



Hydrant Protection Pty Ltd

PRODUCT APPRAISAL REPORT 1730 Issue 3

Hydraguard and Retroguard Ant Barrier Devices for Hydrants

Issue 1 Published: 16 March 2028

Issue 2 Published: 28 November 2018

Issue 3 Published: 17 March 2023

Document History

The following information indicates the changes made to this document.

Date	Version
22 February 2018	Client Review
23 February 2018	Peer Review
16 March 2018	Issue 1 Publication
28 November 2018	Issue 2 Publication
17 March 2023	Issue 3 Client Review
17 March 2023	Issue 3 Publication

Peer Reviewers

Name/Title	Organisation	Date
Product Appraisal Technical Advisory Group	WSAA	16 March 2018
WSAA Expert Panel	WSAA	15 March 2018
Peter Pittard, WSAA Consultant	WSAA	22 February 2018
Carl Radford, Product Appraisal Manager	WSAA	16 March 2018
Peter Pittard, WSAA Consultant	WSAA	26 November 2018
Carl Radford, Product Appraisal Manager	WSAA	28 November 2018
Peter Pittard, WSAA Consultant	WSAA	16 March 2023
Carl Radford, Product Appraisal Manager	WSAA	17 March 2023

Overview of WSAA

The Water Services Association of Australia (WSAA) is the peak industry body representing the urban water industry. Our members provide water and sewerage services to over 20 million customers in Australia and New Zealand and many of Australia's largest industrial and commercial enterprises.

Based around our vision of 'customer driven, enriching life', WSAA facilitates collaboration, knowledge sharing, networking and cooperation within the urban water industry. We are proud of the collegiate attitude of our members which has led to industry-wide approaches to national water issues.

WSAA can demonstrate success in the standardisation of industry performance monitoring and benchmarking, as well as many research outcomes of national significance. The WSAA Executive retains strong links with policy makers and legislative bodies and their influencers, to monitor emerging issues of importance to the urban water industry.

WSAA was formed in 1995 as a non-profit organisation to foster the exchange of information between industry, government and the community, and to promote sustainable water resource management.

The urban water industry is committed to anchoring its services to customers' values, and to enrich communities where water services have broad economic, environmental and social values. In line with this our main activities focus on four areas:

1. influencing national and state policies on the provision of urban water services and sustainable water resource management
2. promoting debate on environmentally sustainable development and management of water resources and the community health requirements of public water supplies
3. improving industry performance and establishing benchmarks and industry leading practices for water service processes; and
4. fostering the exchange of information on education, training, research, water and wastewater management and treatment and other matters of common interest.

Copyright

This document is copyrighted. Apart from any use as permitted under the Copyright Act 1968, no part of this document may be reproduced or transmitted in any form or by any means, electronically or mechanical, for any purpose, without the express written permission of Water Services Association of Australia Limited.

© Copyright 2023 by WATER SERVICES ASSOCIATION of Australia Limited **All rights reserved.**

CONTENTS

1 EXECUTIVE SUMMARY	5
1.1 Recommendations	5
2 THE APPLICANT.....	5
2.1 The Supplier.....	5
2.2 The Manufacturer.....	6
3 THE PRODUCT	6
4 SCOPE OF THE APPRAISAL	8
5 APPRAISAL CRITERIA	8
5.1 Quality Assurance Requirements	8
5.2 Performance Requirements	8
6 MATERIALS	8
6.1 Hydraguard	8
6.2 Flange gaskets.....	8
6.3 Fasteners	8
6.4 Retroguard	8
7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION	8
8 PACKAGING AND TRANSPORTATION.....	8
9 PRODUCT WARRANTY	8
10 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD-TESTING REPORT	8
11 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW.....	9
12 FUTURE WORKS.....	9
13 DISCLAIMER.....	9
13.1 Issue of Report.....	10
13.2 Limits on Reliance on Information and Recommendations.....	10
13.2.1 Disclaimer of liability	10
13.2.2 Intellectual Property and other rights.....	10
13.2.3 Need for independent assessment.....	10
13.3 No Updating	11
13.4 No Warranty	11
APPENDIX A –PRODUCT LITERATURE	12
APPENDIX B - SUPPLIER CONTACTS	17

1 EXECUTIVE SUMMARY

Hydrant Protection Pty Ltd is a private company established in 2011 to develop and market innovative devices to prevent ants from filling underground spring hydrant wells with soil.

