INTERNATIONAL ASSOCIATION OF LIGHTING DESIGNERS **IALD**

Dear Recipient:

As President of the International Association of Lighting Designers I congratulate my IALD/ANZ Colleagues for taking time and energy to conduct a careful and thorough technical review of the "Consultation Regulation Impact Statement – Lighting". I believe that the review they have shared with me reflects the views of IALD members in the Australia/New Zealand region, and, if we had time to circulate the document globally, would reflect the views of a vast majority of our professional colleagues around the world.

I look forward to keeping informed about the progress IALD/ANZ are able to make in opening and continuing a dialogue with regulatory authorities in your region. All of us are working to improve the quality of lighting while reducing energy use, and our comments hopefully make a clear and logical case to support the recommendations we make.

I look forward to learning more about the evolution of this proposed regulation in your region.

Sincerely,

Victor Palacio, IALD
President, International Association of Lighting Designers

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IALDANZ

INTERNATIONAL ASSOCIATION OF LIGHTING DESIGNERS IALD

Consultation Regulation Impact Statement – Lighting Submission

by

International Association of Lighting Designers

Australia/New Zealand Region

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1. EXECUTIVE SUMMARY

The **International Association of Lighting Designers (IALD)** is an internationally recognized organisation dedicated solely to the concerns of independent, professional lighting designers. IALD members strive to set global standards for lighting design excellence. Lighting designers work daily with lamps, light fixtures and daylight to optimise indoor and outdoor environments in order to enhance human health and productivity while realising an architect's vision for a given space. IALD/ANZ is the Australia-New Zealand regional branch of the IALD.

IALD/ANZ represents professional lighting designers who design and specify high quality commercial, civic, hospitality, industrial and residential lighting. Professional lighting designers have the knowledge, talent and expertise to provide high quality lighting installations that comply with the limits of Section J6 of the NCC (National Construction Code). This is a world-class building energy code that limits the overall energy density for lighting in all buildings based on the nature of the building usage.

On behalf of our members and affiliates we believe that the introduction of MEPS for LED (Light Emitting Diode) luminaires, as outlined in the consultation Regulation Impact Statement (RIS), is an extremely complex situation and that the current draft does not adequately address the diversity and nature of the industry and its products. As lighting design professionals we firmly believe that many of the draft proposals will result in significant cost to the industry and the end user, for minimal energy saving, and will exclude best practice while allowing much of the worst practice to prosper.

The clear intent of MEPS (Minimum Energy Performance Standards) is to reduce energy consumption but this is already moderated by a clear directive as set out in Section J6, a mandatory obligation specifically designed to minimise the use of energy.

In addition, many commercial buildings are subject to Green Star and NABERS ratings which aim to reduce the impact of energy consumption further.

IALD/ANZ considers that the RIS significantly overestimates the energy and greenhouse gases that will be saved as they will have already been saved by compliance with Section J6 and other current energy stipulations.

Professional lighting designers construct their designs and specifications to meet the energy stipulations of Section J6 and other environmental ratings whilst also achieving quality, fit for purpose and desirable environments for people. By designing to current mandated standards, lighting designs already achieve the major part of energy savings attributable to lighting, and any further energy and greenhouse gasses savings will be negligible as a result of introduction of the luminaire MEPS.

IALD/ANZ believes the additional layer of compliance proposed for LED luminaires serves no benefit if the requirements of Section J6, Green Star and NABERS are already complied with. If there is a desire to further reduce energy consumption, then this could be more efficiently achieved by tightening the stipulations in Section J6 or a review of recommended light levels in the lighting codes.

Much of the justification for the proposals in the RIS is based on domestic consumption with some consideration to office-type spaces. This is not representative of the overall lighting industry and many of the conclusions drawn are not applicable to the professional lighting market. We believe that for the professional lighting specification sector the RIS does not recognise the role and importance of luminaires that have specific optical features, and significantly underestimates the number of products requiring registration. It therefore underestimates the performance implications, cost and complexity of compliance.

The current proposal has a simplistic definition of luminaires and although it may have some application to domestic downlights, in its current state it will exclude the majority of luminaires that lighting designers specify for civic and commercial applications. Many of the luminaires that we specify, particularly the ones with good glare control and beam shaping will not meet the proposed efficacy limits despite the fact that they are functionally vital to certain applications and are already product design world-leaders in efficiency.

