Lighting Council New Zealand Quarterly News - Spring **2024**

Lightline

FROM **THE CHAIR** CHRIS BYRNE **LCNZ CHAIR**

As 2024 wraps up, I think most of us are ready for a break. It's been a tough year for many businesses. The change in government and the resulting spending cuts have really slowed down the economy. But, the recent cuts in the official cash rate, and the promise of more, seem to be helping a bit. Hopefully, 2025 will be brighter and bring some optimism for investment.

Instead of just focusing on the negatives, Lighting Council has been busy with several positive projects – one of which is the 'dark sky movement '. Dark sky supporters, usually astronomers or ecologists, are pretty passionate about keeping the skies dark. Unfortunately, they sometimes see the lighting industry as the bad guys, promoting light everywhere without considering the natural environment.

There were two significant dark sky events this year, one at Massey University Auckland and another by the Royal Astronomical Society of NZ (RASNZ) in Tekapo, highlighting the importance of this issue. About a year ago, Professor John Hearnshaw (an astronomer) started a parliamentary petition pressing for the government to pass legislation to enforce dark skies and significantly reduce outdoor lighting. This is great for astronomers but not so great for people who need light for community activities, sports events, architectural highlights, or road safety. Lighting Council did not support John's petition position of new legislation, but absolutely supported the outcomes desired, agreeing that dark skies are important and we can do better, but legislation isn't the answer. We need better lighting planning bylaws at the local council level and collaboration among all parties to properly apply solutions.

The Parliamentary Select Committee seemed to like LCNZ's approach. In their official Final Report, they recommended forming a working group in 2025 with the government and all concerned parties to find a constructive solution that best balances all community needs for outdoor activities.

Bryan and I met with John Hearnshaw to discuss the report and emphasized the need to work together for the best results. This meeting went well, so stay tuned in 2025 as we make progress on this issue.

Interestingly, Local Government New Zealand , representing local councils, NZ's largest owners of outdoor lighting, only response was to say that they didn't see it as a priority at this time. This shows there's still a lot of work to do in this area!

LIGHTING COUNCIL NZ **WHO WE ARE AND WHAT WE DO**

Lighting Council New Zealand is an industry association with around thirty member companies, representing NZ lighting industry interests to government agencies, regulators, and other industry and professional associations, spanning commercial, industrial, municipal, and residential lighting.

More information on the LCNZ website: here.

THE NZ RIGHT TO REPAIR BILL

In April 2024, the NZ *'Consumer Guarantees Act (Right to Repair) Amendment Bill'* was randomly selected from the Member's Bill ballot. This Bill seeks to amend the Consumer Guarantees Act 1993 to require manufacturers to make repair parts and information available to consumers.

The Bill is intended to strengthen the Consumer Guarantees Act by making it mandatory for products to be repairable and requiring easy access to the supply of repair information, tools and parts. This aims to extend the lifetime of products, keeping resources in circulation and waste out of landfills.

The 'take, make, waste' linear economy approach is inherently wasteful and waste is increasingly being seen as a product design flaw. The reform is seen as a step toward building a circular economy to conserve value resources.

This proposed legislation raises some questions for New Zealand:

- Will luminaires (light fittings) be included in the scope or not?
- Will any proposed scoring methods align with international methods?

See below – How a similar legislative initiative has transpired in the European Union, and what might be the lessons applicable for New Zealand.

EUROPEAN RIGHT TO REPAIR LEGISLATION

The recent introduction of 'Right to Repair' legislation by the European Parliament is aimed at reducing waste by promoting the repair of goods in support of the wider 'European Green 'Deal' legislation. The legislation is intended to make it easier and more cost-effective for consumers to repair as opposed to replace products, and this should also incentivise producers to develop and implement more sustainable product design 'circular' business models.

The European legislation requires vendors to offer a repair facility, except when it is more expensive than replacement. A new set of legal rights will be available to consumers to help make repair an accessible option.

A strong point of contention in the consultation on the European legislation was the scope of products to be included. The legislation is focused on large home appliance categories of fridges, washing machines, dishwashers, microwaves, televisions, and ICT items such as laptops, tablets and smartphones. Originally, a range of small electrical and electronic products, including luminaires (light fittings) was included,

LightingEurope, the pan-Europe association representing twenty-seven EU national lighting associations was an active participant in European Parliament consultation. Owing to the extreme diversity of size and form of the luminaire types it was apparent that the home-appliance model was unworkable, and luminaires were excluded from the legislation.

