IPART

Independent Pricing and Regulatory Tribunal
New South Wales

Lighting Requirements Guide

Home Energy Efficiency Retrofits

Energy Savings Scheme

June 2020

The Independent Pricing and Regulatory Tribunal (IPART)

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Document Control

Version number	Change description	Date published
V1.0	Initial release following amendments to the ESS Rule made in April 2016	July 2016
V1.1	Clarification of the process for applying to have lighting products accepted	December 2016
V1.2	Updates to reflect changes to the lighting application and acceptance process	December 2018
V1.3	Updates following amendments to the ESS Rule	March 2020
V1.4	Updates to reflect that LED Lamp Only - 240V Self Ballasted are declared articles	June 2020

Contents

1 About this document

The NSW Energy Savings Scheme (**ESS**) seeks to reduce energy consumption in NSW by creating financial incentives for organisations to invest in energy saving projects.

The other objects of the ESS are to:

- assist households and businesses to reduce energy consumption and energy costs
- make the reduction of greenhouse gas emissions achievable at a lower cost, and
- reduce the cost of, and need for, additional energy generation, transmission and distribution infrastructure.[1]

Electricity retailers and other mandatory participants (**Scheme Participants**) are obliged to meet energy saving targets. Energy savings can be achieved by installing, improving or replacing energy saving equipment. Persons that become Accredited Certificate Providers (**ACPs**) can create energy savings certificates (**ESCs**) from these activities and then sell those ESCs to Scheme Participants. The Independent Pricing and Regulatory Tribunal of NSW (**IPART**) is both the Scheme Administrator and Scheme Regulator of the ESS.[2]

This document provides guidance about:

- the equipment requirements[3] that must be met for lighting products installed for certain activities under the Home Energy Efficiency Retrofits (**HEER**) method at time of product acceptance and time of implementation, and
- the process for applying to have lighting equipment accepted by the Scheme Administrator as meeting the relevant equipment requirements under clause 9.2A.3 of the *Energy Savings Scheme Rule of 2009* (**ESS Rule**).

1.1 Legislative requirements

This document is not legal advice. The legal requirements for ACPs participating in the ESS are set out in:

- Part 9 of the *Electricity Supply Act 1995* (**Act**)
- Part 6 of the *Electricity Supply (General) Regulation 2014* (**Regulation**), and
- the ESS Rule.

ACPs are also required to meet any additional accreditation conditions as set out in their Accreditation Notice.

1.2 Related documents

The following documents provide further information on the HEER Method:

- HEER - Method Guide[4]

1 *Electricity Supply Act 1995*, section 98(2).
2 *Electricity Supply Act 1995*, sections 153(2) and 151(2).
3 Refer Schedule E of the ESS Rule for eligibility requirements and implementation requirements that must be met.
4 Refer:www.ess.nsw.gov.au/Home/About-ESS/Energy-savings-calculation-methods/Home-Energy-Efficiency-Retrofits.

- HEER – Fact Sheet,[5] and
- HEER – Tool - Lighting Requirements.[6]

2 Overview of requirements

This document sets out the equipment requirements for the following activities in Schedule E of the ESS Rule:

- Activity Definition E1 – Replace halogen downlight with an LED luminaire and/or lamp
- Activity Definition E2 – Replace a linear halogen floodlight with a high efficiency lamp
- Activity Definition E3 – Replace parabolic aluminised reflector (**PAR**) lamp with efficient luminaire and/or lamp
- Activity Definition E5 – Replace a T8 or T12 luminaire with a LED luminaire
- Activity Definition E11 – Replace an Edison screw or bayonet lamp with an LED lamp for general lighting purposes, and
- Activity Definition E13 - Replace a T5 luminaire with a LED luminaire.

Products related to Activity Definition E4 (Replace a T8 or T12 luminaire with a T5 luminaire) do not require acceptance by the Scheme Administrator, as T5 linear fluorescent luminaires are considered 'standard' equipment (refer to Table A9.1 of the ESS Rule).

The equipment requirements for the HEER method are different to those for the Commercial Lighting Energy Savings Formula (**CLESF**) method.[7] **Lighting products accepted for use under the CLESF method are not automatically accepted for use under the HEER method.**

Before ESCs can be created under the HEER method in respect of the installation of lighting products using emerging lighting technologies, the Scheme Administrator must first accept that the products meet the Equipment Requirements in the ESS Rule. When using any product, ACPs must ensure that they meet the Eligibility Requirements and Implementation Requirements, and calculate the Deemed Activity Electricity Savings as required under the relevant Activity Definition in the ESS Rule.

