New Zealand House of Representatives
Te Whare Māngai o Aotearoa

Petitions Committee | Komiti Whiriwhiri Take Petihana

Fifty-fourth Parliament
November 2024

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

Presented to the House of Representatives
by Greg O'Connor, Chairperson

Contents

Petition of John Hearnshaw

Recommendations

The Petitions Committee has considered the petition of John Hearnshaw—New Zealand needs a national law to limit light pollution and promote dark skies—and recommends to the Government that:

1. It investigate 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 begin 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.

Request to restrict light pollution

The petition was presented to the House on 16 May 2023. It requests:

> That the House of Representatives introduce legislation to limit light pollution, following similar laws in France and Croatia, covering public and private exterior illumination and ensuring light is only used where and when it is essential.

The Petitions Committee of the 53rd Parliament began considering the petition. It received written submissions from the petitioner and three organisations. We resumed consideration in the 54th Parliament. We considered evidence from the following submitters, including oral evidence from the first four:

- the petitioner
- the Royal Astronomical Society of New Zealand
- Forest & Bird |Te Reo o te Taiao (whose oral submission was supported by a University of Auckland biological scientist, Master Electricians New Zealand, and the Illuminating Engineering Society of Australia and New Zealand)
- the Ministry for the Environment | Manatū Mō Te Taiao
- the Department of Conservation | Te Papa Atawhai (DOC)
- the Lighting Council New Zealand.

Local Government New Zealand was invited to make a submission but declined.

John Hearnshaw is Emeritus Professor of Astronomy at Canterbury University. He is a member of the Royal Astronomical Society of New Zealand and the New Zealand Dark Sky

Network.[1] The submissions from the Royal Astronomical Society and Forest & Bird strongly support his request.

Professor Hearnshaw told us that New Zealand has a "huge" environmental problem from artificial light at night (ALAN).[2] We heard that ALAN is increasing at between 2 and 10 percent each year. The Royal Astronomical Society said that light pollution in New Zealand is increasing faster than population growth.

Benefits of reducing light pollution

ALAN arises mainly from street lighting; other sources include factories, docks, sporting facilities, advertising signs, and housing. The petitioner submitted that reducing ALAN has "no negatives, but many wins for everyone":

- better human health
- benefits to flora and fauna
- economic and environmental benefits from less wasted electricity
- it is easier to see the stars
- better safety at night.

Effects on human health

In large cities, the petitioner said, the regular rhythm of day and night has been replaced by constant brightness. People usually produce the hormone melatonin when it is dark, but melatonin production drops when people are exposed to blue light. A lack of melatonin disrupts the circadian rhythm and contributes to problems such as sleepless nights, depression, anxiety, hypertension, diabetes, and obesity. We heard that melatonin deficiency contributes to some cancers, including a 35 percent increase in risk for prostate cancer and breast cancer.[3]

Effects on wildlife

Professor Hearnshaw told us that "just about all" plants and animals are severely affected by light at night. We were told about a 2021 United Nations report on the adverse effects of light pollution, including loss of habitat and extinction of species.[4]

Forest & Bird said that light from LEDs[5] includes a very high blue wavelength that some birds are particularly attracted to. Humans cannot see it (although it also affects them).

---

1 Information about these two groups is online at Dark Sky Network NZ (dsnnz.org) and Royal Astronomical Society of New Zealand - Dark Skies Group (rasnz.org.nz).

2 One of the submitters, Lighting Council New Zealand, said that the term "artificial" light has been challenged on the basis that "no light source can be artificial". It said that a better synonym is "anthropogenic light at night" or, more simply, "light at night" (LAN). Our wording in this report reflects the petitioner's use of terminology.

3 The petitioner said that the adverse health effects have been documented by the American Medical Association and others. They are described by the Royal Society of New Zealand in *Blue Light Aotearoa* (2018).