As a responsible industry organisation, LightingEurope subsequently began work to develop a voluntary approach to accelerate supply chain circularity for luminaires and will soon be publishing a scoring system that rates repairability and the durability of luminaires. This is a two-factor approach that links a Luminaire Repairability Score and a Luminaire Durability Score. A product with a high repairability score but a low durability score may be credible, and likewise vice versa. It is expected that LightingEurope will finalise and publish this in Q1 2025.

The question is: Could such a scoring and reporting method be suitable for New Zealand? LCNZ is closely watching European outcomes and will actively monitor progress to learn any lessons that may assist with practical solutions for New Zealand.

NZ TRENDS IN RESIDENTIAL LIGHTING

Trends and directions in NZ residential lighting design vary across the different housing sectors, and in NZ, standalone is still the biggest sector, apartment builds have slowed, and holiday homes continue. Ceiling recessed lighting is still heavily used but indirect lighting, track systems and pendants are increasing. Energy efficiency is seldom a talking point nowadays as LED technology is universal and is delivering power loads that are a small fraction of the incandescent and halogen of previous generations.

The volume housing market is still heavily dominated by recessed luminaires (downlights) with diffuser optics with a colour temperature of 3000K, with little design expertise invested in layout and positioning. Even basic dimming control is seldom used. A big trend is the use of furniture integrated LED strip lighting. Many joinery and kitchen fitout companies are pre-installing LED strip into their cabinetry, and when the cabinetry is installed in the home the light colour often does not match the other lighting, creating an unsightly ambience. Additionally, the quality of LED strip light used is often poor, with low colour rendering giving off-colour hues. Attention to detail in the planning and execution of such schemes is an absolute necessity.

In high end architectural homes the strong trend away from ceiling recessed luminaires is continuing, with a move towards lighting integrated within the building fabric. LED strip lighting abounds but also more aluminium extrusion indirect lighting (eg wall wash light) and in some cases a preference from 3000K towards 2700K.

Smart controls are growing in popularity with bluetooth technologies such as Casambi and Wiser, systems that are not complicated to install and dont need to cover the whole building. ‘Tunable White’ is slowly being taken up by those with more generous budgets, as a control system is needed. This is a growing market with homes that have a focus on artwork. ‘Dim to Warm’ control that transitions between cooler white and warmer white, is still poorly understood. It has distinct advantages for dramatic mood creation in living spaces and bedrooms.

Many electrical contractors are keen to learn more about the opportunities of advanced lighting technologies for residential application, and they are supporting the benefits to their clients. However, there is still a whole sector that think the only thing that matters is how cheap they can buy lighting, but it’s likely that group will always exist.

GLA - WASHINGTON DC BOARD MEETING

The Global Lighting Association (GLA) is the voice of the lighting industry worldwide. GLA shares information on political, scientific, social, and environmental issues within the lighting industry and advocates its position to multiple government and private sector stakeholders in the international sphere.

In September 2024 GLA participants met for the annual board meeting and working group sessions in Washington DC, with delegates from USA, Belgium, Netherlands, Italy, UK, Finland, Malta, Italy, Taiwan and Japan. LCNZ participated as a regular contributor to GLA debate and policy development.

The host member, the National Electrical Manufacturer's Association (NEMA) USA was very accommodating host, with first-rate conference facilities, and the provision networking opportunities. Information sharing seminars were held on regulatory policy and technical standards support, especially relating to energy, light at night, and circular economy.

GLA President Dr Maurice Maes, of the Netherlands

The priorities for development of GLA publications for the coming year are:

- **Light at Night** - Collaboration with dark sky groups for minimising consequences.
- **Repairability Legislation** - Encouraging harmonised methodologies and enforcement
- **Temporal Lighting Artefacts (TLA)** - Practical standards and regulation to limit TLA effects

TLA is the scientific name for the physics of, flicker, strobing and phantom arrays, that can affect some LED light sources.