3 Product application process

3.1 Applying for acceptance of lighting equipment

ACPs accredited for HEER method activities[8] may apply for acceptance of lighting equipment by submitting an application through the ESS Lighting Mailbox (ESSlighting@ipart.nsw.gov.au) and include 'HEER product application' in the subject line.

5 Refer www.ess.nsw.gov.au/Home/Document-Search/Fact-Sheets/HEER-Fact-Sheet/HEER-Fact-Sheet-V1.2

6 Refer: www.ess.nsw.gov.au/Home/About-ESS/Lighting-equipment-requirements/HEER-method-lighting-requirements.

7 Refer: www.ess.nsw.gov.au/Home/About-ESS/Lighting-equipment-requirements/Commercial-lighting-requirements.

8 Lighting suppliers interested in having their equipment used in HEER upgrades should contact an ACP.

Before submitting an application, ACPs should check that the product is not already on our list of lighting products accepted under the HEER method. [9]

To submit an application, ACPs need to provide information about the product and submit certain supporting documents to demonstrate that the product meets the relevant equipment requirements, as outlined in section 4 of this document.

Applicants must check that the documents they submit meet the requirements outlined in this document, and that the information is consistent, ie, all documents are for the same brand name and model numbers. A manufacturer's declaration reconciling the branding and model numbers may be provided along with a letter signed by the applicant reconciling all model names and numbers.[10] The HEER Lighting Equipment Requirements Tool has been provided to assist ACPs to determine what documents are needed to evidence the requirements.

Applications must include the following **for each product**:

- completed ELT Application Checklist - HEER
- completed HEER Lighting Equipment Requirements Tool
- product specification sheet, and
- all documents evidencing that the lighting product meets the relevant equipment requirements (as outlined in section 4 of this document).

If the product has already been accepted under either the CLESF or the Victorian Energy Upgrades (**VEU**) program, ACPs do not have to provide some of the supporting documents.[11] ACPs planning to apply to have the same products accepted for use under the CLESF are encouraged to apply for CLESF acceptance **before** applying for HEER method acceptance to reduce the processing time for the application.

3.2 Processing applications

If the Scheme Administrator accepts the equipment as meeting the relevant requirements, ACPs will be notified by email that the product has been accepted and it will be included on the list of lighting products accepted under the HEER method.

If additional information is required to assess an application, a request for further information (**RFI**) will be sent to the ACP.

ACPs will generally be provided with a maximum of two RFIs before the Scheme Administrator makes a decision about whether to accept the product based on the information provided throughout the application process. If the information does not meet the requirements, the application may be refused by the Scheme Administrator. A new application may then be submitted (with all of the required information).

9 Refer: www.ess.nsw.gov.au/Home/About-ESS/Lighting-equipment-requirements/HEER-method-lighting-requirements.

10 In the case of safety certificates and certain other documentation noted in the tables below, the documentation must be issued for the exact brand and model as the product applied for.

11 Refer HEER Lighting Requirements Tool: www.ess.nsw.gov.au/Home/Document-Search/Tools/HEER-Tool-Lighting-Requirements/HEER-Tool-Lighting-Requirements-V2.0.

Responses to RFIs must be submitted within 90 days. If an applicant does not respond to an RFI within 90 days then the application may be rejected by the Scheme Administrator. A new application may then be submitted.

4 Equipment requirements

To be used in the ESS, each product must meet the equipment requirements. Some of these requirements must be met upfront, ie, an applicant needs to provide information as part of the product acceptance process (refer to section 3 of this document). Other requirements must be met at the time of an implementation, and the ACP will need to maintain documentation demonstrating it has met these requirements, which will be checked as part of audits.

The tables below list all the equipment requirements that apply for each activity, and when they must be met, ie, at time of product acceptance or time of implementation.

4.1 Activity Definition E1 – Replace halogen downlight with an LED luminaire and/or lamp

This section outlines the equipment requirements that apply to Activity Definition E1 of the HEER method for each of the following eligible equipment classes:

- LED Lamp Only – 240V Self Ballasted (Table 4.1.1)
- LED Lamp Only – Extra Low Voltage (**ELV**) (Table 4.1.2)
- LED Luminaire – recessed (Table 4.1.3), and
- LED Lamp and Driver (Table 4.1.4).

4.1.1 E1: LED Lamp Only – 240V Self Ballasted

Description: A self-ballasted LED Lamp as defined by AS/NZS 62560 Self-ballasted LED lamps for general lighting services by voltage > 50 V. These Lamps are connected directly to a 240V supply.

Relevant Australian safety standard: AS/NZS 62560: Self-ballasted LED-lamps for general lighting services by voltage > 50 V – Safety specifications.