The proposal needs to recognise the importance and benefit of specific effect integrated LED luminaires such as wallwashers, directional accent lights and profile projectors. These precise and professional instruments are designed with particular and valuable purpose. Amongst their inherent merits they are effective at providing apparent brightness and therefore can create the illusion of a welcoming and bright space at a lower energy consumption than would be otherwise necessitated. These

fittings typically have a lower Light Output Ratio (LOR), and under the draft proposal would all fail the MEPS. There are a number lighting suppliers who distribute such high quality luminaires, and the implementation of the current draft proposal would decimate their businesses.

As most of these professional luminaires are manufactured overseas and Australia is a relatively small part of their market, we are concerned that the proposal, as it stands, would require them to be withdrawn from the Australian market. This would not achieve energy savings but would have an adverse impact on innovation and the ability to design high quality effective spaces, and lead to a detrimental effect on functionality.

In respect to the product approval process, the professional lighting design community is concerned that registration costs will mean it is not viable for suppliers to offer these luminaires into the Australian market. We have had estimates from some suppliers that they will have to remove between 30 to 70% of their product range if they are to comply with the MEPS. This limitation will have a severe and damaging impact on the lit environment and purpose of space but without the energy reduction that is implied in the proposal.

There are moves overseas to include Wellness in the criteria for lighting design through improved glare control, appropriate colour temperature and colour rendering. These important criteria are starting to be included in Australian project design briefs. The draft proposal will favour lower colour rendering and high colour temperature LEDs which are typically more efficacious but detrimental to human experience and inappropriate aesthetically and functionally in many instances. The current draft works against the goals aspired to in the Wellness ideals, and therefore would place Australia out of step with leading models.

Due to Australia's world-leading ban of incandescent lamps, Australia already leads in the uptake of LED technology.

We, IALD/ANZ, support the application of MEPS to LED lamps as we see this as a natural progression from the incandescent and fluorescent lamps MEPS; however, there are some modifications that in our opinion need to be made to the proposed MEPS.

IALD/ANZ supports the phase-out of incandescent and tungsten halogen lamps, with some exceptions such as lamps in hot environments, as we believe that the majority of lighting applications can now be carried out by LED technology. We believe that there should be an extended implementation period as there are legacy installations that do not have an LED replacement lamp that will fit the existing luminaires or supply adequate lumens to substitute the conventional lamps.

The further phase-out of incandescent and tungsten halogen will help reduce energy consumption. This will be adequately addressed by retrofitted LED lamps that satisfy the MEPS, so long as the equivalence is accurate and meaningful.

IALD/ANZ also supports the introduction for non-integrated commercial luminaires as it will improve the general transition to LED technology. Again, we have some qualifications.

Whilst IALD/ANZ supports the mandatory labelling of lamps we do not support the mandatory labelling for luminaires. The majority of the products that lighting designers specify never appear on a retail shelf and the specifier will never see the carton. In addition, products are imported from multiple countries, often in small quantities and it would be extremely difficult to manage a uniquely Australian labelling system. On behalf of our members we believe that the only impact of mandatory labelling on professional luminaires will be to increase the cost.

The remaining market sector is the replacement of incandescent and tungsten halogen luminaires that will inevitably be upgraded with LED or compact fluorescent luminaires if they are to meet the NCC energy density stipulations. The compact fluorescent downlight market is dead. As a result, this market has been shown to be self-regulating because LED luminaires are the default replacement for incandescent and tungsten halogen fixtures.

We believe that as lighting design must comply with energy prerequisites in Section J6 of the BCC, and that there are other ratings systems in place to further reduce greenhouse gases; there is no justification for the inclusion of integrated LED luminaires in the MEPS. The proposal, as it stands would put the whole quality lighting industry at risk, with significant and negative effect on cost, functionality and human experience.

IALD/ANZ RECOMMENDATIONS

For reasons further expounded in the body of this submission, IALD/ANZ recommends the following;

MEPS on LED Lamps

i. MEPS for LED lamps should proceed subject to the equivalence being modified to ensure that when retrofitted to installations the existing lighting parameters are retained.

