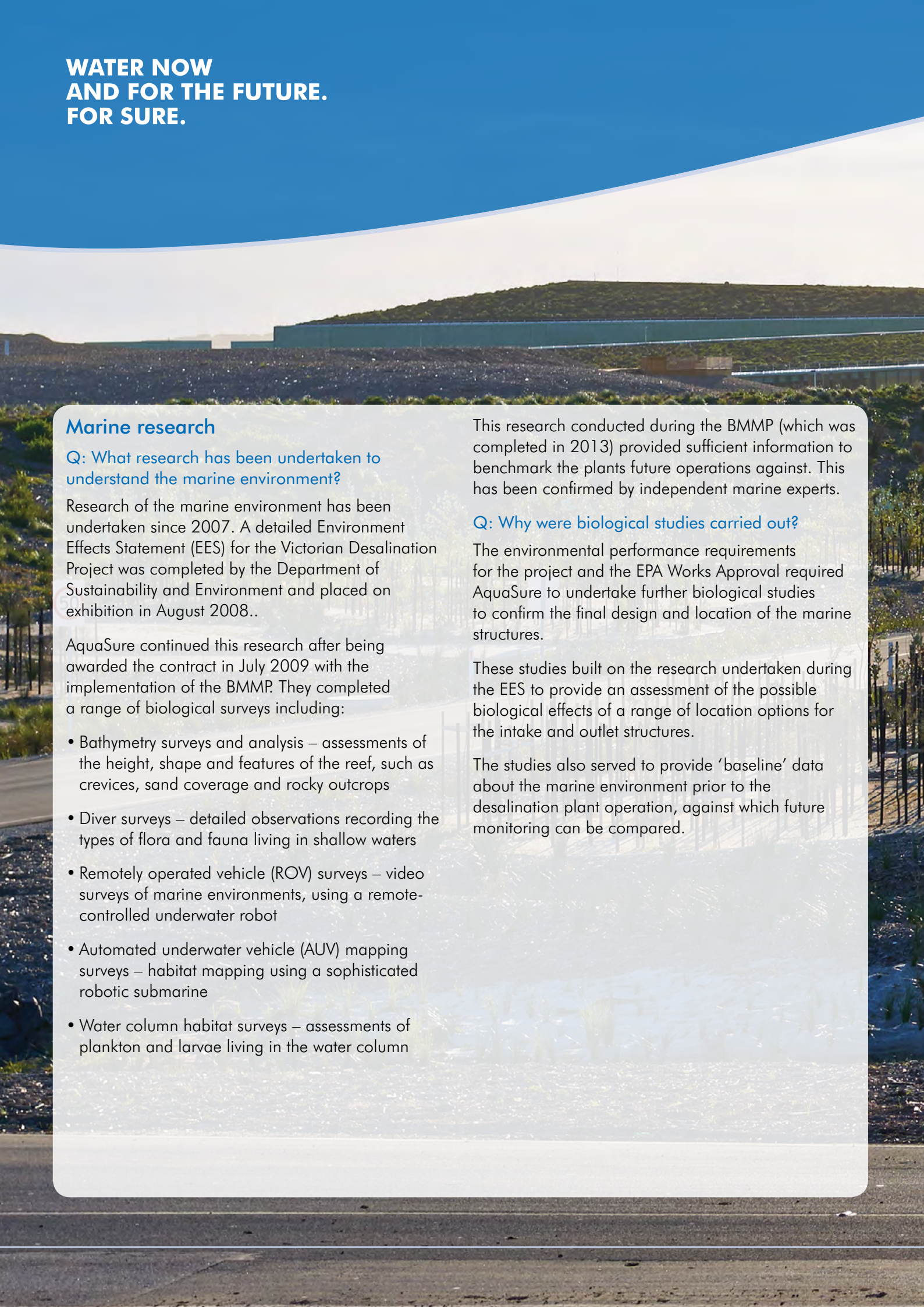
The successful implementation of the BMMP and the knowledge gained was used to develop the OMMP.

Q: Why doesn't the program include monitoring of whales etc?

The program doesn't include whale monitoring because the plant does not pose a risk to whales.

The plant's design and survey work done to date, including noise monitoring during construction and operation has confirmed the plant's operations will not impact on whales. Results of underwater noise measurements demonstrated that under normal operating conditions (at 150Gl per year) the noise levels are within required maximum decibel levels for whale safety.

**WATER NOW
AND FOR THE FUTURE.
FOR SURE.**



Marine research

Q: What research has been undertaken to understand the marine environment?

Research of the marine environment has been undertaken since 2007. A detailed Environment Effects Statement (EES) for the Victorian Desalination Project was completed by the Department of Sustainability and Environment and placed on exhibition in August 2008..

AquaSure continued this research after being awarded the contract in July 2009 with the implementation of the BMMP. They completed a range of biological surveys including:

- Bathymetry surveys and analysis – assessments of the height, shape and features of the reef, such as crevices, sand coverage and rocky outcrops
- Diver surveys – detailed observations recording the types of flora and fauna living in shallow waters
- Remotely operated vehicle (ROV) surveys – video surveys of marine environments, using a remote-controlled underwater robot
- Automated underwater vehicle (AUV) mapping surveys – habitat mapping using a sophisticated robotic submarine
- Water column habitat surveys – assessments of plankton and larvae living in the water column