Table 4.1.1 - Activity Definition E1 - Equipment Class: LED Lamp Only – 240V Self Ballasted

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (**LCP**)	LCP (as Published by the Scheme Administrator)	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform IES LM-79-08 (if required)	At time of product acceptance	10
Minimum true power factor	≥ 0.55			
Minimum Colour Rendering Index (**CRI**)	Average ≥ 80			
Luminous efficacy	≥ 48 lumens/watt			
Initial Downward Light Output	≥ 462 lumens			

Table 4.1.1 - Activity Definition E1 - Equipment Class: LED Lamp Only – 240V Self Ballasted

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lifetime	L_{70} (70% of initial Downward Light Output) at 15,000 hrs	▼ Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities (NATA) or equivalent body and accredited to perform IES LM-84-14, **and** ▼ IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10
Electro-magnetic compatibility (**EMC**)	Compliance with AS/NZS CISPR 15:2011	▼ Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5
Safety	Lamp complies with relevant Australian safety standard **(**AS/NZS 62560**)**	▼ Certificate of approval to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme**.** *Note: Certificate must be issued for the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates.*	At time of product acceptance	N/A
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	▼ Test report demonstrating compatibility of lamp with the dimmer, **and** ▼ Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Beam Angle	Beam angle consistent with existing lamp	▼ Declaration by the purchaser confirming that they are satisfied with the light distribution of the upgraded lamps	At time of implementation	N/A

4.1.2 E1: LED Lamp Only – ELV

Description: An LED Lamp that runs off an existing Extra-low voltage lighting converter (ELC) designed for retrofitting into an existing Luminaire or Lamp holder. These are typically used as a replacement for ELV Tungsten halogen Lamps

Relevant Australian safety standard: Not applicable

Table 4.1.2 - Activity Definition E1 - Equipment Class: LED Lamp Only – ELV

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Nominal Lamp Power (**NLP**)	NLP (as Published by the Scheme Administrator)	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform IES LM-79-08 (if required) *Please note: NLP does not include power consumption of control gear. Test reports should ensure that control gear power consumption is not included.*	At time of product acceptance	10
Minimum true power factor	Demonstrated combined lamp circuit power of lamp and a compatible electronic transformer must be ≥ 0.7 *Note: The test must be conducted with an Electronic type Extra Low Voltage lighting converter designed for halogen lamps*			
Minimum Colour Rendering Index (**CRI**)	Average ≥ 80			
Luminous efficacy	≥ 52 lumens/watt			
Initial Downward Light Output	≥ 462 lumens			
Lifetime	L_{70} (70% of initial Downward Light Output) at 15,000 hrs	▼ Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities (NATA) or equivalent body and accredited to perform IES LM-84-14, **and** ▼ IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10

Table 4.1.2 - Activity Definition E1 - Equipment Class: LED Lamp Only – ELV

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Electro-magnetic compatibility (**EMC**)	Compliance with AS/NZS CISPR 15:2011	▼ Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5
Safety	N/A (Lamp is Extra Low Voltage)	▼ N/A	N/A	N/A
Transformer Compatibility	Lamp must be compatible with electronic transformer	▼ Test report demonstrating compatibility of the lamp and the electronic transformer with which it will be installed, **and** ▼ Electrician declaration that installed electronic transformer is a compatible model listed in the above test report	At time of implementation	1
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	▼ Test report demonstrating dimming compatibility of lamp with the electronic transformer/dimmer combination, **and** ▼ Electrician declaration that the installed electronic transformer/dimmer combination is a compatible combination listed in the above test report	At time of implementation	1
Beam Angle	Beam angle consistent with existing lamp	▼ Declaration by the purchaser confirming that they are satisfied with the light distribution of the upgraded lamps	At time of implementation	N/A
Minimum true power factor	Combined power factor of lamp and installed electronic transformer ≥ 0.7	▼ Declaration by electrician who performed or supervised the installation	At time of implementation	N/A

4.1.3 E1: LED Luminaire – recessed

Description: An LED Luminaire intended for use as a recessed luminaire as defined in AS/NZS 60598.2.2 Luminaires – Particular requirements – Recessed luminaires.

Relevant Australian safety standard:

- Luminaire: AS/NZS 60598.2.2 Luminaires - Particular requirements - Recessed luminaires.
- Control Gear: AS/NZS 61347.1 Lamp control gear – General and safety requirements, and AS/NZS 61347.2.13 Lamp control gear – Particular requirements for d.c. or a.c. supplied electronic control gear for LED modules.