MEPS for Integrated LED Luminaires

i. We believe that there are many serious issues that mean that the current proposal is not workable and it should be deferred until these are adequately resolved.

ii. The majority of the predicted savings in energy and greenhouse gases will have already been made due to the NCC, the LED lamp MEPS and the phase-out of incandescent and tungsten halogen lamps.

iii. The existing proposal is unworkable for high quality professional product and decorative lighting and will force the market to the low quality, high glare products.

iv. The list of exemptions needs to be expanded.

v. The categories need to be expanded and a formula that reflects the degree of optical control of the luminaire should be adopted.

vi. Adjustment factors need to be included for colour rendering and correlated colour temperature.

vii. We therefore believe that the MEPS for integrated LED luminaires should not proceed at least until the Europeans have released their system.

MEPS for Non-integrated Commercial Luminaires

i. We believe that there is some merit in this proposal. However as there is ambiguity as to what comprises a commercial luminaire it should be extended to all luminaires that have an interchangeable lamp.

ii. An exemption should be given for lamp shades as they would be impossible to regulate.

Mandatory Labelling

i. IALD/ANZ considers that mandatory labelling of LED lamps is reasonable and consistent with other lamps. The Association has some concerns with the viability of the dimming requirements.

ii. We do not believe that the mandatory labelling of professional luminaires will serve any function as the product selection is independent of the packaging.

Phase-out of Incandescent and Tungsten Halogen Lamps

i. The availability and quality of LED products now means that the majority of incandescent and tungsten halogen lamps can be replaced with LED product.

ii. The phase-out needs to address the problems of environments unsuitable for LEDs, smooth dimming to extinction and legacy luminaires where there is no workable LED replacement lamp.

2. BACKGROUND

The RIS may have a rather simplistic view of the lighting supply industry.

The industry basically supplies product to the following major markets:

- Domestic
- Retail (lighting of retail establishments)
- Commercial
- Architectural and galleries
- Industrial
- Landscape and Street lighting
- Sports

Although there is a small overlap of product from one market to the other, each of the markets requires a different suite of luminaires that is selected, specified and distributed in different manners.

2.1 Domestic Lighting

Most of the lighting that goes into the domestic market is sold over the counter at department stores, lighting shops, home improvement centres and electrical wholesalers. The purchaser is normally the home owner or a domestic electrician. There is generally no lighting design and the RIS details the selection process in many of these purchases.

2.2 Retail Lighting

Retail lighting falls into two camps.

At the department store and high end retail outlets, the lighting is generally designed by a professional lighting designer and the product used is quality architectural and gallery equipment. The lights are generally supplied by the distributor of the brand via an electrical wholesaler. The wholesaler and the electrician are normally not involved in the selection.

The professional lighting designer is trained to selecting the appropriate luminaire based in its quality, optical performance and energy efficiency. They also certify compliance with section J.6 of the NCC.

At the lower of the market the lighting is normally the base fit-out of the building with some supplementary low quality accent lights and downlights. These lights are usually selected by the electrician or with the help of a lighting retailer.

2.3 Commercial Lighting

Again, with commercial lighting there are two ends of the market. The majority of commercial projects, which includes offices, health, accommodation and food and beverage premises are designed and documented by lighting professionals and use quality product.

At the other end of the market is a design-and-construct process where the selection of the lighting is left to the electrician or a low-cost bulk seller of imported equipment. These luminaires are generally selected based on price alone.

There is a reputable design and construct process where the services of professional designers are still retained. In this case the 'design and construct' refers to the method procurement of the project rather than any implication of quality.

2.4 Architectural/ Gallery Lighting

Architectural and gallery lighting covers a huge range of products that are used in the public spaces of commercial and public buildings, galleries and museums, quality retail and high-end residential. The product is generally of a very high quality and is designed to achieve specific lighting performance as well as an aesthetic appearance.

This segment of the industry has an extremely wide variety of products with differing photometric distributions and appearance to suit a broad variety of lighting tasks. The majority of this product is sourced from Europe.

This lighting is almost exclusively designed by professional lighting designers.

