



Hydrant Services Pty Ltd

PRODUCT APPRAISAL REPORT 2036

Ant and Debris Barriers for Hydrants

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Name/Title	Organisation	Date
Product Appraisal Technical Advisory Group	WSAA	14 October 2020
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Peter Pittard, WSAA Consultant	WSAA	31 July 2020
Carl Radford, Product Appraisal Manager	WSAA	14 October 2020

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.

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1 EXECUTIVE SUMMARY

Hydrant Services Pty Ltd, a privately-owned company established in Queensland in 2017, was established to develop and market ant and debris barrier solutions for below ground hydrants.

This appraisal considers ant and debris barriers for below ground spring hydrants.

It is common for a hydrant box cavity, where below ground spring hydrants are located, to completely fill with soil transported by ants, often within a period of weeks. Debris can also enter the cavity through the surface access cover.

In such cases access to the hydrant for fire-fighting or other operational requirements will be hindered or prevented. Ongoing and significant maintenance costs associated with monitoring and clearing the cavities is common for many Water Agencies. Delay or prevention of fire fighter access to the hydrant may result in avoidable property damage and possibly even loss of life. Accelerated corrosion of unprotected hydrants is another potential consequence.

Hydrant Services has developed an ant barrier to avoid soil from being transported into the hydrant cavity and a debris barrier to prevent ingress entering through the surface access cover.

Transportation of soil by ants is prevented by installation of a neoprene boot (termed a bikini). There are two options for installation:

1. The bikini is fitted tightly around the hydrant body and adjacent hydrant riser flange joint whilst also providing a barrier around the inside of the PVC shroud pipe. This method is proposed to retrofit the barrier to existing hydrants or for fitment during replacement of a hydrant. This option utilises a bikini with pre-cut holes to facilitate exposure of the body-lug connection bolts.
2. The bikini is fitted to the hydrant riser below the hydrant and sealed using a zip tie whilst also providing a barrier around the inside of the PVC shroud pipe. This method is generally used for new installations. This option utilises a bikini similar to option 1 except that it has no pre-cut holes and incorporates belt loops to facilitate fitment of a plastic zip tie.

The base of the bikini incorporates a specially shaped PVC ring to act as a spring to provide sufficient sealing pressure on the inside of the PVC shroud pipe. Polyethylene mesh drain holes are also incorporated to allow water drainage whilst preventing ant access.

An option to install an inner cover and lid, manufactured from nitrile rubber or polyethylene, is also available to provide a debris barrier, preventing entry of debris through the ground level access cover. Options are available to accommodate either trafficable DI access covers or non-trafficable plastic access covers.

The products within the Scope of this Appraisal are considered as innovative and are not covered by any Standard or Specification. They are not considered as strategic products and accordingly the normal appraisal requirements for quality assurance licences are deemed unnecessary.

1.1 Recommendations

It is recommended that WSAA members, subject to any specific requirements of the member, accept or authorise Hydrant Services Pty Ltd Ant and Debris Barriers for below ground spring hydrants provided they are installed in accordance with the manufacturer's requirements.

2 THE APPLICANT

The Applicant is Hydrant Services Pty Ltd.

2.1 The Supplier

Hydrant Services Pty Ltd, a privately-owned company established in Queensland in 2017, was established to develop and market an ant and debris barrier solution for below ground hydrants.

2.2 The Manufacturer

The neoprene bikinis are manufactured by Custom Wetsuit Designs in Brisbane. The Nitrile or polyethylene inner covers and lids are manufactured by Qingdao Todo Rubber Co Ltd in China. Other components are sourced locally in Brisbane.

3 THE PRODUCT

This appraisal considers ant and debris barriers for below ground spring hydrants. They are designed to suit hydrant installation arrangements commonly used within Queensland and NSW. See Figure 1.

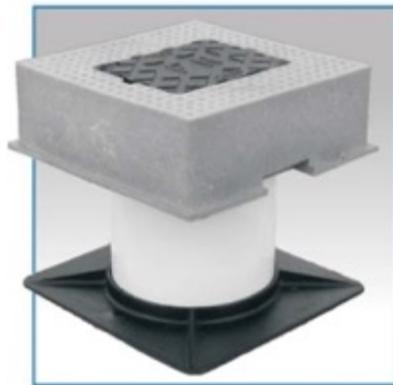


FIGURE 1

TYPICAL HYDRANT INSTALLATION ARRANGEMENT – NON-TRAFFICABLE

It is common for a hydrant box cavity, where below ground spring hydrants are located, to completely fill with soil transported by ants, often within a period of weeks. Debris can also enter the cavity through the surface access cover. See Figure 2 for examples.