Table 4.1.3 - Activity Definition E1 - Equipment Class: LED Luminaire - recessed

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (**LCP**)	LCP (as Published by the Scheme Administrator)	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform IES LM-79-08 (if required)	At time of product acceptance	10
Minimum true power factor	≥ 0.55			
Minimum Colour Rendering Index (**CRI**)	Average ≥ 80			
Luminous efficacy	≥ 48 lumens/watt			
Initial Downward Light Output	≥ 462 lumens			
Lifetime	L_{70} (70% of initial Downward Light Output) at 15,000 hrs	**Option 1** ▼ Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** ▼ IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10

Table 4.1.3 - Activity Definition E1 - Equipment Class: LED Luminaire - recessed

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lifetime	L_{70} (70% of initial Downward Light Output) at 15,000 hrs	**Option 2** ▼ IES LM-80-08 or ANSI/IES LM-80-15 test report from a Laboratory that is accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15, **and** ▼ Manufacturer's declaration stating that the brand and model of the LED chip tested in the IES LM-80-08 or ANSI/IES LM-80-15 report is identical to that supplied with the luminaire, **and** ▼ In-situ temperature measurement test (ISTMT) report conducted on one sample using Section 12.4.1 of IEC 60598.1 (or equivalent) or Clause 14 of ANSI/UL 1598 from a laboratory accredited by NATA or equivalent body to perform that test. The ISTMT must be conducted in accordance with Annex A of IES LM-84-14 (the testing laboratory does not have to be accredited to LM-84-14). The ISTMT report must include: – Statement that the ISTMT was conducted in accordance with Annex A of IES LM-84-14 (the laboratory does not have to be accredited to IES LM-84-14) – The brand and model of the LED chip(s) – The forward current of the LED chip(s) – Clear photos identifying the product and the exact position of the thermocouple. ▼ Manufacturer's declaration stating the brand, model and forward current of the LED chip(s) when used under normal operating conditions in Australia, **and** ▼ IES TM-21-11 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15. The IES TM-21-11 test report must be based on the IES LM-80-08 or ANSI/IES LM-80-15 test report and the L_{70} value must use the temperature and forward current reported in the ISTMT report or a higher temperature and/or forward current *Note: ISTMT reports must be issued in the exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for ISTMT reports.*	At time of product acceptance	10
Electro-magnetic compatibility (**EMC**)	Compliance with AS/NZS CISPR 15:2011	▼ Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5

Table 4.1.3 - Activity Definition E1 - Equipment Class: LED Luminaire - recessed				
Parameter	**Requirement**	**Documentation Requirement**	**Documentation Required**	**Minimum test sample size**
Safety	Luminaire complies with relevant Australian safety standard (AS/NZS 60598.2.2, AS/NZS 61347.1, AS/NZS 61347.2.13)	▼ Certificate of suitability for Luminaire to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme, **or** ▼ JAS-ANZ endorsed certificate showing compliance to relevant Australian safety standard *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates.*	At time of product acceptance	N/A
	If Control Gear is Independent	▼ Certificate of approval for Control Gear to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme	At time of product acceptance	N/A
Dimmer Compatibility	If the luminaire is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	▼ Test report demonstrating compatibility of luminaire with the dimmer, **and** ▼ Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Beam Angle	Beam angle consistent with existing lamp	▼ Declaration by the purchaser confirming that they are satisfied with the light distribution of the upgraded lamps	At time of implementation	N/A

4.1.4 E1: LED Lamp and Driver

Description: An LED-reflector Lamp and matching LED Driver intended as an alternative to a Mirrored Reflector Halogen Lamp.

Relevant Australian safety standards: Control Gear: AS/NZS 61347.1 Lamp control gear – General and safety requirements, and AS/NZS 61347.2.13 Lamp control gear – Particular requirements for d.c. or a.c. supplied electronic control gear for LED modules.

Table 4.1.4 - Activity Definition E1 - Equipment Class: LED Lamp and Driver

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (LCP)	LCP (as Published by the Scheme Administrator)	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform IES LM-79-08 (if required) *Note: The test must be conducted with the driver the lamp is supplied with. The lamp will only be approved for installation with the same driver it was tested with.*	At time of product acceptance	10
Minimum true power factor	≥ 0.55			
Minimum Colour Rendering Index (CRI)	Average ≥ 80			
Luminous efficacy	≥ 48 lumens/watt			
Initial Downward Light Output	≥ 462 lumens			
Lifetime	L_{70} (70% of initial Downward Light Output) at 15,000 hrs	**Option 1** ▼ Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** ▼ IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10