2.5 Industrial Lighting

Industrial lighting covers lighting for manufacture, assembly and warehousing, mining and military. The lighting is generally of a functional nature with a low importance to aesthetics. The selection is often based on operation and maintenance costs. Large establishments are usually designed by professionals however smaller projects are often design and construct.

There has been some problem with upgraded LED luminaires that, although they achieve the required efficacy, fail to adequately illuminate the space. The proposed MEPS will not solve this problem.

2.6 Landscape Lighting

Landscape lighting includes post-top lights, bollards, garden and in-ground lights. The lighting for public urban spaces is robust and well designed and is usually specified by professionals. There is also a residential end of the market that is less robust. IALD/ANZ believes that the energy used by residential landscape lighting will be almost negligible.

2.7 Sports Lighting

Sports lighting uses high powered floodlights that are purpose built for sport and area lighting. This is normally designed by professional lighting designers but will not fall within the scope of this document as the luminaires generally produce > 50,000 lumens and in any event usually run a very limited number of hours per year.

3. ISSUES OF PRIMARY CONCERN TO PROFESSIONAL LIGHTING DESIGNERS

3.1 MEPS for Lamps

We believe that there is a natural progression from the incandescent and fluorescent MEPS, however there is a significant problem with the current draft.

The lumen levels for equivalence are far too low.

- The base lumens are based on GLS(General Lighting Service) lamps (11 lm/W) whereas the majority of the directional lamps are tungsten halogen lamps (22 lm/W). For example, a 50 watt MR16 lamp typically has an output of 950 to 1000 lumens. Extrapolation of the values in Table 1 as directed gives base lumens of 650. It then applies a further 80% multiplier.

  This means that the supplier can claim lumen equivalence to a 950lm tungsten halogen lamp with an LED lamp that only produces 520lm. This would result in a 45% reduction in illuminance.

- Similarly, the base lumens for a 1200mm long linear fluorescent lamp are 1600 lm. A 36 watt T8 MEPS-compliant fluorescent lamp produces 3200lm. This would again represent a reduction in illuminance of 50%.

3.2 Lamp Equivalence

The lamp lumens and beam distribution for the LED replacement lamp must be the same as the tungsten halogen equivalent.

The MEPS also used centre of beam luminous intensity as a parameter for comparison. We have seen many installations where retrofit LED lamps of the same centre of beam luminous intensity have been installed but with a much narrower beam width. The result is an installation that has the same illuminance directly under the lamps and a much lower average illuminance and uniformity.

3.3 Luminous Intensity

We believe that reference to centre of beam luminous intensity should be removed.

Our Professional Members have seen several installations where the substitution of LED replacement lamps has resulted not only in the installation no longer complying with the recommendations of AS1680 (the interior lighting code), but also with the mandatory minimum illuminance required for compliance with the NCC.

The MEPS for lamps must guarantee that if the lamps are retrofitted as an equivalent in an existing installation, then the design illuminance and uniformity is maintained.

3.4 MEPS for Integral LED Luminaries

We believe that the range and diversity of the luminaires in this category is extremely complex and that there is a long way to go to make it a workable standard.

The majority of architectural and commercial luminaires, other than troffers, are either designed or manufactured in Europe. There is a European standard in the process of preparation and it would be better if the Australian standard was aligned with the European standard. This would mean that testing for compliance could be used by both.

The sector of the lighting industry covered by professional lighting designers draws on both major and quite small lighting manufacturers in Australia and around the World. Most of them have Australian agents which market the entire ranges of these manufacturers either by the distribution of printed catalogues or through their websites. Many of these products are specific in either photometric performance or aesthetics.

Our research shows there are possibly half a million products available to the professional lighting designer in Australia. Probably less than 10,000 of these product lines are sold in Australia per annum.

The current definition of marketing we understand to mean that if you publish or advertise a product then it must be registered. This may work for everyday commercial and some domestic products where there is an almost guaranteed number of sales, however it does not work for the professional market.

There is supposed to be an exemption for low quantity products and although that is good, it creates an ambiguity.

If the product must be registered to market then all the half million products, reduced by creation of product families, will need to be registered. Many of them are decorative and will not have been photometrically tested. Others are only made to order and samples would need to be made to test.

