

Introduction

Arrowform's downlight protection products have been installed by more responsible insulation contractors since the inception of the government's Energy Efficient Homes Package (EEHP) and for several years previous.

However, in November the government wisely decided to mandate approved downlight enclosures under the program in response to mounting fire safety concerns.

Our close involvement in the roll-out of this program has provided a unique insight into its operation on the ground. As a local business and employer, we have scaled up our operations significantly to meet the demand this program has created. Please accept our constructive and insightful remarks with the supportive spirit in which they are offered.

This submission will address Terms of reference that are relevant to Arrowform's area of operations only.

Background

Arrowform is Australia's sole specialist in recessed downlight protection, based in Swan Hill, Victoria.

The company was formed in 2003 to address the life-threatening consequences of exposed and unprotected halogen downlights, following a devastating ceiling fire within the family.

Fires caused by recessed downlights are far too common in Australia. Their effects are devastating because they are mostly not detected early by a mandatory smoke alarm. Often, occupants become aware of the fire only because the ceiling is falling in.

There is estimated to be well in excess of 50 million recessed downlights installed in the ceilings of Australian homes, each of which can reach operating temperatures of close to 300 ° Celsius.

Downlight protection

Suitable fire resistant downlight enclosures (that conform to the minimum requirements of the Australian Standard) are the most effective means of preventing downlight related electrical fires in insulated ceilings. This was demonstrated by the government's recent decision to make approved downlight enclosures mandatory as part of the EEHP.

Arrowform's Isolite guards (pictured at [Appendix 1.](#)) are manufactured from a fire-resistant polymer that was independently tested and approved to comply with AS3000:2007 4.5.2.3. This material will outlast the life of any downlight, unlike some cheaper products currently on the market.

While commonly fitted over downlights at the time of installation, Isolite guards can be safely retrofitted to existing downlight installations without disconnection of power cables, whether 12V or 240V.

Importantly, Isolite guards also enhance the energy efficiency of ceilings by up to 66 percent according to a report by former CSIRO scientist, James M Fricker¹ (see [Appendix 2.](#)) They allow insulation and timber to safely abut the downlight, unlike the alternative option allowed under the Australian Standards that requires a 200mm clearance to be left around and above each globe,

¹ Report: Fricker, James M. "Report on the thermal performance of insulated ceilings with/without using Isolite or Flexi downlight enclosures", Revised April 2009

resulting in up to a 500mm hole in the insulation per halogen downlight. These are responsible for the large efficiency losses as described by the Fricker report.

The Australian Standard

The Isolite product conforms to the Australian Standard AS/NZS 3000:2007 (clause 4.5.2.3), as “a suitable fire resistant enclosure”. Details of the clause are included at [Appendix 3](#).

In mandating downlight protection under the EEHP, the government has commendably stepped beyond the relevant section of this Standard which also allows a ‘default clearance’ – ‘option d’ – of a 200mm clearance in the insulation around each downlight (as previously described).

However in addition to the efficiency losses it creates, this option also presents a fire hazard as the clearances are known to collect flammable debris that exists within the roof cavity.

Arrowform is strongly of the view that ‘option d’ should not be applied under any circumstances.

Electrical safety

Arrowform would like to highlight the following points in relation to electrical safety that is a critical issue for the EEHP. (Some points have been reiterated elsewhere in this document where appropriate):

- Arrowform’s Isolite guards can be safely retrofitted to existing downlight installations without requiring any disconnection of the power supply, whether 12V or 240V.
- The major electrocution risk presented by ceiling installations relate to metal staples penetrating 240V wires and not recessed downlight installations.
- All Arrowform products come with instructions that warn specifically and strongly against any interference with 240V wiring, and state that electrical connections require a qualified electrician.
- The vast majority of halogen downlight arrays are powered by 12V cables which are safe to work with. This is done either a qualified electrician wiring it directly into the transformer or installing a socket in the ceiling so that the installer can just plug the downlight into the socket.
- However 12V installations require a transformer. Arrowform also produces a transformer isolator as an optional extra with its Isolite range, because statistics demonstrate that transformers (particularly old iron core types) can also heat up to dangerous temperatures.
- The Transformer Isolator can also be installed safely without the aid of an electrician because it does require any electrical disconnection.