GLA Board Meeting participants, at the NEMA USA conference centre Washington DC

Mr Tsuyoshi Maeki, Technical Director of the Japan Lighting Manufacturers Association (JLMA) outlines technical standards policies in Japan

Ms Elena Scaroni, CEO of LightingEurope explaining LE communication strategies

LIGHT AND HEALTH

US FDA - LED LIGHT AND HEALTH REVIEW

In May 2024 the US Food and Drug Administration (FDA) released a groundbreaking assessment of research and evidence regarding the effects on human health from LED lighting. Document: Here

The nineteen page FDA letter of response has been in reaction to the four Citizen Petitions submitted to the US Federal Government in 2023 by the Softlights Foundation USA. This foundation is a US-based NGO that seeks to restrict the widespread use of LED lighting. The four petitions raise concerns related to LED lightsources and their impact on human health and make requests for the FDA to establish new regulations to restrict their use. Scientific and anecdotal information was supplied by the Softlights Foundation to support the petitions.

The FDA engaged an independent research organisation to conduct a comprehensive literature search and systematic review with regard to adverse health effects of LED light on humans. The FDA response is a complex read, however it identifies hard research evidence, and draws conclusions from this. The FDA response rejects the assertions made by the Softlights Foundation. The FDA review summarises as follows:

- The overall quality of evidence in the literature for any health effects was low
- Many of the studies had one or more limitations
- The literature either did not report severe adverse health effects, or the results were inconclusive or inconsistent
- The FDA has determined that insufficient evidence exists in the literature to demonstrate that a performance standard to control the emission of electronic product radiation by products that use LEDs is necessary at this time for the protection of public health and safety

The FDA response is timely as this provides useful hard information to address the many instances of sweeping claims and 'mis and dis' information regarding LED lighting and effects on human health. It is important to monitor any likely unintended consequences of lighting use, however any such assessments need to be based on credible research that uses real-world representative dosage scenarios, and not on conjecture.

LIGHTING ENERGY

NEW LIGHTING ENERGY PERFORMANCE GUIDE

With the mid-2024 publication of a new SNZ Guide on Energy Performance of lighting in buildings, New Zealand now has a world class pair of publications for the assessment and quantification of lighting systems operational energy in buildings.

A) *Lighting Energy performance - Standard*
NZS 20086:2022 Light and lighting – Energy performance of lighting in buildings. Information: Here
Based on the ISO/CIE international standard, NZS 20086:2022 introduces concepts, metrics and methods for stakeholders to measure or calculate, holistic energy performance in commercial and industrial buildings (and thus operational carbon emissions) using the well-known UK/EU Lighting Energy Numeric Indicator (LENI) metric. The standard covers methods for the assessment of the energy required for electric lighting and control devices within a building, either by calculation or by metering of lighting circuits, for new or refurbished buildings, and for existing buildings.

B) *Lighting Energy performance - Guide*
SNZ ISO/CIE TR 3092:2024 Light and lighting – Energy performance of lighting in buildings – Explanation and justification of ISO/CIE 20086.
Information: Here
This new 2024 SNZ Technical Report serves as an informative companion publication to aid understanding of the NZS 20086:2022 lighting energy standard. This eighty-two page publication supports the application of the standard. It explains the lighting energy calculation methodology with worked examples, including advanced lighting control system applications that are particularly relevant to New Zealand conditions.

The international Technical Report was prepared by Technical Committee ISO TC 274, Light and lighting, in cooperation with CIE Joint Technical Committee 6. Chris Byrne and Bryan King from LCNZ and active members of the SNZ Lighting Energy Committee P9079 played a key role in the assessment of ISO/CIE TR 3092 for adoption as a SNZ publication. The SNZ adoption was facilitated by funding support from EECA.

Technical information is on the International Lighting Commission (CIE) website: Here

IEC INTERNATIONAL ELECTROTECHNICAL COMMISSION - KOREA

Convenors of WG 24, Bryan King of LCNZ and Dr Armin Konrad, Global Head of Standardisation and Regulation, LEDVANCE Germany.

In early November 2024 the IEC TC 34 Technical Committee for lighting standards met on Jeju Island Korea for plenary and working group meetings. The event was hosted by the Korean IEC National Committee as part of meeting venue rotation around the continents. TC 34 consists of 54 member countries, with lighting standards project work carried out by 18 subcommittees and working groups.

LCNZ is now in its 20th year of IEC participation and is active in 5 Working Groups. LCNZ Executive Director Bryan King is a convenor of WG 24 Environmental Aspects and a project leader in the SC 34D Luminaire sub-committee. The environmental WG is the fastest growing within the entire lighting sphere, comprising 42 members from 20 countries. This strength of support reflects the rapid rise of environmental performance quantification and regulation for lighting, particularly in regions such as Europe, Japan, California, and China.