Many of these fittings will never be sold in Australia and others will only be sold in small quantities. These would then fall in the small quantity exemption. Does the supplier then get their registration money back for all the luminaires that do not sell?

The most likely solution will be for the supplier to remove any product from their range that they are unlikely to sell in large quantities. This will add a further cost to the industry as they

will then need to publish special Australian catalogues. It will also deprive the professional lighting designers of their major tools of trade.

- **We would therefore recommend that it be separated for the MEPS for lamps so that the lamps can proceed allowing revision of the luminaire MEPS**.
- **We would also recommend that this package be deferred until the European proposal is at least released for public comment. We understand this is expected in the middle of 2017.**

3.5 Efficacy

We believe that the current lighting categories are too simplistic. The breakdown into small non-directional, small directional, large and P/B/T(Planar, Battens & Troffers) is too generic.

The integral luminaire efficacy limits are the same as for lamps. There is no account taken for the LOR (Light Output Ratio) of the luminaire. This may be applicable for downlights that have the LEDs level with the ceiling. Any luminaire that has any glare control must be multiplied by a typical LOR of at least 0.75.

Without this there is a definite advantage given to retrofit lamps in non-integral luminaires over the integral luminaires when we would have thought that the intention of the MEPS was to push the industry to integral luminaires as it is generally a superior product.

There is no category that covers linear LED profile products.

There needs to be a tolerance on the compliance. An accredited photometric laboratory has a measurement error of 5 to 7%. An in-house laboratory may be less accurate. In addition to this there are tolerances on the reflectance of the materials, accuracy of the shape of reflectors, luminous flux of lamps, driving current and power losses of the drivers.

Refer to AS/NZS3827 Lighting system performance – Accuracies and tolerances.

The categories appear to have assumed luminaire types.

3.6 Small Non-Directional Luminaires

We consider small non-directional luminaires refer to a standard LED downlights with the LEDs either level with the ceiling or slightly recessed. In this instance the reflector has minimal impact on the distribution. These fittings are relatively easy to comply with the efficacy limits. These fittings are commonly used in residential applications and are also the ones at the low-quality end of the market that product high glare and general poor performance.

We believe that these fittings are the very fittings that the MEPS is aimed at, but it has the least impact on them.

For a downlight that meets the quality aspects of lighting and glare control required by AS1680, it is necessary that the light source be recessed higher into the ceiling. Thus, the efficacy of the luminaire is reduced.

We have looked at a test group of high quality recessed downlights. The efficacies are between 71 and 87 lm/W depending on the wattage. Although currently complying, without a major improvement in LED technology, all will fail in 2021 when the requirement increases to 85 lm/W.

A consequence of the improved efficacy of LEDs is that smaller and smaller lamp wattages are required. The power consumption of the driver does not necessarily reduce proportionally to the LED wattage. Thus, a 3 watt LED downlight uses 2 to 5 watts in the driver and does not meet the overall efficacy limit. A 12 or 15 watt LED is therefore needed to raise the overall efficacy to the limit. More energy is required for no reason other than compliance.

This could be overcome by putting several luminaires on one driver; however, this would require another registration for each lamp/driver combination.

The narrower the beam width of a light, the more efficient the utilisation of the light on the task but the lower the efficiency of the luminaire.

The better the colour rendering of the light source and the warmer the light the lower the efficacy of the LED. The current proposal rewards cold light with poor colour rendering.

- **An exemption should be included for luminaires <10 Watts**
- **An adjustment or exemption should be allowed to encourage low wattage luminaires**
- **An adjustment factor must be allowed for beam width**
- **An adjustment factor must be allowed for high colour rendering and warm colour temperature**.

3.7 Small Directional Luminaires

We believe that this is addressed at luminaires with a tilting light source. The assumption that this should have the same efficacy as a straight downlight is valid if the luminaire is photometered in the straight downward direction. If it is tilted, then light will be trapped in the luminaire and the efficacy will fall.

The majority of directional lights that are used in professional lighting designed installations use the reflectors and lenses in the luminaire to direct and shape the light distribution. Although this may decrease the efficacy of the luminaire it increases the efficacy of the lighting of the task as it takes what would be waste light and directs to the task.