Response to the terms of reference

Term of reference 1. The Federal Government's Energy Efficient Homes Package (ceiling insulation), with particular reference to:

ii. the administration of the program from a pricing, probity and efficiency perspective

A. The basis on which the Government determined the size of the rebate for ceiling insulation

Arrowform noted the government’s early, wise decision to include ‘suitable fire resistant enclosures’ under the (then-\$1,600) rebate as an accessory.

As a guide, Arrowform estimates that inclusion of downlight enclosures under the scheme should cost around \$300 per home. This allows for on average 20 halogen downlights for those that have them at all.

Based on an estimate of \$1,000 per home for the installation of insulation batts, Arrowform believes that the existing maximum rebate of \$1,200 should not be reduced any further, as safety measures such as downlight protection will be the first corner to be cut by contractors.

B. Regulation of quoting and installation practices

Arrowform believes that the Department is responding to emerging issues in this program in an appropriate and timely manner; particularly those surrounding questionable quoting and installation practices.

Importantly, the government is now looking carefully at installation practices to ensure the safety of both contractors and consumers. Arrowform's products come with detailed installation instructions to safeguard workers when they are in ceilings, particularly when retrofitting Isolite products to existing lighting arrays.

It is our strong view that our products can be safely installed without the assistance of a qualified electrician. (See 1. iii B.)

C. Protection against rorting and abuse of the rebate

From a downlight protection perspective, we believe the use of cheap, imported downlight covers that do not conform to AS/NZS 3000:2007 to be a worrying abuse of the rebate and a threat to public safety.

I. The consultation and advice received from current manufacturers regarding their ability to meet the projected demand

From the beginning of this program, Arrowform has made regular representations to the government and the department relating to safety (see 1. iii. B) and efficiency issues based on our extensive technical experience in this sector.

Arrowform has not been approached by the government or the department with regards to production capacity or any of the aforementioned issues.

Despite this, we believe that successive alterations to the program demonstrate that the government has taken advice and recommendations provided by Arrowform – and other industry participants – on board.

iii. an examination of:

A. The employment and investment in insulation production and manufacturing resulting from the program

To respond to a sharp spike in demand, Arrowform has recently invested very heavily in new Australian Made tooling. We have employed an extra two staff (semi-permanently) to dispatch goods and manage general logistics for the business. We have also employed four staff (on a part-time basis) to work on packaging and more than five extra staff to manufacture the guards in Australia.

B. What advice was provided to the Government on safety matters, particularly in relation to fire and electrocution risks and to what degree the Government acted on this advice

Current advice relating to fire and electrocution risks

Arrowform's most recent communication (directed to both the Minister and the Department) is of critical importance as it directly addressed electrical and workplace safety issues. It is summarised here:

Despite the clear need for modifications to the EEHP's enforcement regime following a number of tragic incidents involving electrocution, Arrowform believes that the government should not act on suggestions to mandate the attendance of an electrician at every installation. This would increase the cost of the EEHP dramatically, while also slowing it down in direct proportion due to the expense and lack of availability of qualified electricians.

However, Arrowform supports the government in introducing more stringent training and registration requirements, as well as tougher sanctions for non-compliance.

We understand that recent instances of electrocution relate to metal staples penetrating 240V wires and not recessed downlight installations. Arrowform products are designed to be retrofitted to existing downlight arrays without any disconnection of or interference with wiring. Therefore they do not require installation by an electrician and come with instructions that warn specifically and strongly against any interference with 240V wiring, and state that electrical connections require a qualified electrician.

Summary of previous advice

From the start of the program, Arrowform has communicated regularly with the government in relation to fire (and electrocution) risks. These are summarised in the table below.