Table 4.1.4 - Activity Definition E1 - Equipment Class: LED Lamp and Driver

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lifetime	L_{70} (70% of initial Downward Light Output) at 15,000 hrs	**Option 2** ▼ IES LM-80-08 or ANSI/IES LM-80-15 test report from a Laboratory that is accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15, **and** ▼ Manufacturer's declaration stating that the brand and model of the LED chip tested in the IES LM-80-08 or ANSI/IES LM-80-15 report is identical to that supplied with the lamp, **and** ▼ In-situ temperature measurement test (ISTMT) report conducted on one sample using Section 12.4.1 of IEC 60598.1 (or equivalent) or Clause 14 of ANSI/UL 1598 from a laboratory accredited by NATA or equivalent body to perform that test. The ISTMT must be conducted in accordance with Annex A of IES LM-84-14 (the testing laboratory does not have to be accredited to LM-84-14) The ISTMT report must include: – Statement that the ISTMT was conducted in accordance with Annex A of IES LM-84-14 (the laboratory does not have to be accredited to IES LM-84-14) – The brand and model of the LED chip(s) – The forward current of the LED chip(s) – Clear photos identifying the product and the exact position of the thermocouple. ▼ Manufacturer's declaration stating the brand, model and forward current of the LED chip(s) when used under normal operating conditions in Australia, **and** ▼ IES TM-21-11 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15. The IES TM-21-11 test report must be based on the IES LM-80-08 or ANSI/IES LM-80-15 test report and the L_{70} value must use the temperature and forward current reported in the ISTMT report or a higher temperature and/or forward current *Note: ISTMT reports must be issued in the exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for ISTMT reports.*	At time of product acceptance	10
Electro-magnetic compatibility (EMC)	Compliance with AS/NZS CISPR 15:2011	▼ Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5

Table 4.1.4 - Activity Definition E1 - Equipment Class: LED Lamp and Driver

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Safety	Control gear complies with relevant Australian safety standard (AS/NZS 61347.1, AS/NZS 61347.2.13)	If Control Gear is built-in: ▼ Certificate of suitability for Control Gear to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme, **or** ▼ JAS-ANZ endorsed certificate showing compliance to relevant Australian safety standard *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates*.	At time of product acceptance	N/A
		If Control Gear is Independent: ▼ Certificate of approval for Control Gear to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme	At time of product acceptance	N/A
Dimmer Compatibility	If the lamp and driver is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	▼ Test report demonstrating compatibility of lamp and driver with the dimmer, **and** ▼ Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Beam Angle	Beam angle consistent with existing lamp	▼ Declaration by the purchaser confirming that they are satisfied with the light distribution of the upgraded lamps	At time of implementation	N/A

4.2 Activity Definition E2 – Replace a linear halogen floodlight with a high efficiency lamp

This section outlines the equipment requirements that apply to Activity Definition E2 of the HEER method for the following eligible equipment class:

- LED Luminaire - Floodlight (Table 4.2.1).

4.2.1 E2: LED Luminaire – Floodlight

Description: An LED Luminaire intended for use as a floodlight as defined in AS/NZS 60598.2.5 Luminaires – Particular requirements – Floodlights.

Relevant Australian safety standards:

- Luminaire: AS/NZS 60598.2.5 Luminaires – Part 2.2: Particular requirements – Floodlights.
- Control Gear: AS/NZS 61347.1 Lamp control gear – General and safety requirements, and AS/NZS 61347.2.13 Lamp control gear – Particular requirements for d.c. or a.c. supplied electronic control gear for LED modules.

Table 4.2.1 - Activity Definition E2 - Equipment Class: LED Luminaire – Floodlight

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (**LCP**)	LCP (as Published by the Scheme Administrator)	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform IES LM-79-08 (if required)	At time of product acceptance	10
Minimum true power factor	≥ 0.55			
Minimum Colour Rendering Index (**CRI**)	Average ≥ 80			
Lifetime	L_{70} (70% of initial Downward Light Output) at 3,650 hrs	**Option 1** ▼ Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** ▼ IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10

Table 4.2.1 - Activity Definition E2 - Equipment Class: LED Luminaire – Floodlight

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lifetime	L_{70} (70% of initial Downward Light Output) at 3,650 hrs	**Option 2** ▼ IES LM-80-08 or ANSI/IES LM-80-15 test report from a Laboratory that is accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15, **and** ▼ Manufacturer's declaration stating that the brand and model of the LED chip tested in the IES LM-80-08 or ANSI/IES LM-80-15 report is identical to that supplied with the luminaire, **and** ▼ In-situ temperature measurement test (ISTMT) report conducted on one sample using Section 12.4.1 of IEC 60598.1 (or equivalent) or Clause 14 of ANSI/UL 1598 from a laboratory accredited by NATA or equivalent body to perform that test. The ISTMT must be conducted in accordance with Annex A of IES LM-84-14 (the testing laboratory does not have to be accredited to LM-84-14) The ISTMT report must include: – Statement that the ISTMT was conducted in accordance with Annex A of IES LM-84-14 (the laboratory does not have to be accredited to IES LM-84-14) – The brand and model of the LED chip(s) – The forward current of the LED chip(s) – Clear photos identifying the product and the exact position of the thermocouple. ▼ Manufacturer's declaration stating the brand, model and forward current of the LED chip(s) when used under normal operating conditions in Australia, **and** ▼ IES TM-21-11 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15. The IES TM-21-11 test report must be based on the IES LM-80-08 or ANSI/IES LM-80-15 test report and the L_{70} value must use the temperature and forward current reported in the ISTMT report or a higher temperature and/or forward current *Note: ISTMT reports must be for the same exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for ISTMT reports.*	At time of product acceptance	10
Electro-magnetic compatibility (**EMC**)	Compliance with AS/NZS CISPR 15:2011	▼ Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5