The main type of directional lights that are used by professional lighting designers are:

a) Wallwash luminaires – These are used to highlight the walls and increase the apparent brightness in the space. As a result end-user satisfaction can be achieved with a lower general illuminance and therefore lower energy usage. They are also used as the base lighting for galleries and museums as they are more efficient than lighting the whole installation with projector spotlights.

b) Directional accent light – These are used to highlight objects in the space to provide accent and visual interest. Again, these often allow the ambient illuminance to be lowered.

c) Profile projector lights – These lights use a series of lenses to control the beam width and focus the image. They can be used for framing or a sharp edge spot. They can also be used for the projection of gobo images. These are similar in design to a theatrical spotlight but are an architectural version. They could be brought into the theatrical light exemption.

   These lights are the workhorse of all major galleries and museums in Australia and around the world.

We have looked at some typical good quality professional products to see how they compare to the 65 lm/W limit.

Small Wallwasher – 55 lm/W = FAIL

Small Directional – 51 lm/W = FAIL

Profile Spotlight without framing head – 30 lm/W = FAIL

These fittings are not inefficient. They are very efficient for the lighting performance that they achieve. Banning these lights would make galleries, public buildings, hotels and restaurants look and feel like offices.

- **The MEPS must make an exception for the directional qualities of the luminaire.**

3.8 Large Luminaires

We believe that large is meant to refer to high bay fittings and small floodlights.

There are many downlights that are produced for architectural areas, with high ceiling heights or higher illuminance requirements, which have luminous flux level of greater than 2500 lm.

There is no allowance for directional light or beam control in this category although there are still wallwashers and directional luminaires that fall in this category.

The limit does a massive leap from 65 lm/W to 110 lm/W when many of the luminaires serve the same purpose.

The example architectural lights we assessed were:

A large non-directional downlight has an efficacy of 93 lm/W = FAIL

A large wall washer has an efficacy of 80 lm/W = FAIL

- **The division between the types of luminaire must be better than simply a step based on the luminous flux. One supplier has two matching downlights in their range. One is 2400 lm the other is 2700 lm. There is a 45 lm/W difference between the compliance for the two luminaires**
- **High bay and floodlights need to be separated from the architectural lighting**
- **We believe that there should be a sliding scale of compliance related to the beam width of the distribution and depth of recess.**

3.9 Planar, Battens & Troffers (P/B/T)

This category is far too broad and is ambiguous as to what it comprises. We believe that it is meant to capture recessed and surface LED fittings that would replace conventional fluorescent lights.

Whereas the fluorescent light was basically limited to the dimensions of the lamp, LED lights have much more flexibility in dimensions and shape.

We believe that it should cover any opal or prismatic panel fitting, flat or dished, irrespective of dimensions and shape with a luminance flux of greater than 2500 lm.

3.10 Decorative Luminaires

The current proposal for decorative lighting is unworkable. There are several Australian companies that produce high quality, bespoke decorative luminaires for lobbies, foyers, restaurants, hotels etc. With this requirement, they would probably be put out of business together with the associated loss of employment.

The majority of decorative lights are currently not photometrically tested so all luminaires would need to be tested. The performance of decorative luminaires is normally approximated by a combination of calculation from first principles and drawing on the experience of the designer.

Any decorative luminaire with a lampholder will not fall in this scope and does not fall in the current scope of the non-integral commercial luminaire MEPS.

The proposed MEPS does not exempt decorative luminaires; it only gives a reduction in compliance testing and registration costs for luminaries that are less than 20 watts and less than 20 are sold per annum. Many commercial decorative luminaires exceed 20 watts. 20 pieces is an exceptionally small manufacturing threshold.

Often there are only a few of the luminaires that are produced and they are produced at the one time. The luminaire is therefore not available for photometric testing until the order has been completed. Many commercial decorative luminaires are too large to fit in a standard photometer.

In addition, these luminaires are made to order and there is no stock held. A luminaire would need to be manufactured purely so that it could be tested.

We believe that there should be an exemption for all decorative luminaires but understand that there needs to be a definition that will stop all luminaires from claiming to be decorative.

The exemption for decorative luminaires should be <100.