Separate instances of written communications are listed here. The content of these communications is also summarised below. Phone calls and meetings have not been included. Other topics raised have been expanded on previously in this submission.

Date	Communication	Subject(s)
26 February 2009	Briefing memo to Minister Garrett	Fire hazards arising from uncovered halogen downlights Thermal efficiency issue Inter-jurisdictional coordination with regards to electrical safety
6 April 2009	Email to Minister Garrett	Outlining fire hazards associated with the application of AS/NZS 3000:2007 4.5.2.3 in the ongoing roll-out of the EEHP
16 April 2009	Letter to Department of Environment, Water, Heritage and the Arts	Clarification on whether downlight protectors are to be rebateable under the EEHP Ceiling fire hazard risk presented by application of the 'default option' of AS/NZS 3000:2007 4.5.2.3 Error on website regarding health and safety tips
August 2009	Communication with the Minister Garrett's office	Discussion of approved enclosures becoming mandatory under the EEHP

September 2009	Communication with the Minister Garrett's office	To clarify ongoing nature of the EEHP in light of media reports. To note 'upscaling' of operations
3 December 2009	Letter to Minister Garrett	Electrical safety and downlight covers Need for an electrician to attend insulation fit-outs exaggerated
16 December 2009	Letter to the Department of Environment, Water, Heritage and the Arts	Electrical safety and downlight covers Need for an electrician to attend insulation fit-outs exaggerated

v. An analysis of the effectiveness of the package as a means to improve the efficiency of homes and reduce emissions of greenhouse gases, including comparison with alternative policy measures

In response to this term of reference, Arrowform would highlight the thermal efficiency gains offered by products like its Isolite downlight guard.

While downlight protection may be viewed as a side-issue to what is a significant program, the efficiency advantages of a small outlay in this area are significant.

The report by James M. Fricker, revised in April 2009 and enclosed at [Attachment 2.](#)), clearly demonstrates that an estimated \$300 per ceiling expenditure to fit approved downlight guards will result in up to 66 percent increase in the thermal efficiency of a ceiling.

Arguably, the disadvantages of not using approved downlight enclosures are significant enough to call into question why an insulation fit-out (in a home that contains halogen downlights) should be allowed to proceed without them.

Term of Reference 3. Other related matters

Finally, we believe the Inquiry should consider how developments in the EEHP are communicated to the industry, and how it affects the operation of this area of the economy.

There is no doubt that the program has had an overall positive effect on the insulation sector. To aid this, the government provides regular updates to industry via the media, its website and its call centre.

Nonetheless, the insulation industry remains rife with rumours and misinformation about changes to various aspects of the program that have had sudden impacts on both business confidence generally, and our business specifically.

For example, an Arrowform business customer recently attended a refresher course for insulation installers, where he was informed that Arrowform's Isolite products would no longer be accepted under the EEHP "as they require contractors to work with 240 volt power".

Rumours of this kind may be unsourced and nonsensical (most halogen downlights run off 12 volt rather than 240 volt power), but they tend to be believed by an industry that is in a state of flux.

Additionally, these kinds of rumours are difficult to verify with the department's call centre, as it seems to be consumer-oriented and not resourced to provide detail on technical issues.

Arrowform suggests that the EEHP consider providing greater clarity in communications with all industry parties. This may be via an industry email update, or a separate hotline for what would be a low volume of industry enquiries.

While Arrowform remains excited about working to help deliver this important government initiative, we also emphasise that as a small company it is vital that confidence in our products is maintained so that we may continue to offer a safe, high-quality local product to the Program.

Appendices

Appendix 1: The Isolite Guard

Below: Isolite abutting insulation batts



Below: Isolite compared against the 'option d' default clearance.



Appendix 2: Report: Fricker, James M. "Report on the thermal performance of insulated ceilings with/without using Isolite or Flexi downlight enclosures", Revised April 2009 (ATTACHMENT)

Appendix 3: Details of the Australian Standard AS/NZS 3000:2007 (clause 4.5.2.3) (ATTACHMENT)