DAM BUSTER SOLVES THE BOX GUTTER RAINHEAD

Non-compliant, poorly fitted or 'retro-fixed' box gutter rainheads are the bane of roofs, often causing catastrophic and nuisance flooding, **Deborah Andrich** investigates.

Tired of seeing box gutter rainheads across Australia that just didn't comply with AS/NZ3500.3, a team of plumbing industry experts came together to resolve the issue.

Too often in the roofing industry, plumbers are installing rainheads that simply don't perform, requiring 'solutions' to make them work, such as tin snipping in overflow holes, removing components or altering the overall product. In many cases, the end result is still non-compliant but also an ugly fixture that can cause overflow flooding inside the building, creating insurance headaches for the owner and occupants.

The launch of the Dam Buster box gutter Rainhead means Australian roofing plumbers can now install an 'off the shelf', fully ASNZS3500.3 compliant, simple to fit rainhead that meets the 'deemed-to-satisfy' requirements of the Plumbing Regulations .

Designed to perform under the most extreme conditions, including one-in-one-hundred year rain events mandated under the Standards, the Dam Buster Rainhead features an inbuilt overflow weir and overflow chute to allow a free flow of water away from the box gutter and roof installation even with the downpipe obstructed.

"It shouldn't be a surprise to the industry, but 95% of all rainheads installed on buildings in Australia are non-compliant," says Peter Coll, general manager of Johnson Roofing, and PC's roofing expert.

"The reasons can vary from the position it is installed in to the lack of provision for overflow."

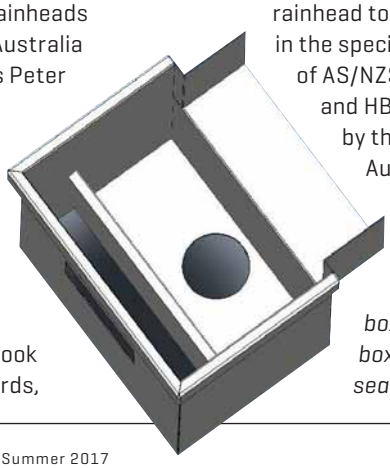
"Most rainheads don't look like the one in the Standards, because from a cosmetic point of view, customers don't accept it because you see too much of the box gutter behind it.

"The aesthetics issue has been resolved with the Dam Buster design – I'm kicking myself for not having seen the simplicity of the design."

Many housing estates have upwards of five rainheads - most of which are not compliant

Currently the Standards require a rainhead to be similar to the one in the specification diagrams of AS/NZS3500.3: HB-114,: and HB- 39. The description by the Victorian Building Authority states:

"The width of the rainhead is to be at least equal to the width of the box gutter and the box gutter needs to be sealed to the rainhead. The hydraulic capacity of the overflow device must be no less than the design flow for the associated box gutter outlet. Overflow devices need to discharge to the atmosphere in such a way as to prevent damage to buildings and property."



The design developed by Dam Buster features an overflow weir toward the forward face of the rainhead, beyond the downpipe outlet in alignment with the box gutter outlet. Across the front of the rainhead is a fascia that has a pre-cut egress point (circular or rectangular) for unusually high water flow. Between the weir and the front face of the downpipe is an overflow chute sufficient to provide the overflow provision required in AS/NZS3500.3.

This fascia gives a more attractive appearance to the overall rainhead.

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THE STANDARDS DESIGN OF A BOX GUTTER RAINHEAD

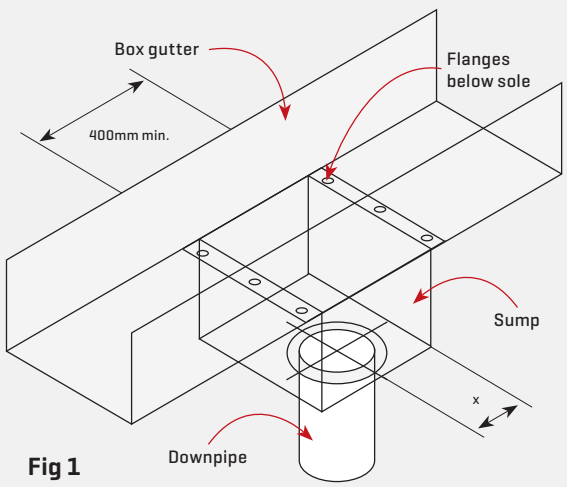

Fig 1

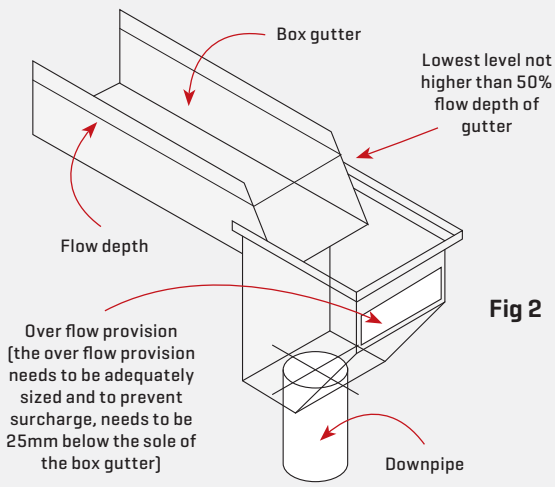

Fig 2

SOURCE: VICTORIAN BUILDING AUTHORITY OVERFLOW PROVISION FOR BOX GUTTERS, OCTOBER 2014
http://www.vba.vic.gov.au/__data/assets/pdf_file/0012/24510/Overflow-provisions-for-box-gutters.pdf

More importantly, without a solid base in the main overflow chute, there is reduced risk of debris such as leaf matter, blocking the blocking the overflow provision of the rainhead.