We also believe that a decorative luminaire can contribute significantly, if not completely to the illumination of the space. If this is not the case then the total energy used by the decorative luminaire could be considered to be wasted.

There is an additional compliance problem with decorative lighting as many luminaires are fabricated or imported by interior design shops or market stalls that are outside the general lighting sales market. These will be difficult to control and enforce.

While there is obviously the need to develop a comprehensive definition for a decorative luminaire we would propose the following be considered:

- **We believe that the 20 watt limit is too low and that the wattage is irrelevant as to whether a luminaire is decorative or not**
- **Any luminaire with a single dimension greater than 1000mm should be exempt**
- **Any luminaire where less than 100 are produced should be exempt.**

3.11 MEPS for Non-Integral Commercial Luminaires

There is not a definition of a commercial luminaire. We believe that this is as difficult to define as "decorative luminaire".

The Association and its members believe that if this MEPS is to be developed then it should include all luminaires that have a lampholder or socket to enable the lamp to be replaced.

While the LOR (light output ratio) approach is a good simple test we believe that it is a bit too simplistic.

The proposal is to use a full 360-degree distribution. This has the advantage that the LOR (light output ratio) can be measured in an integrating sphere rather than a full photometric distribution.

The disadvantage is that waste light into the ceiling cavity is counted as useful light. If the light is designed to be recessed, then only the DLOR (downward light output ratio) should be used for compliance.

We are concerned that compliance at the low end of the market will be at the cost of glare control as the LOR can be improved by removing lenses and louvres and locating the lamps lower in the ceiling. A bare batten fitting will have the highest LOR!

We understand the purpose of the MEPS on non-integral luminaires is to close the loophole of using poor quality fluorescent luminaires to avoid having to use LED compliant luminaires.

The Association and its members do not understand why circular fluorescent lamps have been exempted. These lamps are common in circular luminaires for the domestic and medium density residential market. These are competing with LEDs for this market and the exemption will increase their usage, which would be contrary to the objective of the draft proposal.

In addition, there should be an exemption where luminaires are made to meet the requirements of classified heritage buildings.

- **There should be an exemption for the manufacture of a few additional lights to match existing ones in an existing building**.
- **There should be an exemption for lamps shades otherwise these would also be subject to a LOR limit.**

3.12 Dimming

There are several dimming situations and the MEPS needs to distinguish among them.

We believe the main ones to be:

- Phase control – leading edge
- Phase control – trailing edge
- Pulse width modulation
- 0-10V control
- DALI control
- DSI dimming

The RIS identifies poor performance of drivers with leading and trailing edge dimmers. The majority of lighting product sold in the professional market are either 0-10V or DALI. There are very few installations that use phase control dimming.

As 1-10V, DALI and DSI all dim within the ballast or controller and do not generally have the compatibility issues of phase control dimmers, these luminaires should be exempt from the dimming compliance testing.

The difficulty with registration of phase control dimming is that there are too many combinations for a supplier to produce a reasonable list.

Some manufacturers of quality product have dedicated controllers. It is relatively easy for them to comply.

Many importers of luminaires, because ballasts are declared articles, install the controller in Australia. They may not be able to get the same supplier all the time so that the same product may have different controllers in different batches. Although these may fall within the definition of a family the controllers may have a different compatibility list. This would probably then require the luminaires to have separate catalogue numbers and separate registrations.

If the luminaire has a remote controller the problem is greater as there are an enormous combination of ELVCs and dimmers.

The simplest solution would be for the supplier to list one controller and one dimmer to comply, however this defeats the intent of the regulations.

One problem is that the luminaire supplier is responsible for items that are out of their control. If the controller or the dimmer manufacturer changes their design the compatibility may change but the luminaire supplier may not be aware of it.

3.13 Exemptions

The classification system of the lights either needs to be expanded to be inclusive of a variety of luminaires available or the exemptions need to be expanded to compensate.

The exemption list is headed "Integrated LED luminaires (Small and Large) exclude:" however the exclusion below cover all the integrated luminaires.