FIGURE 2

EXAMPLES OF ANT DEPOSITED SOIL AND DEBRIS IN HYDRANT CAVITIES

In such cases access to the hydrant for fire-fighting or other operational requirements may be hindered or prevented. Ongoing and significant maintenance costs associated with monitoring and clearing the cavities is common for many Water Agencies. Delay or prevention of fire fighter access to the hydrant may result in avoidable property damage and possibly even loss of life. Accelerated corrosion of unprotected hydrants is another potential consequence.

Hydrant Services has developed an ant barrier to avoid soil from being transported into the hydrant cavity and a debris barrier to prevent ingress through the surface access cover.

Transportation of soil by ants is prevented by installation of a neoprene boot (termed a bikini). There are two options for installation:

1. The bikini is fitted tightly around the hydrant body and adjacent hydrant riser flange joint whilst also providing a barrier around the inside of the PVC shroud pipe. This method is proposed to retrofit the barrier to existing hydrants or for fitment during replacement of a hydrant. This option utilises a bikini with pre-cut holes to facilitate exposure of the body-lug connection bolts. See Figure 3.

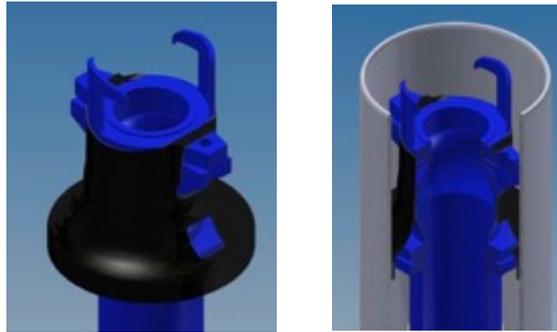


FIGURE 3 BIKINI FITTED TO HYDRANT

2. The bikini is fitted to the hydrant riser below the hydrant and sealed using a zip tie whilst also providing a barrier around the inside of the PVC shroud pipe. This method is generally used for new installations. This option utilises a bikini similar to option 1 except that it has no pre-cut holes and incorporates belt loops to facilitate fitment of a plastic zip tie. See Figure 4.



FIGURE 4 BIKINI FITTED TO HYDRANT RISER

The base of both bikini pieces incorporates a specially shaped PVC ring to act as a spring to provide sufficient sealing pressure on the inside of the PVC shroud pipe. Polyethylene mesh drain holes are also incorporated to allow water drainage whilst preventing ant access.

The ant barrier exhibits the following features and benefits:

- Fits 225 PVC storm water shroud pipe regardless of wall thickness.
- Fits DN 80 or DN 100 flanged hydrants whether square or circular shaped.
- Fitted without interruption to water supply.
- No contact with potable water.
- Can be fitted at the time of installation or replacement of a hydrant or retrofitted to existing installations.

An option to install an inner cover and lid, manufactured from nitrile rubber or polyethylene, is also available to provide a debris barrier, preventing entry of debris through the ground level access cover. Options are available to accommodate either trafficable DI access covers or non-trafficable plastic access covers. See Figure 5.

**FIGURE 5****TRAFFICABLE AND NON-TRAFFICABLE NITRILE OR PE INNER COVER AND LID****4 SCOPE OF THE APPRAISAL**

The Scope of the Appraisal covers ant and debris barriers for below ground spring hydrants.

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

Hydrant Services Ant and Debris Barriers are considered as innovative products and are not covered by Standards or Specifications. Performance tests are therefore not applicable. Field trials have been conducted with Queensland Urban Utilities and are referenced in Section 10.

6 MATERIALS

The bikini is manufactured from a waterproof neoprene rubber with good resistance to weathering, petroleum products, mineral oils, greases, acids and ozone. The material has been selected to provide sufficient elasticity whilst maintaining the required strength for the intended application.

The drainage vents are manufactured from a polyethylene material commonly utilised in orchards for protection of fruit against insects and birds. The material is extremely durable and provides the necessary resistance to ant penetration whilst facilitating drainage of ground water away from the hydrant cavity.

The inner cover and lid are manufactured from Nitrile rubber with nominal 70 durometer hardness or polyethylene. The lid is attached to the cover using a stainless-steel cable.

7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION

An installation guide is included in Appendix A.

Videos demonstrations are also available at the following link:

<https://sites.google.com/view/hydrant-services-barriers/youtube-demonstrations>

8 PACKAGING AND TRANSPORTATION

The components are packed into cardboard boxes for delivery.