4 United Nations Environment Programme, Impact of light pollution on different taxa of migratory species, 2021.

5 LEDs are a type of light. LED stands for light-emitting diodes.

Forest & Bird told us that birds can become attracted to light sources and fly continually until they crash or starve. We heard about young Westland black petrels getting disoriented by ALAN, crashing, and either getting run over or killed by predators. Forest & Bird said that light pollution can be seen for up to 100 kilometres. When light was reduced in the Punakaiki area, we heard, more disorientated and dead petrels turned up in Greymouth, 50 kilometres away.

Forest & Bird told us similar stories about the Hutton's shearwater (in Kaikōura), the Cook's petrel (in Auckland), and the grey-faced petrel (in Whakatane). It said that other marine life is also affected, for example, turtles' navigation, animal predation patterns, and the coral reproduction process.

Forest & Bird told us that New Zealand has more endemic seabird species than any other country. A quarter of the world's seabird species breed here. Also, many vulnerable seabird colonies breed "right next to our cities". Researchers have found that more seabirds become grounded in places that are brighter at night.

Professor Hearnshaw explained how ALAN affects insects and plants. Insects cluster around lights, exposing themselves to predation. In trees, we heard about the stomata in leaves, which open during the day and (normally) close at night. However, with artificial light they can stay open, which eventually causes the leaves to die. Another problem is ALAN disrupting plants' sensitivity to the length of the day and hence to the seasons. This can cause deciduous trees to retain their foliage in autumn and not hibernate properly in winter.

Effects on the economy and climate change

Forest & Bird submitted that electric lights use 17 to 20 percent of the world's electricity and street lighting uses about 2 percent.

It has been estimated in the USA that 35 percent of outdoor lighting is wasted each year. The light shines upwards to the sky or downwards to places where it is not needed, or it stays switched on when it is not needed. We heard that the US Department of Energy has estimated that this equates to US$3 billion of electricity and 21 tons of carbon dioxide a year. Based on the US data, Professor Hearnshaw estimated that better street lighting in New Zealand would save about $50 million worth of electricity each year. The Royal Astronomical Society added that reducing ALAN would help reduce carbon emissions and would free up electricity for other uses.

Too bright to see the stars

The petitioner noted that a brighter night sky makes it harder to see the stars. This impedes scientific research. It also means that people cannot see and appreciate the beauty of the night sky. The Royal Astronomical Society referred to a 2018 report saying that naturally dark skies are important for tikanga Māori.[6] It said that naked eye astronomy is Māori astronomy. If dark skies continue to be polluted, we heard, our grandchildren might not be able to see Matariki.

[6] Ministry for the Environment & Stats NZ, New Zealand's Environmental Reporting Series: *Our air 2018*, p 57.

Professor Hearnshaw told us about the UNESCO[7] *Starlight Declaration*, of which the first clause declares:

> An unpolluted night sky that allows the enjoyment of the contemplation of the firmament should be considered an inalienable right of humankind equivalent to all other environmental, social, and cultural rights, due to its impact on the development of all peoples and on the conservation of biodiversity.

Less glare means better safety

The petitioner said that two ways to improve safety at night are to light up the ground (not the sky) and to reduce the glare that shines into people's eyes. He said that reducing glare improves the visibility of objects at night, leading to better road safety and possibly also less crime. We heard that lighting up the ground and reducing glare are achieved by shielding light fittings and lowering illumination levels.

Professor Hearnshaw also submitted that bright advertisements, such as illuminated billboards, distract drivers.

Dark-sky places in New Zealand

The Royal Astronomical Society told us that 74 percent of the North Island and 93 percent of the South Island have very low light pollution, and 53 percent of New Zealand's land area has "pristine" night skies. However, we learnt that only 3.8 percent of the land area has protection in the form of recognition as dark-sky places:

- Aoraki Mackenzie International Dark Sky Reserve
- Aotea/Great Barrier Island International Dark Sky Sanctuary
- Rakiura/Stewart Island International Dark Sky Sanctuary
- Wai-iti International Dark Sky Park
- Wairarapa International Dark Sky Reserve.