3.13.1 Recommended Modifications to Exemptions

I. Item 1 should be replaced with "Any luminaire with lampholders or sockets that allows the lamp or light source to be replaced"

II. Theatrical luminaires should include architectural luminaire with directional beams and beam widths of less than 15 degrees or that focus the beam

III. An item should be added excluding surgical and medical examination luminaires

IV. We do not understand why rope lighting and chain lighting is exempt when rigid strip lights are not

V. Outdoor lighting is exempt for ≥IP65. Many external luminaires are IP55. The limit should be reduced to ≥IP55

VI. We do not understand why a particular type of wall light is exempt when there are many other wall lights of similar wattage that do not fall into the narrow exemption

VII. We do not understand why a floor and step lights should be singled out for an exemption when there are many other lights of similar wattage that do not fall into the narrow exemption

VIII. Additional exemptions:

- Internally illuminated artworks
- Illuminated walls and luminaire that are too large to photometered
- Internally illuminated signs
- Luminaires where there are less than 100 produced
- Luminaire of less than 10 watts
- Dimming exemption for luminaires that are 0-10V or DALI controlled.

4. ISSUES OF SECONDARY CONCERN TO PROFESSIONAL LIGHTING DESIGNERS

4.1 Testing and Compliance

While we welcome the introduction of moves to improve the reliability and accuracy of information; however, we are concerned that the cost of the testing will make many products uneconomic.

The testing requirements are quite arduous and will have a significant cost to the industry. The costs will depend on what constitutes an acceptable testing authority for the tests.

We believe that testing should be organised to minimise the impact on manufacturers and suppliers. We would suggest the following approach:

- **Testing should be aligned with European Standards**
- **Testing should be confined to a single sample for photometric testing**
- **Photometric testing is to be carried out by a laboratory that is independently accredited by the local national testing certifier**
- **Performance of LED modules with respect to life, lumen maintenance, colour etc. are to be taken from the manufacturers published data. That data should nominate the testing authority that carried out the tests.**

4.2 Accreditation

The draft MEPS does not define what constitutes an accredited testing laboratory and what is an acceptable non-accredited laboratory.

We believe that an accredited laboratory should be a laboratory that is independently certified by the national accreditation authority of the country where it is tested. It is not feasible to insist on NATA approval as this would require all the imported fittings to be re-tested in Australia. Not only does this represent a cost and time impost but there are insufficient laboratories in Australia to carry out the work in a timely manner.

Test reports produced by in-house laboratories are a much greater problem as there is no control on the appropriate test conditions, the calibration of the equipment and the technical competence of the person doing the testing.

There is currently a problem in the industry with the low-cost copy and substitution end of the market with copied photometric test results and information that does not directly relate to the actual luminaire. Often this is deliberately fabricated. There are also test reports that

have been generated by luminaire design packages such as Photopia, before the fabrication of the luminaire. We believe that if this testing and registration regime comes into place the honest suppliers will bear the brunt of the costs while the less honest suppliers will continue as usual.

4.3 MEPS for Mandatory Labelling

Mandatory labelling has little impact on professional lighting designers as they select the luminaires based on professional information such as photometric files, data sheets and inspection of samples. They rarely see the packaging of the luminaires. We are not in favour of mandatory labelling if all it does is add the end cost of the luminaires.

4.4 EPS (Energy Performance Standards) for Incandescent Phase-out

Although the mandatory phase out of incandescent lamps has logical advantages there are some areas where this will be a problem

LED lamps are limited by their ability to reject heat. They are therefore not suited for hot environments such as ovens etc.

The RIS also highlights the difficulties that have been experienced with dimming of LEDs. In many applications where smooth dimming is required to extinction the tungsten halogen lamp is still superior.

There are many good quality luminaires such as gallery wallwash lights, ceiling wash lights, decorative wall lights and small floodlights, for which there is not a viable LED replacement lamp available. These luminaires may still have many years of service left and could have been a relatively expensive luminaire when purchased.

The timing of the phase-out either needs to be extended to allow the luminaires to be replaced or there should be some financial assistance to assist people to compensate for the residual value of the existing luminaire.

This will not be a simple changeover as there may not be a direct replacement for the luminaire and in places like hotels, restaurants and lobbies of commercial buildings it may require the engagement of an interior designer and a lighting consultant. It may also involve changes to the wiring, dimming control and painting or resurfacing the walls, with commensurate cost.