Table 4.2.1 - Activity Definition E2 - Equipment Class: LED Luminaire – Floodlight				
Parameter	**Requirement**	**Documentation Requirement**	**Documentation Required**	**Minimum test sample size**
Safety	Luminaire complies with relevant Australian safety standard (AS/NZS 60598.2.5)	▼ Certificate of suitability for Luminaire to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme, **or** ▼ JAS-ANZ endorsed certificate showing compliance to relevant Australian safety standard *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates*.	At time of product acceptance	N/A
	If Control Gear is Independent, Control Gear complies with relevant Australian safety standard (AS/NZS 61347.1, AS/NZS 61347.2.13)	▼ Certificate of approval for Control Gear to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme	At time of product acceptance	N/A
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	▼ Test report demonstrating compatibility of lamp with the dimmer, **and** ▼ Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Light Output	As specified in Table E2.1 of the ESS Rule	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body	At time of implementation	1
Beam Angle	Beam angle consistent with existing lamp	▼ Declaration by the purchaser confirming that they are satisfied with the light distribution of the upgraded lamps	At time of implementation	N/A

4.3 Activity Definition E3 – Replace parabolic aluminised reflector (PAR) lamp with efficient luminaire and/or lamp

This section outlines the equipment requirements that apply to Activity Definition E3 of the HEER method for the following eligible classes of equipment:

- LED Lamp Only – 240V Self Ballasted (Table 4.3.1), and
- LED Luminaire – Floodlight (Table 4.3.2).

4.3.1 E3: LED Lamp Only – 240V Self Ballasted

Description: A self-ballasted LED Lamp as defined by AS/NZS 62560 Self-ballasted LED lamps for general lighting services by voltage > 50 V. These Lamps are connected directly to a 240V supply.

Relevant Australian safety standard: AS/NZS 62560: Self-ballasted LED-lamps for general lighting services by voltage > 50 V – Safety specifications.

Table 4.3.1 - Activity Definition E3 - Equipment Class: LED Lamp Only – 240V Self Ballasted

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (**LCP**)	LCP (as Published by the Scheme Administrator)			
Minimum true power factor	≥ 0.55	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform IES LM-79-08 (if required)	At time of product acceptance	10
Minimum Colour Rendering Index (**CRI**)	Average ≥ 80			
Luminous efficacy	≥ 45 lumens/watt			
Lifetime	L_{70} (70% of initial Downward Light Output) at 12,000 hrs	▼ Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** ▼ IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10

Table 4.3.1 - Activity Definition E3 - Equipment Class: LED Lamp Only – 240V Self Ballasted				
Parameter	**Requirement**	**Documentation Requirement**	**Documentation Required**	**Minimum test sample size**
Electro-magnetic compatibility (**EMC**)	Compliance with AS/NZS CISPR 15:2011	▼ Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5
Safety	Lamp complies with relevant Australian safety standard (AS/NZS 62560)	▼ Certificate of approval to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme. *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates.*	At time of product acceptance	N/A
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	▼ Test report demonstrating compatibility of lamp with the dimmer, **and** ▼ Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Light Output	As specified in Table E3.1 of the ESS Rule	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body	At time of implementation	1
Beam Angle	Beam angle consistent with existing lamp	▼ Declaration by the purchaser confirming that they are satisfied with the light distribution of the upgraded lamps	At time of implementation	N/A

4.3.2 E3: LED Luminaire – Floodlight

Description: An LED Luminaire intended for use as a floodlight as defined in AS/NZS 60598.2.5 Luminaires – Particular requirements – Floodlights.

Relevant Australian safety standards:

- Luminaire: AS/NZS 60598.2.5 Luminaires - Particular requirements – Floodlights.
- Control Gear: AS/NZS 61347.1 Lamp control gear – General and safety requirements, and AS/NZS 61347.2.13 Lamp control gear – Particular requirements for d.c. or a.c. supplied electronic control gear for LED modules.