9 PRODUCT WARRANTY

The products are covered by the normal commercial and legal requirements of the *Competition and Consumer Act 2010 (Cth)*. Details of Hydrant Services Pty Ltd warranty is included in their terms and conditions of sale.

10 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD TESTING REPORT

Trials were conducted by Queensland Urban Utilities at three different locations over a period from May 2019 to September 2020. The barriers were shown to be effective in preventing soil transportation by ants or other debris from entering the hydrant cavities. Details are provided in Appendix B

11 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW

No issues have been raised.

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.

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

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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

Hydrant Services Kit Choices

Upper or Lower Bikini Ant Barrier
(Determined by desired
Cavity Protection)



1. Upper Bikini 2. Lower Bikini

Bikini Choices



Upper
or
Lower

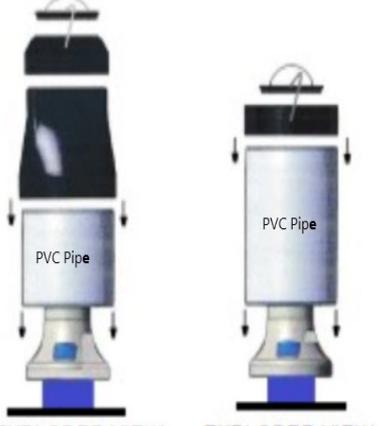
Depending on cavity required

Trafficable or Non-Trafficable Debris barrier
(Determined by Box Type)