This vocal front-line participation helps to shape 'NZ ready' technical standards and brings fast-response knowledge back to NZ to share with designers, suppliers, users, and government regulators, without waste from duplication of efforts.

WG 24 is currently working on two lighting publications:

- IEC Technical Report – *'Environmental aspects for lighting – Literature review on lighting products and systems'.*
- IEC International standard – *'Environmental aspects for lighting - Product specific rules (PSR) for luminaires"*

Members of IEC TC 34 Environmental Aspects WG24

ENVIRONMENTAL

GLA - ENVIRONMENTAL PRODUCT DECLARATIONS

A very hot-topic within the lighting industry worldwide is the pressing need for international standardisation to calculate and report on environmental performance of lighting products.

The Global Lighting Association (GLA) has recently published the White Paper *"Implementing Internationally Harmonised LCAs & EPDs for Lighting Products"*. This document offers insights on creating standardised Life Cycle Assessments (LCAs) and Environmental Product Declarations (EPDs) for lighting products. This GLA publication supports the work of the International Electrotechnical Commission (IEC) TC 34 Environmental Working Group WG 24 who are developing an International Standard for Product Specific Rules (PSRs) for luminaires as part of LCA/EPD process within the ISO 14000 environmental standards series.

The key point is that LCAs and EPDs assess and communicate the environmental impacts of lighting products throughout their whole life cycle, from the manufacture phase, to the operational phase, and through to end of life:

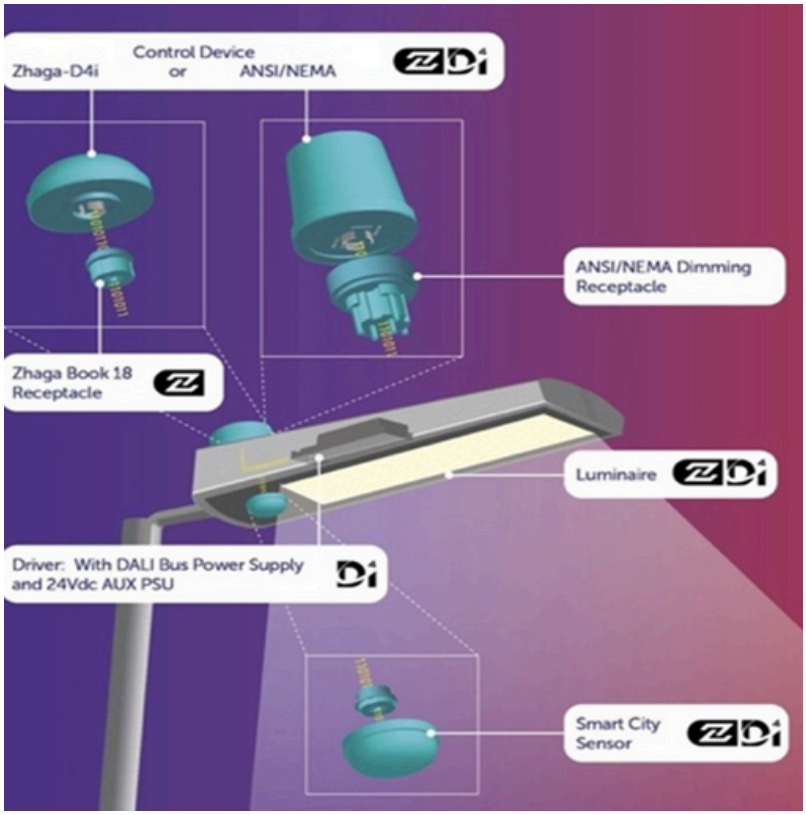
International standardisation of LCAs and EPDs ensures harmonisation across markets
The GLA Paper outlines steps for implementing harmonised assessments
The GLA supports IEC international standards for environmental reporting

As a member of the GLA, LCNZ has contributed to this guidance publication. LCNZ Executive Director Bryan King convenes the IEC committee that is standardising EPD rules for luminaires, and was a co-author of the GLA publication. Download from the GLA website Here

SMART OUTDOOR LIGHTING WITH ZHAGA D4I

Innovation from the Zhaga-D4i alliance is bringing transformational change to the outdoor lighting world. The Zhaga Consortium develops specifications for standardized interfaces between luminaires and LED modules, intelligent sensors, communication modules, and LED control gear. Together with the Digital Addressable Lighting Interface (DALI) Alliance, digital products can be certified to 'Zhaga-D4i' specifications to provide an ICT platform for smart outdoor lighting systems, as a practical base for circular economy business models.