Table 4.3.2 - Activity Definition E3 - Equipment Class: LED Luminaire – Floodlight

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (**LCP**)	LCP (as Published by the Scheme Administrator)			
Minimum true power factor	≥ 0.55	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform IES LM-79-08 (if required)	At time of product acceptance	10
Minimum Colour Rendering Index (CRI)	Average ≥ 80			
Luminous efficacy	≥ 45 lumens/watt			
Lifetime	L_{70} (70% of initial Downward Light Output) at 12,000 hrs	**Option 1** ▼ Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** ▼ IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10

Table 4.3.2 - Activity Definition E3 - Equipment Class: LED Luminaire – Floodlight				
Parameter	**Requirement**	**Documentation Requirement**	**Documentation Required**	**Minimum test sample size**
Lifetime	L_{70} (70% of initial Downward Light Output) at 12,000 hrs	**Option 2** ▼ IES LM-80-08 or ANSI/IES LM-80-15 test report from a Laboratory that is accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15, **and** ▼ Manufacturer's declaration stating that the brand and model of the LED chip tested in the IES LM-80-08 or ANSI/IES LM-80-15 report is identical to that supplied with the lamp, **and** ▼ In-situ temperature measurement test (ISTMT) report conducted on one sample using Section 12.4.1 of IEC 60598.1 (or equivalent) or Clause 14 of ANSI/UL 1598 from a laboratory accredited by NATA or equivalent body to perform that test. The ISTMT must be conducted in accordance with Annex A of IES LM-84-14 (the testing laboratory does not have to be accredited to LM-84-14) The ISTMT report must include: – Statement that the ISTMT was conducted in accordance with Annex A of IES LM-84-14 (the laboratory does not have to be accredited to IES LM-84-14) – The brand and model of the LED chip(s) – The forward current of the LED chip(s) – Clear photos identifying the product and the exact position of the thermocouple. ▼ Manufacturer's declaration stating the brand, model and forward current of the LED chip(s) when used under normal operating conditions in Australia, **and** ▼ IES TM-21-11 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15. The IES TM-21-11 test report must be based on the IES LM-80-08 or ANSI/IES LM-80-15 test report and the L_{70} value must use the temperature and forward current reported in the ISTMT report or a higher temperature and/or forward current *Note: ISTMT reports must be issued in the exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for ISTMT reports.*	At time of product acceptance	10
Electro-magnetic compatibility (EMC)	Compliance with AS/NZS CISPR 15:2011	▼ Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5

Table 4.3.2 - Activity Definition E3 - Equipment Class: LED Luminaire – Floodlight

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Safety	Luminaire complies with relevant Australian safety standard (AS/NZS 60598.2.5)	▼ Certificate of suitability for Luminaire to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme, **or** ▼ JAS-ANZ endorsed certificate showing compliance to relevant Australian safety standard *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates.*	At time of product acceptance	N/A
	If Control Gear is Independent	▼ Certificate of approval for Control Gear to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme	At time of product acceptance	N/A
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	▼ Test report demonstrating compatibility of lamp with the dimmer, **and** ▼ Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Light Output	As specified in Table E3.1 of the ESS Rule	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body	At time of implementation	1
Beam Angle	Beam angle consistent with existing lamp	▼ Declaration by the purchaser confirming that they are satisfied with the light distribution of the upgraded lamps	At time of implementation	N/A

4.4 Activity Definition E5 – Replace a T8 or T12 luminaire with a LED luminaire

This section outlines the equipment requirements that apply to Activity Definition E5 of the HEER method for the following eligible classes of equipment:

- LED Luminaire - Linear Lamp (Table 4.4.1).

4.4.1 E5: LED Luminaire – Linear Lamp

Description: An LED Luminaire intended for use as an alternative to a linear fluorescent Luminaire, where the Luminaire houses a matching Linear LED tube or a linear array of integrated LEDs. Where the Luminaire uses a Linear LED tube, the Luminaire must not be compatible with a linear fluorescent Lamp.

Relevant Australian safety standards:

- Luminaire: AS/NZS 60598.2.1 Luminaires - Particular requirements - Fixed general purpose luminaires.
- Control Gear: AS/NZS 61347.1 Lamp control gear – General and safety requirements, and AS/NZS 61347.2.13 Lamp control gear – Particular requirements for d.c. or a.c. supplied electronic control gear for LED modules.