This Appraisal is for Hydraguard and Retroguard ant barrier devices for hydrant access wells.

Ants are able to completely fill a hydrant access well with soil in as little as 2-3 months. Despite ongoing high levels of maintenance and associated costs, the ants often win out, resulting in inaccessible and inoperable hydrants. This can result in unnecessary property damage and even potential loss of life.

Hydraguard and Retroguard provide a physical barrier between the hydrant and the bottom of the well thereby preventing ants from transporting soil upwards and filling the hydrant access well.

Hydraguard is a circular plate with an elastomeric seal located around its rim and is installed between the flanges of a hydrant and riser during installation. A barrier is formed between the elastomeric seal located on the rim of the Hydraguard plate and the inside of a PVC shroud pipe, which prevents ant mobility.

Hydraguard is available to suit DN 80 or DN 100 hydrants with either circular or square shapes.

The Hydraguard plate is injection moulded from a 15% glass fibre reinforced Nylon 6 material (Duralon) which exhibits high strength and stiffness with excellent chemical resistance.

Retroguard is a complementary product to Hydraguard that allows for a retrofit installation on existing circular flanged DN 80 hydrant assemblies. Retroguard is an elastomeric sleeve that fits over an existing hydrant / riser flange assembly to provide a seal against the inside of the shroud pipe. It is currently only available for DN 80 circular flanges.

Hydraguard and Retroguard are innovative products that are not specifically covered by any Standards. They are not considered as strategic products and accordingly the normal appraisal requirements for quality assurance licences are deemed unnecessary.

Hydraguard is covered by Australian Registered Design No. AU327907.

1.1 Recommendations

It is recommended that WSAA members accept or authorise Hydraguard and Retroguard ant barrier devices to prevent ants from filling hydrant wells with soil in ant infested areas, provided they are installed in accordance with manufacturer's requirements.

2 THE APPLICANT

The applicant is Hydrant Protection Pty Ltd.

2.1 The Supplier

Hydrant Protection Pty Ltd, previously Hydratect Pty Ltd, is a private company established in 2011 to develop and market an innovative device to prevent ants from filling underground spring hydrant wells with soil. The company is located in Bangalow NSW and the two inventors had extensive experience working in the water and sewer sections of local government councils in NSW. They identified a need to overcome ongoing maintenance requirements to ensure ready access to hydrants in ant infested regions.

2.2 The Manufacturer

The components of the Hydraguard and Retroguard products are manufactured by B & K Plastics at Currumbin Waters Qld.

3 THE PRODUCT

This Appraisal is for Hydraguard and Retroguard ant barrier devices for hydrant access wells.

Ants are able to completely fill a hydrant access well with soil in as little as 2-3 months. Despite ongoing high levels of maintenance and associated costs, the ants often win out, resulting in inaccessible and inoperable hydrants. This can potentially result in unnecessary property damage and even loss of life.

The use of these products also reduces the likelihood of subsidence of the hydrant surface box. Maintenance involves the ongoing removal of soil build up in the well and will eventually provide an unstable base beneath the hydrant box.

It is well known that ants deposit soil in the bottom of a hydrant well and build their mounds vertically until the cavity is completely filled. Hydraguard and Retroguard provide a physical barrier between the hydrant and the bottom of the well thereby preventing ants from transporting soil upwards and filling the hydrant access well.

Hydraguard is a circular plate with an elastomeric seal located around its rim. The plate has 4 bolt holes and two capillary drainage plugs incorporated into the plate. The Hydraguard is installed between the flanges of a hydrant and riser during installation. See Figure 1.



FIGURE 1 HYDRAGUARD INSTALLED

A DN 225 PVC PN4 shroud pipe is installed over the assembly and a seal is formed between the elastomeric seal located on the rim of the Hydraguard plate and the inside of the PVC shroud pipe. This provides an effective barrier to ant mobility. See Figure 2.



FIGURE 2 SHROUD PIPE INSTALLED

The complete installation assembly is shown in Figure 3.