We are aware that three more dark-sky places have been certified recently:

- Kawarau-Gibbston Dark Sky Park
- Oxford Forest Conservation Area
- Kaikōura Dark Sky Sanctuary.[8]

Professor Hearnshaw said that about 320 places in the world have dark sky accreditation.

The Royal Astronomical Society said that, because much of New Zealand is still naturally dark, protecting dark skies now would require less effort and expense than doing it later. The society proposed that New Zealand be the first country to seek accreditation as a dark-sky nation.

---

7 UNESCO is the United Nations Educational, Scientific and Cultural Organization.

8 For more information, see Dark Sky Places - Dark Sky Network NZ (dsnnz.org).

Astrotourism

The petitioner said that dark-sky places enjoy economic benefits from astrotourism, mostly in the form of overseas tourists before the COVID-19 pandemic. The Royal Astronomical Society said that astrotourism is the "Number 1 global tourism trend". It said that, in 2019, tourism accounted for 20 percent of total exports, 9 percent of the gross domestic product (GDP), and 14 percent of employment. We heard that that astrotourists tend to stay overnight, stay longer at the dark-sky destination, and visit during "shoulder" seasons.

The society believes that New Zealand could lose its chance to be the "premier astrotourism location". It said that other countries, such as Chile, are actively developing their industry. It provided maps, based on night photos taken from space, showing that New Zealand's dark skies are still abundant and accessible but "under threat". It was clear from the maps that New Zealand currently has the advantage of having much less ALAN than most other developed nations. Professor Hearnshaw suggested that controlling light pollution could become a sort of "brand identity" for New Zealand.

Local governments control light pollution in New Zealand

Light pollution is currently controlled by the 67 territorial authorities.[9] However, submitters believe this is a burden that could be relieved by national legislation. The petitioner submitted that most local councils, especially those with populations of less than 10,000, do not have the capacity to manage ALAN: they have neither the resources nor the expertise to understand lighting technology, which changes very fast.

Requirements for getting accredited as a dark-sky place

For accreditation, the International Dark-Sky Association requires aspiring dark-sky places to have a certified light management plan.[10] Professor Hearnshaw said that light management plans might include a lighting ordinance in a district plan, regular monitoring of changes in light pollution, annual reporting to the International Dark-Sky Association, and outreach activities to promote astrotourism. The main provisions required in a lighting ordinance in a district plan are:

- LED streetlights are yellow or amber, with a corelated colour temperature (CCT) less than 2700 Kelvin, ideally 2200 Kelvin[11]
- no blue light: wavelengths are greater than 500 nanometres[12]
- light shines down only: no light goes upward
- LED lights are controlled by a central management system
- motion sensors are highly desirable
- skylights are not encouraged
- light trespass is avoided: no light shines outside the scene that is intended to be lit
- no floodlighting at sports and recreational facilities after 10pm

9 Territorial authorities comprise city councils, district councils, and unitary authorities.

10 For more information on the recognition of Dark Sky places see DarkSky International | Protecting the night skies for present and future generations.

11 The CCT, measured in Kelvin, indicates whether the light appears warm or cool in colour.

12 Visible light waves range in length from 400 nanometres (violet light) to 665 nanometres (red light).

- illuminated commercial advertising signs are not encouraged
- light spilling from windows to outdoors is avoided with blinds or curtains.

Support from local authorities is essential

The Royal Astronomical Society said that 39 communities in New Zealand are working "at a grassroots level" to protect their night skies. It said that accreditation of New Zealand's dark-sky places has only been achieved with strong support from the respective local authorities. Many aspiring dark-sky communities are deterred by slow responses from local authorities that do not have the expertise needed to support and prioritise the protection of the dark sky. The Royal Astronomical Society submitted that any legislation about light pollution in New Zealand should provide sufficient specifics for local authorities and others to work with. It said that local authorities should be able to "piggy-back" on national requirements.

Professor Hearnshaw said that the New Zealand Dark Sky Network and the Royal Astronomical Society's Dark Skies Group have provided free advice to many councils and communities. However, he said that councils and communities struggle to understand what is needed and the advisers struggle to donate so much of their time.