With a range of features for installation including inbuilt attachment points and a box gutter seal, plumbers can quickly and easily fit a Dam Buster to a new build or retrofit one to any box gutter application. It can be converted for use on eaves guttering using the supplied converter plate.

THE INSURANCE PERSPECTIVE

Decades of experience tells Chartered Loss Adjuster David Pockett, director of Metropolis Solutions that the 'overflowing gutters' are responsible for significant numbers of insurance claims, particularly in storm events. It is quite common for there to be no actual 'storm' damage to a house or building and for the only damage to be caused by the gutters failing to cope with the volume of rain and flooding the property via the ceilings.

"Many people put these events down to that good old '1 in 100 year storm'," says David, "but these supposed events have become so common it's obvious people are not talking about 1:100 year events, but maybe 1:10 or 1:20 type events.

With the massive rise in modern construction has come an equally massive rise in the use of box gutters and rainheads (Fig1 & 2). In years gone by these were almost never found on domestic homes – only on commercial buildings and in the 'old days' they commonly had a different installation method that mirrored the original English design which was also the basis of one of the (compliant) rainhead options set out in AS/NZS3500, which rarely caused a problem.

"Currently the Australian Bureau of Statistics shows that between 15,000 and 20,000 new homes are being constructed in Australia every month," says David.

"If we assume only 50% have rainheads that equates to 9,000 to 10,000 new homes a month with rainheads. A typical house would have four to five rainheads. So we are looking at nearly 50,000 non-compliant rainheads a month going into residential housing."

The major problem with modern rainhead installations says David, is that they choke the box gutter, even if they are well installed and there is also no restriction through the parapet. Modern rainheads are little more than decorative trim boxes. Small holes and slots hacked in to the front face of the rainhead with tin snips are inadequate to cope with the potential volume of water generated by a 1:100 year rain event when the rainhead will need significant overflow provision to meet AS/NZS3500.3 and simultaneously ensure the property will not be flooded internally.

The end result is likely to be an epidemic known as 'leaky building syndrome' occurring mostly in multi-unit residential developments. In David's experience, water damage from defective roof plumbing in domestic homes and multi-unit residential developments is common. Entire properties can be flooded out, ceilings collapse, carpets are saturated and floating timber floors destroyed and mould takes hold, forcing people out of their homes.

In the insurance industry, most assessors do not recognise that common practice is (for rainheads) non-compliant and do not investigate the root cause of any claim. This means that claims are paid on face value, especially if there has been a rain event of some significance. Many insurers also use what is called "The Builders Model" where panel builders will assess causation of any claims, however they also often lack the experience to identify the problem which has actually

caused the loss and claims are paid.

"More and more insurers are using specialist assessors who will recognise non-compliant installations and defects and deny the claims," says David. "The hapless consumer who has recently purchased their dream home has no idea about rainheads or non-compliance. Their property floods and suddenly the insurance company tells them the roof plumbing installation was not compliant and their claim will be denied. As insurers tighten the screws, this is potentially the next 'flood' to appear in this area of denied claims and unhappy home owners."

"The Dam Buster Rainhead patented design has put together years of hydraulic experience and mixed it with some truly amazing manufacturing techniques to make the seemingly problematic rainhead and wrap it in the skin of another rainhead to deliver the "box in a box" Dam Buster Rainhead that is fully compliant," says Peter.

CALCULATING RAINHEAD SIZING

The team at Dam Buster have simplified the zoning of rainfall intensity listed in AS/NZS 3500.3, Appendix E, into five categories (listed as Average Recurrence Interval – ARI). For regional areas, consult the charts in the Standard.

MAX RAINFALL INTENSITY (MM)	LOCATION
190	Melbourne, Adelaide, Hobart
220	Canberra, Perth
270	Sydney
330	Brisbane
390	Darwin, Cairns

For example, in Sydney, the rainfall intensity is up to 270mm for a 1:100 year ARI. It is necessary to size the roof stormwater catchment area (which should include exposed sections of walls that may drain into the catchment area). This must be done to size the box gutter in accordance with Australian Standards (as per HB 114 1998) to give the minimum width and depth of the box gutter required.

The Dam Buster Design Guide will give the appropriate size rainhead to suit the width and depth of the box gutter and the catchment area (in sqm) based on the rainfall intensity for the location.

With these numbers established, the 'Design Guide for Dam Buster Rainheads' will also specify the acceptable range of downpipe sizes (and shapes) that can then be cut into the base of the Dam Buster rainhead.

A correctly sized and fitted Dam Buster rainhead has been certified (Dr R J Keller & Associates, Civil Engineering Hydraulics) to meet the primary hydraulic requirement of AS3500.3 "Plumbing and drainage Part 3: Stormwater drainage" for rainhead performance:

"3.7.5.1 Hydraulic capacity - The hydraulic capacity of an overflow device shall be not less than the design flow for the associated gutter outlet. Overflow devices shall discharge to the atmosphere."

The Dam Buster rainhead is therefore not only compliant with AS/NZS 3500.3 but also compliant with the NCC as it meets or exceeds the Deemed-to-Satisfy requirements and meets the overall performance requirement of the NCC Volume 3 2015 Plumbing Code of Australia Section D I Clause DP1.1, DP1.2 and DP1.4.

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