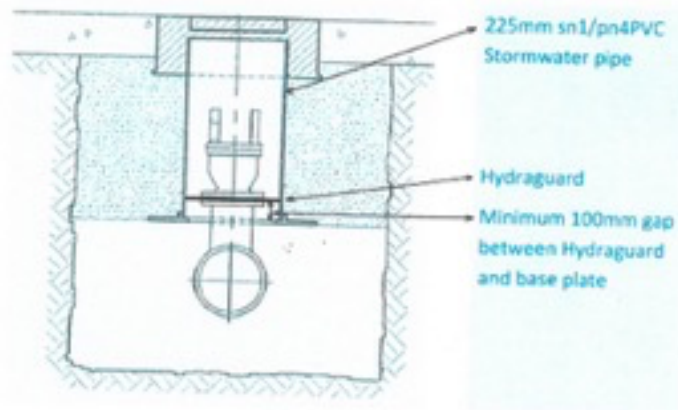


FIGURE 3 COMPLETED HYDRAGUARD ASSEMBLY

Hydraguard is available to suit DN 80 or DN 100 hydrants with either circular or square shapes. The Hydraguard kits are supplied with two 3mm solid EPDM flange gaskets and four M16 x 75 Grade 316 stainless steel bolts and nuts. See Figure 4. Other components including the base plate, shroud pipe and hydrant box are not included in the kit.



FIGURE 4 HYDRAGUARD KIT

The Hydraguard plate is injection moulded from a 15% glass fibre reinforced Nylon 6 material (Duralon) which exhibits high strength and stiffness with excellent chemical resistance.

Retroguard is a complementary product to Hydraguard that allows for a retrofit installation on existing hydrant assemblies. Retroguard is an elastomeric sleeve that fits over an existing hydrant / riser flange assembly to provide a seal against the inside of the shroud pipe. It is only available for DN 80 circular flanges.



FIGURE 5 RETROGUARD

4 SCOPE OF THE APPRAISAL

The products considered in this Appraisal are Hydraguard and Retroguard barrier devices to prevent ants from filling underground spring hydrant wells with soil.

5 APPRAISAL CRITERIA

5.1 Quality Assurance Requirements

The products submitted for appraisal are not considered as strategic products and normal quality assurance requirements are deemed unnecessary.

5.2 Performance Requirements

Hydraguard and Retroguard are considered as innovative products and there are no relevant standards, specifications or performance tests available. Field trials have been conducted with a number of water utilities and are referenced in Section 10.

6 MATERIALS

6.1 Hydraguard

The Hydraguard plate is injection moulded from a 15% glass fibre reinforced Nylon 6 material (Duralon) with AS/NZS 4020 compliance. It is black in colour to enhance UV resistance. This material exhibits high strength and stiffness with enhanced dimensional stability and resistance to chemicals including oil, greases and hydrocarbons.

The elastomeric sealing ring is manufactured from a topolymer compound, which is fitted to the groove in the rim of the Hydraguard.

6.2 Flange gaskets

The two flange gaskets included in the Hydraguard kit are 3mm solid EPDM complying with WSA 109.

6.3 Fasteners

Four M16 x 75 Grade 316 stainless steel hexagon head bolts, nuts and washers are included in the Hydraguard kit.

6.4 Retroguard

The Retroguard product is moulded from a topolymer compound. This product is not in contact with water and was chosen for its mouldability and sealing capabilities.

7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION

Details are available at the following link: <http://www.hydrantprotection.com.au>

8 PACKAGING AND TRANSPORTATION

The Hydraguard kit is individually packaged in a sturdy plastic bag for transportation.

9 PRODUCT WARRANTY

The products are covered by the normal commercial and legal requirements of the *Competition and Consumer Act 2010 (Cth)*, which covers manufacture to the relevant standard, and details of Hydrant Protection Pty Ltd's warranty is included in their terms and conditions of sale.

10 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD-TESTING REPORT

Hydraguard has been successfully utilised by Lismore City Council, Tweed Shire Council, Clarence Valley Council and Coffs Harbour City Council.

Icon Water, Tweed Shire and Rous County Council specify the inclusion of Hydraguard for all new hydrant installations and utilise Retroguard for maintenance purposes.