The Royal Astronomical Society said that many certified and aspiring dark-sky communities have hired consultants to work alongside local authorities on lighting technologies and standards. The society said that consultants have made up for the lack of internal council resources. It understands that the price for consultants has been $30,000 to $65,000 per community. The society considers it inequitable that communities with less money have not been able to progress their dark-sky work. It said that national legislation would speed up the efforts already under way, ensure consistency between areas, and achieve economies of scale.

Existing standards and guidelines

Three technical standards exist for outside lighting in New Zealand.[13] However, Professor Hearnshaw said, they are primarily for lighting engineers and they do not apply to privately owned premises. Also, they are only guidelines, not requirements. The Royal Astronomical Society noted that the current technical standards support blue-rich LEDs, which are not conducive to dark skies.

We also received a submission from the Lighting Council New Zealand, which mentioned the technical standards. We discuss that submission later in this report.

Other jurisdictions

The petitioner said that France and Croatia have enacted national legislation to control light pollution. Other jurisdictions have laws covering particular situations, such as road lighting. The Royal Astronomical Society told us that Germany and the United Kingdom are also working towards national legislation.

[13] AS/NZS 1158.3.1:2020 (Lighting for roads and public spaces), AS/NZS 4282:2023 (Control of the obtrusive effects of outdoor lighting), and M30 (Specification and guidelines for road lighting design).

The society also commented that New Zealand's international responsibilities support the reduction of ALAN.

Suggested legislation based on French law

Professor Hearnshaw told us that the French legislation has two parts: one for all outdoor lighting and the other for lighting in the vicinity of 11 astronomical observatories. The French law includes the following—and the petitioner urges the House to enact similar provisions:

- less blue light: the correlated colour temperature (CCT) is less than 3000 Kelvin in towns and less than 2400 Kelvin in rural areas
- illumination is less than 35 lux in towns and less than 10 lux in rural areas
- floodlighting on buildings is curtailed and subject to a curfew
- the upward light ratio (ULR) from any luminaire (lights) is less than 1 percent
- searchlights and lasers are banned or strictly controlled
- glare is reduced
- light trespass is banned: no light is allowed to shine into places that are not intended to be lit, including streetlights shining into windows.[14]

Professor Hearnshaw said a New Zealand law should also include:

- streetlights on a central management system so that they are dimmed or turned off after midnight
- bollards, not lampposts, in pedestrian areas
- motion sensors for all security lighting
- the banning of illuminated billboards in urban streets.

Australian guidelines for wildlife

Australia's National Light Pollution Guidelines for Wildlife provide information to assess whether artificial lighting is likely to affect wildlife and tools to minimise and mitigate its effect.[15] Forest & Bird considers that the Australian guidelines could be adopted in New Zealand. One option for achieving this is to amend New Zealand's national planning standards to require that lighting be addressed in plans and to specify application of the Australian guidelines.[16] Another is to incorporate the Australian guidelines into a national environmental standard prescribing technical standards, methods, or requirements.[17]

Technology and practicalities

Given Forest & Bird's point that light can distract birds from 100 kilometres away, we asked whether total darkness is actually needed to prevent seabirds from getting disoriented.

---

[14] For more detail, the petitioner directed the committee to France Adopts National Light Pollution Policy Among Most Progressive In The World | DarkSky International.

[15] The National Light Pollution Guidelines for Wildlife are available on the website of the Australian Department of Climate Change, Energy, the Environment and Water.

[16] National planning standards are provided for in sections 58B to 58J of the Resource Management Act 1991. They are intended to make council plans and policy statements easier to prepare, understand, and comply with, by improving the consistency of format and content. They can be amended under section 58H of the Resource Management Act.

[17] National environmental standards are provided for in sections 43 to 44A of the Resource Management Act.

Master Electricians New Zealand—which attended in support of Forest & Bird—replied that the style and colour of lights is important: lights should have covers, they should be directed downward, and their spectrum should be more yellow than white-blue.[18] We heard that putting baffles across a light is "relatively easy". However, there would need to be a commercial benefit from doing so, or a law requiring that no light may drift upwards. We heard that manufacturers will always make the cheapest version unless required to do otherwise.