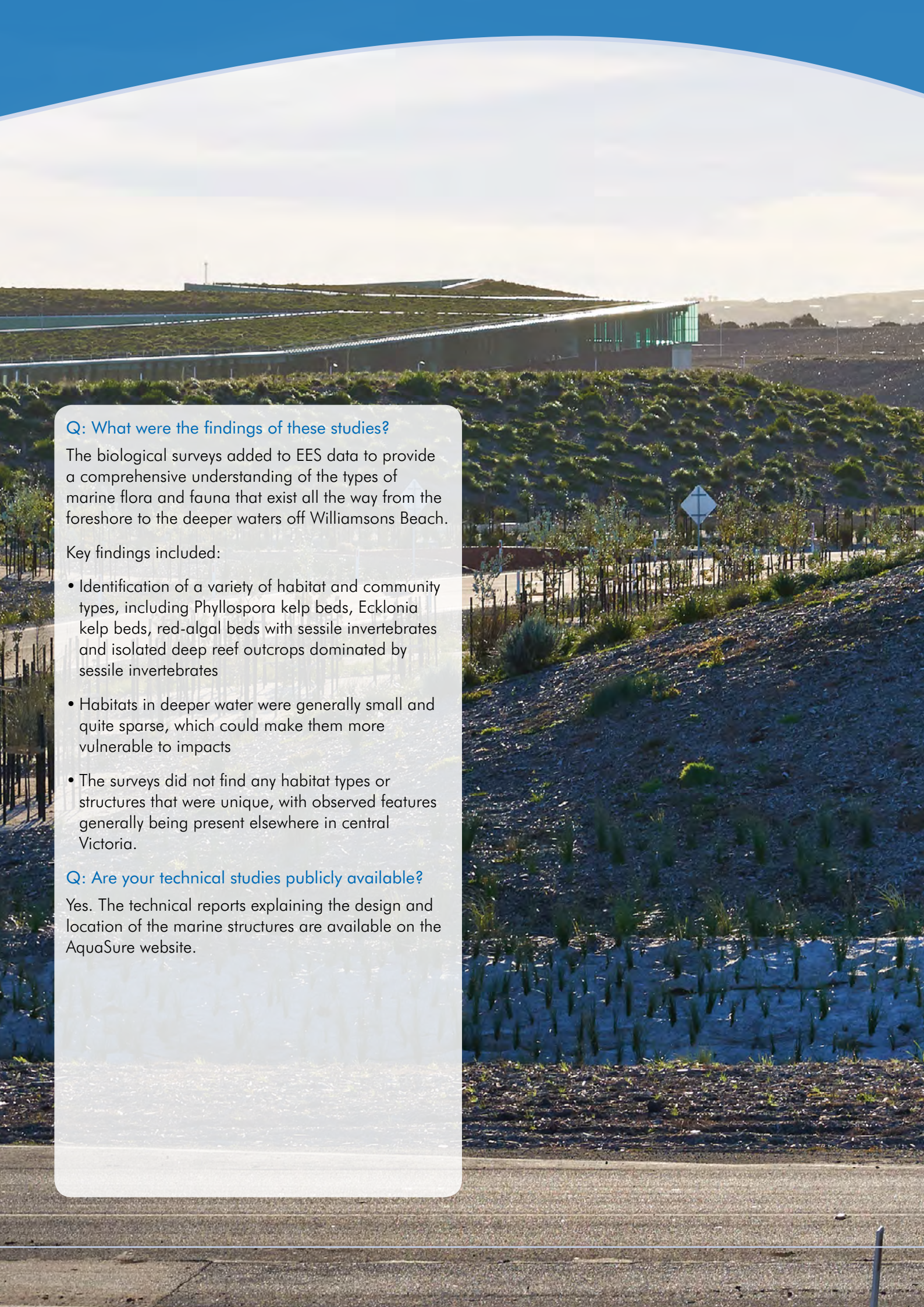
This research conducted during the BMMP (which was completed in 2013) provided sufficient information to benchmark the plants future operations against. This has been confirmed by independent marine experts.

Q: Why were biological studies carried out?

The environmental performance requirements for the project and the EPA Works Approval required AquaSure to undertake further biological studies to confirm the final design and location of the marine structures.

These studies built on the research undertaken during the EES to provide an assessment of the possible biological effects of a range of location options for the intake and outlet structures.

The studies also served to provide ‘baseline’ data about the marine environment prior to the desalination plant operation, against which future monitoring can be compared.



Q: What were the findings of these studies?

The biological surveys added to EES data to provide a comprehensive understanding of the types of marine flora and fauna that exist all the way from the foreshore to the deeper waters off Williamsons Beach.

Key findings included:

- Identification of a variety of habitat and community types, including Phyllospora kelp beds, Ecklonia kelp beds, red-algal beds with sessile invertebrates and isolated deep reef outcrops dominated by sessile invertebrates
- Habitats in deeper water were generally small and quite sparse, which could make them more vulnerable to impacts
- The surveys did not find any habitat types or structures that were unique, with observed features generally being present elsewhere in central Victoria.

Q: Are your technical studies publicly available?

Yes. The technical reports explaining the design and location of the marine structures are available on the AquaSure website.

WATER NOW
AND FOR THE FUTURE.
FOR SURE.

FREECALL
1800 811 214

EMAIL
contactus@aquasure.com.au

WEB
www.aquasure.com.au

POST
AquaSure C/– PO Box 885
Wonthaggi VIC 3995

Printed on Tudor RP an Australian made paper that contains 100% recycled fibre. No chlorine bleaching occurs in the recycling process and Australian Paper is ISO 14001 certified. Sales of Tudor RP support Landcare Australia.

AUGUST 2013

State Government Victoria

AQUASURE

THIESS

SUEZ environnement Degrémont