Hydraguard and Retroguard are also listed on the SE Queensland IPAM list

The photographs of two hydrants located 60 metres apart, shown in Figure 6, indicate the effectiveness of Hydraguard. The hydrant on the right had Hydraguard installed five years ago whilst the hydrant on the left has been subjected to routine maintenance.



FIGURE 6 HYDRAGUARD EFFECTIVENESS

A copy of a paper presented at Ozwater2016 by Icon Water is attached in Appendix A

Further details of trials are provided on the Hydrant Protection website at the following link: <http://www.hydrantprotection.com.au>

11 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW

There are no outstanding issues.

12 FUTURE WORKS

No future works have been identified.

13 DISCLAIMER

This Product Appraisal Report (Report) is issued by the Water Services Association of Australia Limited on the understanding that:

This Report applies to the product(s) as submitted. Any changes to the product(s) either minor or major shall void this Report.

To maintain the recommendations of this Report any such changes shall be detailed and notified to the Product Appraisal Manager for consideration and review of the Report and appropriate action. Appraisals and their recommendations will be the subject of continuous review dependent upon the satisfactory performance of products.

WSAA reserves the right to undertake random audits of product manufacture and installation. Where products fail to maintain appraised performance requirements the appraisal and its recommendations may be modified and reissued. Appraisal reports will be reviewed and reissued at regular intervals not exceeding five (5) years.

The following information explains a number of very important limits on your ability to rely on the information in this Report. Please read it carefully and take it into account when considering the contents of this Report.

Any enquiries regarding this report should be directed to the Program Manager, Carl Radford, Phone: 03 8605 7601 email carl.radford@wsaa.asn.au.

13.1 Issue of Report

This Report has been published and/or prepared by the Water Services Association of Australia Limited and nominated Project Manager and peer group of technical specialists (the Publishers).

The Report has been prepared for use within Australia only by technical specialists that have expertise in the function of products such as those appraised in the Report (the Recipients).

By accepting this Report, the Recipient acknowledges and represents to the Publisher(s) and each person involved in the preparation of the Report that the Recipient has understood and accepted the terms of this Disclaimer.

13.2 Limits on Reliance on Information and Recommendations

13.2.1 Disclaimer of liability

Neither the Publisher(s) nor any person involved in the preparation of the Report accept(s) any liability for any loss or damage suffered by any person however caused (including negligence or the omission by any person to do anything) relating in any way to the Report or the product appraisal criteria underlying it. This includes (without limitation) any liability for any recommendation or information in the Report or any errors or omissions.

13.2.2 Intellectual Property and other rights

The Water Services Association of Australia Limited does not undertake any assessment of whether the importation, manufacture, sale or use of the Product the subject of this Report infringes the intellectual property rights or proprietary rights of any person. Recipients of the report should undertake their own assessment of whether (as relevant) the importation, manufacture, sale or use of the relevant Products infringe the intellectual property rights or other proprietary rights of any person. If the Product infringes intellectual property rights or other proprietary rights there is potential for the supply of the Products to be interrupted.

From time to time the Water Services Association of Australia Limited and the other Publishers may receive notice of allegations that the importation, manufacture, sale or use of the Product infringes intellectual property rights or other proprietary rights. The Water Services Association of Australia Limited's policy is to not refer to such allegations in its reports or take any other steps to put Recipients on notice of such allegations, unless and until it is aware that the allegations have been admitted or proved in Court. As such, Recipients acknowledge, agree and accept that the Water Services Association of Australia Limited may have information in its possession about intellectual property rights infringement allegations or other infringement allegations in relation to the Product which are not referred to or disclosed in this Report and which are not otherwise communicated to Recipients.

13.2.3 Need for independent assessment

The information and any recommendation contained (expressly or by implication) in this Report are provided in good faith (and subject to the limitations noted in this Report). However, you should treat the information as indicative only. You should not rely on that information or any such recommendation except to the extent that you reach an agreement to the contrary with the Publisher(s).

This Report does not contain all information that a person might require for the purposes of assessing any product discussed or appraised within it (Product). The product

appraisal criteria used in preparing this Report may not address all relevant aspects of the Product.

Recipients should seek independent evidence of any matter which is material to their decisions in connection with an assessment of the Product and consult their own advisers for any technical information required. Any decision to use the Product should take into account the reliability of that independent evidence obtained by the Recipient regarding the Product.