We asked for Forest & Bird's views on retrofitting existing buildings and lights. It noted that the Australian guidelines contain a clause about retrospectivity. Forest & Bird does not expect that existing lighting would have to be changed "overnight". Instead, it recommends that old lights be brought up to new specifications at the same time that other work is done on a building. It emphasised that changing lighting laws now would affect the "huge" amount of new lighting that is added to "every village and town" in New Zealand each year.

Master Electricians New Zealand added that lighting technology is changing rapidly. For example, some lights can change colour early in the morning, and in the evening, and can dim down during the night to a better yellow colour. It said that lights in houses are not as much of a problem as light that angles horizontally or upwards, such as floodlighting in yards, street lighting, and lights on billboards.

We asked what the ideal overhead view of a city would be, from space. Forest & Bird said that cities would still be identifiable from space because of light spilling on the ground. Only light that angles upwards would be reduced.

Comments from the Department of Conservation and the Ministry for the Environment

We considered written submissions from the Department of Conservation and the Ministry for the Environment. We received an oral submission from the ministry.

Artificial light at night in New Zealand

DOC and the ministry agreed that light pollution in New Zealand has increased faster than the global average. Between 2012 and 2021, the illuminated surface area increased by more than 37 percent. According to DOC, the brightness of upward-shining light increased in the last decade in at least 245km^2 of public conservation land. DOC submitted that current practices are not sufficient to safeguard the darkness of the night sky.

DOC acknowledged that some night lighting is useful for human orientation and safety; however, it said there is reason for concern about the effects of ALAN on the environment. In principle, both DOC and the ministry support initiatives that reduce ALAN. The ministry said that reducing light pollution is consistent with the Aotearoa New Zealand Biodiversity

[18] The association Master Electricians represents electrical contractors in New Zealand.

Strategy, the National Policy Statement for Indigenous Biodiversity, and the New Zealand Coastal Policy Statement.[19]

Effects of light pollution

The ministry agreed with the petitioner that light pollution has negative effects on ecosystems and human health. DOC also noted the effects of light pollution on human experiences of the night sky.

DOC confirmed that the effects on native species are wide-ranging, saying that New Zealand and international researchers recognise ALAN as a threat to conservation. Its effects vary depending on the light's spatial extent, brightness, timing, amount of blue light, any darkness requirements for a species' behaviour or during a crucial life stage. We learnt that New Zealand research has focused on seabirds, bats, and insects. Negative effects have been found to include:

- the disruption of daily or annual cycles
- changes of behaviour
- avoidance of areas that were previously preferred
- disorientation, with potential fatal or even population-level consequences.

Mitigation options

DOC submitted that mitigation is available and has been successful in some areas of New Zealand. However, it acknowledged that the mitigation of light pollution in New Zealand is sporadic and lacks an overall nationwide approach. It said that light is unmanaged in most areas.

An exception is in the Buller District, home of the Westland petrel. According to DOC, the Buller District Plan requires fixed, external lighting to be "hooded" between the Punakaiki River and Dolomite Point. The purpose is to reduce adverse effects of light pollution on fledgling Westland petrels.[20]

DOC also referred to the Whenua Hou diving petrel, which has a population of about 200. Survival rates for this bird are reduced by exposure to ALAN from fishing vessels. DOC said that in this case ALAN is managed by voluntary mitigation measures.

Current guidelines

DOC said it has contributed to the development of national and international mitigation standards, guidelines, and regulations. It contributed to the United Nations Convention on the Conservation of Migratory Species of Wild Animals, to which New Zealand is a party. The convention recommends the use of certain guidelines to limit and mitigate the harmful effects of artificial light on migratory species.[21] The guidelines are still in draft form, but DOC

[19] Department of Conservation, Te Mana o te Taiao: Aotearoa New Zealand Biodiversity Strategy 2020, p 54, goal 12.7.1; Ministry for the Environment, National Policy Statement for Indigenous Biodiversity, 2023; Department of Conservation, New Zealand Coastal Policy Statement 2010.