Trafficable Style Box
for this type

Non-trafficable Style
Box for this type

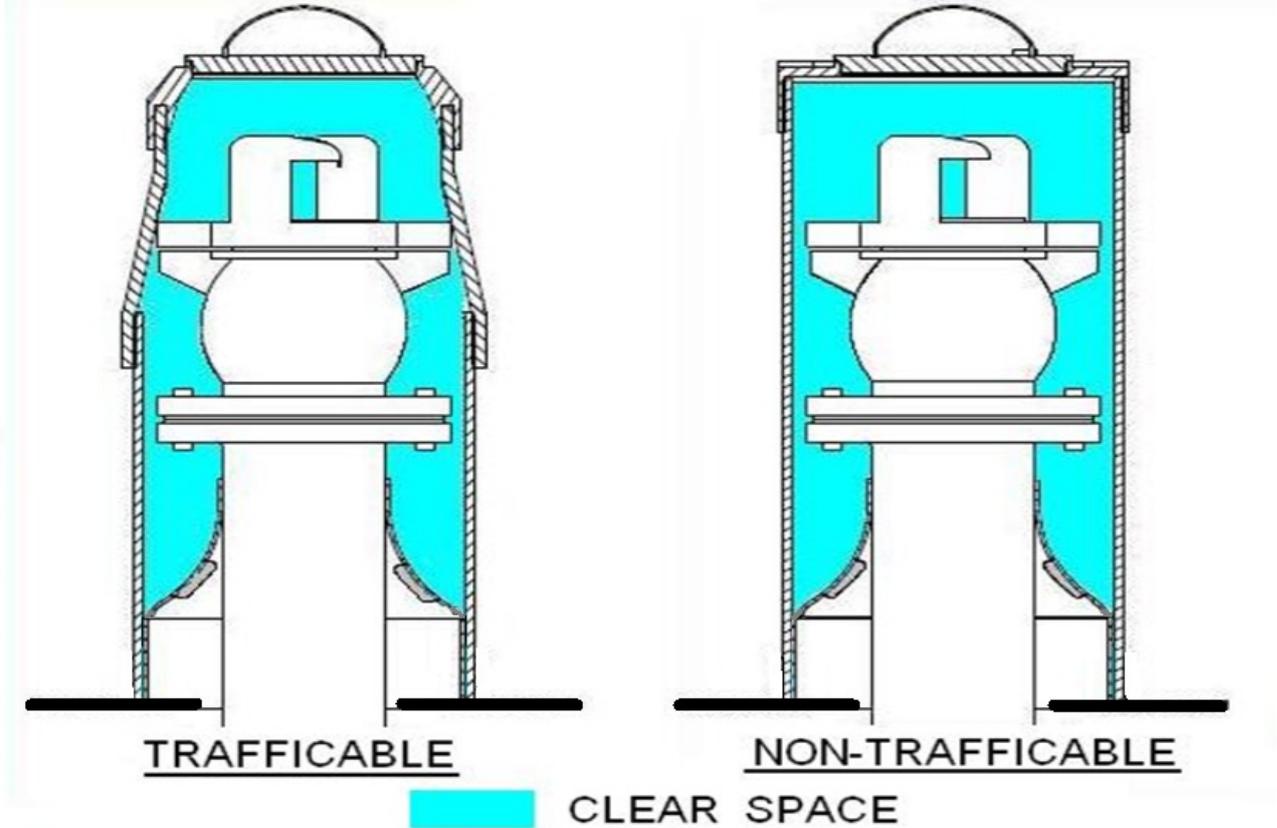


PVC Pipe

PVC Pipe

EXPLODED VIEW
TRAFFICABLE

EXPLODED VIEW
NON-TRAFFICABLE



ANT AND DEBRIS BARRIER - INSTALLATION INSTRUCTIONS

RETROFIT TO EXISTING HYDRANT USING BIKINI WITH PRE-CUT HOLES

- 1 Remove the surface cover to expose the DN 225 PVC shroud pipe.
- 2 Clear dirt and debris to a depth of 100mm below the level of the lug bolts.
- 3 Line up the pre-cut holes in the bikini with the lug bolts. Push the bikini piece over the lugs one side at a time to expose the lugs and bolts through the pre-cut holes. Push the bottom of the bikini piece inside the shroud pipe to ensure a tight fit. (Figs 1 – 11)



- 4 Fit the trafficable or non-trafficable cover and lid over the top of the shroud pipe ensuring a snug fit.



- 5 Re-install the surface cover.



ANT AND DEBRIS BARRIER - INSTALLATION INSTRUCTIONS

FITMENT DURING HYDRANT REPLACEMENT USING BIKINI WITH PRE-CUT HOLES

1. Line up the pre-cut holes in the bikini with the lug bolts. Push the bikini piece over the lugs one side at a time to expose the body-joint bolted connection through the pre-cut holes. (Fig 1, 2, 3, 4 & 5)



2. Push the DN 225 PVC shroud pipe over the hydrant and the bikini. Ensure the base of the bikini is tightly fitted inside the shroud pipe. Slide the pipe down to sit on the base plate. (Fig 6, 7 & 8)



3. Fit the trafficable or non-trafficable cover and lid over the top of the shroud pipe ensuring a snug fit. (Fig 9, 10, 11, 12 & 13)



4. Re-install the surface cover. (Fig 14, 15 & 16)



ANT AND DEBRIS BARRIER - INSTALLATION INSTRUCTIONS

NEW INSTALLATION USING BIKINI WITH BELT LOOPS (NO HOLES)

1. Push the bikini piece over the top of the hydrant assembly on to the riser.



2. Fold down the top part of the bikini to expose the belt loops. Thread the zip tie through the loops. Keep the fold as close to the hydrant/riser flange as possible. Tighten the zip tie.



3. Slide the DN 225 PVC shroud pipe down over the hydrant and riser. When the pipe reaches the base of the bikini piece, tuck it into the bottom of the shroud pipe. Continue pushing the 225 PVC pipe down until it rests on the base plate.



4. Fit the trafficable or non-trafficable cover and lid over the top of the shroud pipe ensuring a snug fit.



6. Install the surface covers.



APPENDIX B – FIELD TEST REPORT



URBAN UTILITIES - FIELD TRIAL

HYDRANT SERVICES PTY LTD - ANT & DEBRIS BARRIER

Background

Hydrant Services Pty Ltd has developed a product that is designed to prevent ingress of dirt and debris into hydrant cavities as a result of soil transport by ants and/or environmental activity such as water runoff, flooding and traffic.

Unhindered access to a hydrant by firefighting personnel is essential to minimise damage to property and possible loss of life. The debris barriers also reduce the costs associated with frequent cleaning of the hydrant cavities.

Urban Utilities agreed to trial the ant & debris barriers in three different locations within Brisbane.

Testing

Details of the trials are indicated below. In all cases the existing hydrant was replaced and the ant barrier & debris barrier installed.

Location	Date Installed	1 st Inspection	2 nd Inspection
20 Hexham St Tarragindi	20-May-2019	March 2020	September 2020
34 Struan St Chapel Hill	16-Aug-2019	March 2020	September 2020
21 Michael St Bulimba	20-Sep-2019	March 2020	September 2020

Results

There was no evidence of any soil or debris in the hydrant cavities. See photos below.

TARRIGINDI



May 2019

March 2020

September 2020

CHAPEL HILL



August 2019

March 2020

September 2020

BULIMBA



September 2019

March 2020

September 2020

Summary

The Hydrant Services Pty Ltd Ant & Debris Barrier product was shown to be very effective in preventing the build-up of ants and debris around the hydrant.

The product has now been listed on the SEQ Code Accepted Civil Infrastructure Products and Materials (IPAM) list.

Andrew McGrath

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Andrew McGrath

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APPENDIX C - SUPPLIER CONTACTS

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