Zhaga consortium technical experts prepare specifications (known as 'Books') that form the foundation of interoperability within a lighting system. The Zhaga Book 18 Edition 3 smart interface between outdoor luminaires and sensing and communication modules offers a hybrid structure for outdoor lighting lighting luminaires featuring the familiar (in NZ) NEMA receptacle and one or two Zhaga 4-pin receptacles.



With two receptacles available on the same luminaire, the system is enabled with sensing and communication functions extending far beyond simple switching, dimming and brightening. Functions such as weather monitoring, air quality, smoke detection, noise detection, CCTV cameras, vehicle and pedestrian detection all become part of an encompassing smart outdoor lighting system.

A key aspect of the Zhaga Book 18 platform is digital control via the IEC DALI protocol. Specifying the DALI D4i protocol for LED control gear communication provides for Internet-of-Things (IoT) functionality. Luminaire mounted control devices using Zhaga receptacles are specified as part of the DALI AS/NZS IEC 62386 series of standards, including:

AS/NZS IEC 62386 Part 251 - Memory Bank Extension
AS/NZS IEC 62386 Part 252 - Energy Reporting
AS/NZS IEC 62386 Part 253 - Diagnostics and Maintenance

These asset management standards have now been adopted as AS/NZS standards:
Part 251 for automated data loading, setup, and system commissioning
Part 252 for automated energy and emissions data-logging and reporting
Part 253 for luminaire condition reporting and predictive maintenance

This functionality can provide tangible financial savings that justify the investment many times over.

Zhaga-D4i certified luminaires allows for multiple vendors and interoperable products, avoiding the 'vendor-lock' associated with proprietary systems. If the original vendor no longer supports the original system, multiple vendor options will be available for support without needing to replace luminaires and start again.

Like the USB receptacle that forever changed computers and cameras, the Book 18 universal interface is transforming outdoor lighting and unlocking the market worldwide.

See the Zhaga-D4i technical guide: Here

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PUBLIC LIGHTING GETS A SPECTRAL UPDATE

The go-to lighting design standard for outdoor lighting for minor roads and public spaces AS/NZS 1158 Part 3.1:2020 has been updated with the release of 'Amendment 1:2024' published on October 10.

See Standards NZ weblink Here

This update has a range of minor changes, however of significance for managing adverse effects of light at night is Clause 3.2.2 'Design lumen value'. For lighter duty traffic applications with lower light levels, lumen multipliers are to be used to derate the effective lumens when using warm/amber LED light sources with a CCT of less than 2500K.

- CCT ≥ 2500K, no lumen derating.
- CCT 1900K to 2500K, use a lumen multiplier of 0.85
- CCT ≤ 1900K, use a lumen multiplier of 0.50.

When compared with using LED white light of ≥ 2500K in a conforming lighting design:

- Using 2000K or 2200K phosphor-coated amber LED will require 18% more lumens, with 18% higher luminaire power, and 18% more energy use.
- Using 1800K native amber LED will require 100% more lumens, with 100% higher luminaire power, and 100% more energy use.

STANDARDS NEW ZEALAND
TE MANA TAUTIKANGA O AOTEAROA

These requirements will likely require physically larger luminaires and perhaps more robust poles, with associated higher capital costs. The higher energy use means proportionally higher operational costs.

AS/NZS derating factors for low CCT light sources to compensate for human spectral sensitivities and resultant loss of visual acuity are not new. Amber light derating factors for Sodium LPS and HPS lamps have been in AS/NZS 1158 Part 3.1 for many decades. This update brings LED into broad alignment with longstanding design factors for low CCT sources and is based on the research of Australian light physicist and International Lighting Commission (CIE) Vice-President Technical, Tony Bergen.

HOUSE OF REPRESENTATIVES - LIGHT POLLUTION REPORT

In May 2023 a petition was presented to the House of Parliament:

'Petition of John Hearnshaw: New Zealand needs a national law to limit light pollution and promote dark skies'.

This requested that the House of Representatives introduce legislation to limit light pollution. The Petitions Committee of Parliament considered this petition and received submissions from interested parties.