Recipients should also independently verify and assess the appropriateness of any recommendation in the Report, especially given that any recommendation will not take into account a Recipient's particular needs or circumstances.

WSAA has not evaluated the extent of the product liability and professional indemnity insurance that the provider of the product maintains. Recipients should ensure that they evaluate the allocation of liability for product defects and any professional advice obtained in relation to the product or its specification including the requirements for product liability and professional indemnity insurance.

13.3 No Updating

Neither the Publisher(s) nor any person involved in the preparation of this Report [has] [have] any obligation to notify you of any change in the information contained in this Report or of any new information concerning the Publisher(s) or the Product or any other matter.

13.4 No Warranty

The Publisher(s) do[es] not, in any way, warrant that steps have been taken to verify or audit the accuracy or completeness of the information in this Report, or the accuracy, completeness or reasonableness of any recommendation in this Report.

APPENDIX A –PRODUCT LITERATURE

Product literature is available at the following link: <http://www.hydrantprotection.com.au>

OZWATER PRESENTATION

MAINTENANCE OF ANT INFESTED HYDRANTS

Sagar Khadka

Icon Water, Canberra, ACT, Australia

HIGHLIGHTS

- 10-15% of Icon Water hydrants are infested by ants which results in additional time to clean out the hydrants during reactive works and fire fighting events.
- A new technology was trialled in 2011-12 FY. This trial was successful and it has now been integrated into routine maintenance. Every year Icon Water installs 300 hydraguard boot/disc on ant infested hydrants.
- It is expected that the program will significantly reduce the interruption time during reactive and emergency works.

METHODOLOGY/ PROCESS

The aim of this paper is to give an understanding of a possible solution to keep the fire hydrants free from ants and sand/dirt build-up in the hydrant sleeves. The paper also discusses how ant infested hydrants will be identified during preventative maintenance.

There are approximately 33,000 water reticulation Fire Hydrants in Canberra's Water Supply System installed between 1920 and 2015. Majority of these hydrants are installed below ground level with the exception of few pillar and high capacity hydrants which are installed above ground. These hydrants are used by the Fire brigade and for network operation and maintenance.

Fire hydrants are inspected and maintained on a continuous five yearly cycle under the preventative maintenance program. This program also emphasises the value of maintaining fire hydrants and reducing risk by making sure that hydrants can be easily located, accessed and operated when required for emergency.

Fire hydrants installed below ground level are susceptible to ant nest infestation and dirt build-up. If these hydrants are not attended, the hydrant sleeves will fill with ant nest. This will result in the hydrant head being covered which inhibits access to and the operation of the fire hydrant during fire events and maintenance activities. From the preventative maintenance program, it has been determined that around 10 to 15% of hydrants are prone to ants in the Canberra Water Supply System.

Icon Water trialled a hydraguard boot installation program on 20 hydrants and monitored those hydrants for a year. Once confirmed that the installation was successful in stopping the ants entering and nesting in the hydrant sleeve, Icon Water implemented a hydraguard boot/disc installation program in 2012-13 on ant prone hydrants.

The hydraguard boot/disc enhances serviceability of fire hydrants by separating the hydrant head from the dirt below. This system also stops ants and the associated build-up of dirt and in some cases subsidence of the hydrant sleeve.

Hydrants that require hydraguard boots were determined from the hydrant inspection in the suburbs that require the general inspection and maintenance. 300 hydraguard boots /discs were installed annually. At the end of the 2014/15 FY, 900 hydraguard boots/discs were installed.

The job involved replacing existing concrete sleeves with 225mm PVC sleeves, installing hydraguard boot/disc and restoring the hydrant cover in its original position.

Benefits of hydraguard boot installation program:

There are four main benefits of this program as outlined below:

- Improved accessibility to hydrants - hydrants remain ant free and operable,
- Reduced time required to access fire hydrants during emergency
- Reduced maintenance costs
- Improved operational and maintenance efficiency – reduced time taken for operations and maintenance teams to drain and refill water mains as hydrants can be easily located and operated.

Assumptions made:

Following two assumptions were made during the trial:

- Ants always come from the bottom (not from the top) and the separation of the hydrant from the soil underneath the flanges will help eliminate the occurrence of ant nests being built in hydrant sleeves.
- If some ants manage to enter the area above the hydrant flanges, they die as they cannot climb the slippery sides of the PVC sleeve.