[20] The Westland petrel was also discussed by Forest & Bird. Its view, set out earlier in this report, is that reducing light pollution in the immediate Punakaiki area was not entirely successful.

[21] United Nations Environment Programme, Convention on Migratory Species, Resolution 13.5.

said that they describe the following principles for lighting design to reduce impacts on native fauna:

- Start with natural darkness and only add light for specific purposes.
- Use adaptive light controls to manage light timing, intensity, and colour.
- Light only the object or area intended—keep lights close to the ground, directed, and shielded to avoid light spill.
- Use the lowest intensity lighting appropriate for the task.
- Use non-reflective, dark-coloured surfaces.
- Use lights with reduced or filtered blue, violet, and ultraviolet wavelengths.

DOC said that there is little awareness or use of the guidelines in New Zealand. However, an exception is commercial fishing, where DOC and the Ministry for Primary Industries have jointly developed a set of mitigation standards to reduce light-induced seabird strikes of fishing vessels. The standards were put in place in March 2023.[22]

Diversity of local councils

The ministry said that artificial light at night serves important community needs, including public safety and night-time activities. It submitted that ALAN management should recognise and provide for these needs. It should also adapt equitably to the needs and preferences of different communities, environments, and ecosystems.

Regarding the power and authority of local councils to manage ALAN through their district plans, the ministry said that the objectives and outcomes of lighting management vary across New Zealand. It said this is reflected in various district plans. For example, it said, some districts with dark-sky places have "stringent lighting standards to protect the high value of their dark skies". On the other hand, it said, some cities "focus mostly on safety, amenity and nuisance effects". Also, it said, some local councils complement their district plans with other approaches. These include education, information, replacement of streetlights in some of the dark-sky places, and Dunedin's "night sky city" action plan and night sky advisory panel.[23]

The Ministry for the Environment thinks further analysis is needed

The ministry agreed with the other submitters that ALAN needs to be managed. However, it thinks more analysis is needed before deciding whether central government intervention is warranted for ALAN; and what form, if any, it should take. Aside from legislation, options might include supporting research, providing guidelines, or incentivising technical solutions.

We asked the ministry how much work would be needed to develop and implement a policy that grants the petition request. It guessed that it might take up to two years. The ministry said it has no existing work programme on light pollution. It said that initial policy work—to understand the scale of the issue and the case for central government intervention—might take six months with sufficient resourcing. The ministry said further work would depend on decisions about how to proceed. If it was decided to progress legislation, that would be a

[22] Department of Conservation and Fisheries New Zealand, Mitigation Standards to Reduce Light-induced Vessel Strikes of Seabirds with New Zealand Commercial Fishing Vessels, March 2023.

[23] However, the petitioner submitted that Dunedin's night sky advisory panel has been disestablished.

larger project. It could not provide more specific information on the timing, resourcing, or extent of work that might be needed.

Comments from the Lighting Council New Zealand

We received a submission from the Lighting Council New Zealand, which is the industry association for "lighting manufacturing, importing, and distribution companies in New Zealand, and associated lighting industry participants". LCNZ said it has concerns about the nature of the petition and the "scope and applicability of the supporting information provided".

Although LCNZ supports the goal of reducing light pollution, it does not support national legislation. It said this would be a "heavy-handed and costly intervention". It prefers other measures to minimise unintended consequences of ALAN. It considers that local council codes and bylaws are not well harmonised, well monitored, or well enforced. It suggested that practices be nationally harmonised and tightened.

LCNZ pointed out the joint Australia/New Zealand AS/NZS technical standards that were also mentioned by Professor Hearnshaw and the Royal Astronomical Society and are discussed earlier in this report. It said that the technical standards are maintained by lighting experts and related stakeholders, including astronomical experts.

In LCNZ's view, the petition "does not address the wider community needs for effective outdoor light at night", including public wellbeing, public safety, personal security, and providing welcoming conditions to support hospitality and tourism. LCNZ also wanted information about the costs of specialised lighting schemes. It also wanted to know how the monitoring and enforcement of any new legislation might be funded and what the incentives or penalties would be.