The LCNZ submission absolutely supported the desired goal to reduce the proliferation of light pollution in NZ, but did not agree that the proposed method of new national legislation was the best implementation approach, LCNZ recommended that multi-party consultation be organised to develop an agreed 'NZ Light at Night Strategic Plan 'with a view to collectively raising awareness, tightening, and harmonising of the fragmented existing local council level regulation.

The LCNZ Petitions Committee submission is Here

On 15 November 2024 the Final Report was released. A Select Committee Report is a document provided to the House by a Select Committee containing recommendations on the matter. The Final Report recommends to the government that:

1) It investigates how to limit the growth of artificial light at night in New Zealand, including considering the option of establishing a set of national guidelines that could be voluntarily adopted by local councils.

2) It begins this work in 2025 because developing an appropriate solution will take some time, and artificial light at night in New Zealand is increasing significantly each year.

3) If the Government develops a set of national guidelines for light at night, the guidelines focus on the development of new facilities, buildings, and streets.

The Select Committee Final Report is Here

Following the release of the Final Report LCNZ has met with leaders of the Royal Astronomical Society of NZ (RASNZ) with the aim of working collaboratively to develop a consensus based Strategic Plan.

A first step is to develop a Stakeholder Briefing framework as a start-point for wider stakeholder discussion and activity early in the new year.

MEMBER PROFILE

Chris Byrne

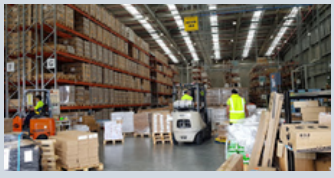
Zumtobel NZ Ltd

Chris Byrne has a forty-year lighting industry career which started as an engineering cadet and progressed through the roles of lighting designer, product designer, sales engineer, sales manager, training manager, marketing manager, and now Managing Director within the multi-national Zumtobel Group.
Chris has built a highly successful career spanning NZ and Australian electrical and lighting industries, working in both private and corporate businesses. His leadership extends to Chairing of LCNZ since 2014 and Deputy Chair since 2011. He is also active as a NZ expert on NZS and AS/NZS lighting standards committees and is NZ Head of Delegation for the influential ISO TC 274 'Light and Lighting' committee.

Thorn Lighting's NZ origins date back to 1936 with the manufacture of incandescent lamps, luminaires and neon lighting. By the mid-1960's fluorescent luminaires were in production at the Thorn factory in New Lynn Auckland. Following this era, the factory and head office relocated to Rosebank Rd in Avondale with the shift to commercial and industrial applications.

In 2000 Thorn was purchased by Zumtobel Group, an Austrian-based global lighting corporate. The wave of LED lighting brought major changes with new technology emerging rapidly from Zumtobel and Thorn global factories and R&D centres. Auckland operations moved to new, purpose-built premises in Avondale in 2016.

These days the company is a world leading Smart Building and Smart City lighting specialist, helping corporates and councils improve safety and wellbeing through lighting system connectivity and intelligence. In indoor lighting, the smart focus is on creating comfortable, efficient light for living and working.



MEMBER PROFILE

Dean Fulford

Lighting Direct Ltd

Lighting Direct Managing Director Dean Fulford has thirty-five years' experience in the lighting industry and gained international insights into the sector with four years in Hong Kong with a European manufacturer and distributor. Extensive world travel developing business connections and strategic insights provided a foundation into the truly innovative lighting industry. Since this introduction, Dean has been a significant force in the NZ lighting industry and within Lighting Direct.

Lighting Direct is New Zealand's largest lighting retail chain adopting a vertically integrated business model with a focus on residential interior and exterior lighting. Lighting Direct has been a consistent high-profile presence in the New Zealand residential lighting market for fifty years. The company now operates an extensive chain of twenty-five stores nationwide.

The company was founded by Dean's father Bill in 1974, and over the decades Bill introduced a range of game-changing business model and marketing initiatives that transformed the face of residential lighting in New Zealand. Lighting Direct has been a foundation member of Lighting Council NZ since its inception twenty-one years ago. Bill was an active LCNZ Board Member for over a decade, and now Dean carries that LCNZ governance contribution forward.

As Managing Director, Dean's key areas of focus are business strategy, team leadership, product design, marketing and logistics. Dean and the Lighting Direct buyers regularly attend lighting trade fairs in Europe and across the globe and search extensively to bring the latest in home lighting styles and designs to New Zealand.