These assumptions were confirmed during the trial installation phase.

Ant migrating from one hydrant to another:

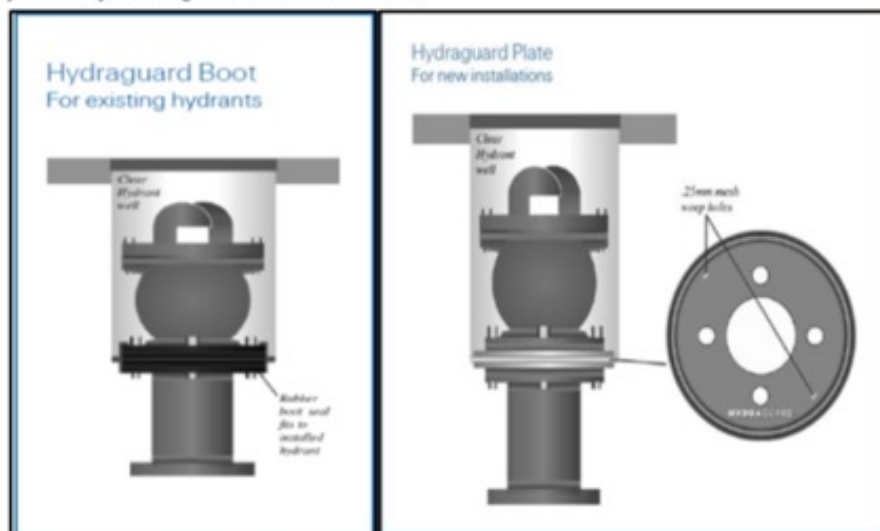
Another important question that was raised during the trial phase was to monitor if the ant nests are destroyed in one hydrant, do the ants find their way to an adjacent hydrant to make a nest? To verify this, three hydrants were identified close to Icon Water Depot. Two ant prone hydrants were within a meter apart and had hydraguard boots installed while a third one (was at 10m distance from the other two) without hydraguard boot and never had a history with ant nest.

These hydrants were monitored over time and it was found that while the ants had been removed from the first two hydrants by installing the boots, the ants had not reappeared in these two hydrants or migrated to the third hydrant. Further evidence to support this issue is being gathered.

Technology available for maintenance of ant infested hydrants:

There are two types of materials available to prevent ants coming from the bottom namely:

- Hydraguard boot- retrofits to the existing hydrant flange, easy to install without shutting down the water mains,
- Hydraguard disc/plate for new installations- disc is installed between the hydrant and spool flange at time of installation. This type of disc can also be installed as an alternative to the boot on older hydrants by shutting down the water mains.



(Photo courtesy of Pentair formerly known as Tyco Water)

A series of time lapse photos for one of the hydrant from the trial are shown below.



Figure 1: Ants infested hydrant



Figure 2: Ants infested hydrant after being cleaned with high pressure hydro digger



Figure 3: Ants infested hydrant with reappearance of ants 3 weeks after cleaning



Figure 4: Hydrant head replaced and installed with hydraguard boot (March 2011)



Figure 5: Hydrant monitored in Dec 2012



Figure 6: Hydrant monitored in July 2013 (Ants noticed but dead)



Figure 7: Hydrant monitored in May 2014(No ants)



Figure 8: Hydrant monitored in April 2015(No ants)



Figure 9: Hydrants monitored for ants migration (3 hydrants 2 together and 3rd one at a 10m distance with no hydraguard boot and no problem with ants. No migration of ants from one hydrant to another).

APPENDIX B - SUPPLIER CONTACTS

Hydrant Protection Pty Ltd

11 Raftons Road
Bangalow NSW 2479

Phone: 0418 764 656

Email: ron@hydrantprotection.com.au

Web: <http://www.hydrantprotection.com.au/>



Melbourne Office

Level 8, Suite 8.02
401 Docklands Drive
Docklands VIC 3008

Sydney Office

Level 9 420 George Street
Sydney NSW 2000
GPO Box 915
Sydney NSW 2001

P +61 (0) 3 8605 7666
email: info@wsaa.asn.au

www.wsaa.asn.au