LCNZ recommended that the Ministry for the Environment organise one or more workshops to assess ALAN and to work on harmonising the existing standards and local government provisions. It suggested that organisations be invited from the environmental protection, tourism, and local government sectors.

It also recommended the development of a "New Zealand Light at Night Strategic Plan". The plan could identify the desired lighting goals for New Zealand. It could also "define the roles of local government overall, and of each local council, of lighting technology, and of lighting design".

Our response to the petition

We thank the petitioner for raising this issue. We note the dramatic increase in light pollution over the last couple of decades and the projections that continued growth will make the problem worse. All submitters agreed that there is a need to mitigate the negative consequences of artificial light at night. We believe there are good reasons to make a set of consistent guidelines for outdoor lighting in New Zealand, particularly when new lighting is being installed. We note that issues of safety can be addressed without excessive ALAN.

Except for the Green Party, we recognise the inconvenience if guidelines were retrospective; for example, if people had to remove or change existing light fittings. That is why we propose

that any national guidelines should not have a significant retrospective effect. However, we are particularly keen to ensure that artificial light at night is mitigated when new facilities, buildings, and streets are being developed.

Recommendations

1. We recommend that the Government investigate 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. We recommend that the Government begin 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. We recommend that, 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.

Several existing requirements have been brought to our attention, including some of the lighting ordinances in district plans, the legislation in France, and the draft guidelines recommended by the UN Convention on the Conservation of Migratory Species of Wild Animals.[24] Themes of the various lighting requirements include:

- light to contain more yellow or amber and less blue
- use of the lowest-intensity lighting that is appropriate
- lights to shine downwards and only into places that are intended to be lit
- restrictions on floodlighting, searchlights, lasers, and illuminated billboards
- use of technology (such as timers, dimmers, and motion sensors) to control lights at various times.

We note the submission from the Lighting Council New Zealand to set up a working group of relevant organisations to consider the issues and options. We support the approach of consulting appropriate organisations during the policy development process.

[24] Other specifications and guidelines were also brought to our attention—such as the AS/NZS technical standards and the Australian National Light Pollution Guidelines for Wildlife—but we did not look at them in depth.

Appendix

Committee procedure

The petition was referred to the Petitions Committee of the 53rd Parliament on 16 May 2023. The committee met between 29 June and 24 August 2023 to consider it. The committee invited and received written submissions from the petitioner, the Department of Conservation | Te Papa Atawhai, the Royal Astronomical Society of New Zealand, and the Royal Forest and Bird Protection Society NZ | Te Reo o te Taiao (Eastern Bay of Plenty). The committee also invited written submissions from the Ministry for the Environment | Manatū mō te Taiao and Local Government New Zealand. The committee recorded its disappointment when Local Government New Zealand declined to make a submission on the basis that the issue "is not an area of focus or priority for us at this time".

On 6 December 2023, the petition was reinstated with the Petitions Committee of the 54th Parliament. We met between 15 February and 14 November 2024 to consider it. We received written submissions from the Ministry for the Environment in February 2024 and the Lighting Council New Zealand in September 2024.

We received oral evidence on 7 March 2024 from Professor John Hearnshaw and Alice Hearnshaw, the Ministry for the Environment, the Royal Astronomical Society of New Zealand, and Forest & Bird (Eastern Bay of Plenty). Appearing with Forest & Bird were a biological scientist from the University of Auckland, and the presidents of Master Electricians New Zealand and the Illuminating Engineering Society of Australia and New Zealand. The Department of Conservation declined our invitation to make an oral submission.

Committee members

Greg O'Connor (Chairperson)
Carl Bates
Kahurangi Carter (until 8 May 2024)
Greg Fleming
Francisco Hernandez (from 8 May 2024)

Related resources

The documents we received as evidence in relation to this petition are available on the Parliament website.

A recording of our hearing on 7 March 2024 can be accessed online here.