Table 4.4.1 - Activity Definition E5 - Equipment Class: LED Luminaire – Linear Lamp

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (LCP)	LCP (as Published by the Scheme Administrator)	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform IES LM-79-08 (if required)	At time of product acceptance	10
Minimum true power factor	≥ 0.55			
Minimum Colour Rendering Index (CRI)	Average ≥ 80			
Lifetime	L_{70} (70% of initial Downward Light Output) at 20,000 hrs	**Option 1** ▼ Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** ▼ IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10

Table 4.4.1 - Activity Definition E5 - Equipment Class: LED Luminaire – Linear Lamp

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lifetime	L_{70} (70% of initial Downward Light Output) at 20,000 hrs	**Option 2** ▼ IES LM-80-08 or ANSI/IES LM-80-15 test report from a Laboratory that is accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15, **and** ▼ Manufacturer's declaration stating that the brand and model of the LED chip tested in the IES LM-80-08 or ANSI/IES LM-80-15 report is identical to that supplied with the lamp, **and** ▼ In-situ temperature measurement test (ISTMT) report conducted on one sample using Section 12.4.1 of IEC 60598.1 (or equivalent) or Clause 14 of ANSI/UL 1598 from a laboratory accredited by NATA or equivalent body to perform that test. The ISTMT must be conducted in accordance with Annex A of IES LM-84-14 (the testing laboratory does not have to be accredited to LM-84-14) ▼ The ISTMT report must include: – Statement that the ISTMT was conducted in accordance with Annex A of IES LM-84-14 (the laboratory does not have to be accredited to IES LM-84-14) – The brand and model of the LED chip(s) – The forward current of the LED chip(s) – Clear photos identifying the product and the exact position of the thermocouple. ▼ Manufacturer's declaration stating the brand, model and forward current of the LED chip(s) when used under normal operating conditions in Australia, **and** ▼ IES TM-21-11 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15. The IES TM-21-11 test report must be based on the IES LM-80-08 or ANSI/IES LM-80-15 test report and the L_{70} value must use the temperature and forward current reported in the ISTMT report or a higher temperature and/or forward current *Note: ISTMT reports must be issued in the exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for ISTMT reports.*	At time of product acceptance	10
Electro-magnetic compatibility (EMC)	Compliance with AS/NZS CISPR 15:2011	▼ Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5

Table 4.4.1 - Activity Definition E5 - Equipment Class: LED Luminaire – Linear Lamp				
Parameter	**Requirement**	**Documentation Requirement**	**Documentation Required**	**Minimum test sample size**
Safety	Luminaire complies with relevant Australian safety standard (AS/NZS 60598.2.1)	▼ Certificate of suitability to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme, **or** ▼ JAS-ANZ endorsed certificate showing compliance to relevant Australian safety standard *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates*	At time of product acceptance	N/A
	If Control Gear is independent	▼ Certificate of approval to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates.*	At time of product acceptance	N/A
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	▼ Test report demonstrating compatibility of lamp with the dimmer, **and** ▼ Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Light Output	As specified in Table E5.1 of the ESS Rule	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body.	At time of implementation	1

4.5 Activity Definition E11 – Replace an edison screw or bayonet lamp with an LED lamp for general lighting purposes

This chapter specifies the equipment requirements that apply to Activity Definition E11 of the HEER method for the following eligible equipment class:

- LED Lamp Only – 240V Self Ballasted (Table 4.5.1).

The information required to identify the minimum lumen output required for this activity is provided in section 4.5.2 of this document.

4.5.1 E11: LED Lamp Only – 240V Self Ballasted

Description: A self-ballasted LED Lamp as defined by AS/NZS 62560 Self-ballasted LED lamps for general lighting services by voltage > 50 V. These Lamps are connected directly to a 240V supply.

Relevant Australian safety standard: AS/NZS 62560: Self-ballasted LED-lamps for general lighting services by voltage > 50 V – Safety specifications.

Table 4.5.1 - Activity Definition E11 - Equipment Class: LED Lamp Only – 240V Self Ballasted

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Base (socket type)	The lamp must have an Edison screw or bayonet base.	▼ Product specification sheet	At time of product acceptance	N/A
Lamp Circuit Power (LCP)	LCP (as Published by the Scheme Administrator)	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform IES LM-79-08 (if required)	At time of product acceptance	10
Minimum true power factor	≥ 0.55			
Minimum Colour Rendering Index (CRI)	Average ≥ 80			
Lifetime	L_{70} (70% of initial Downward Light Output) at 8,400 hrs	▼ Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** ▼ IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10

Table 4.5.1 - Activity Definition E11 - Equipment Class: LED Lamp Only – 240V Self Ballasted				
Parameter	**Requirement**	**Documentation Requirement**	**Documentation Required**	**Minimum test sample size**
Electro-magnetic compatibility (EMC)	Compliance with AS/NZS CISPR 15:2011	▼ Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5
Safety	Lamp complies with relevant Australian safety standard (AS/NZS 62560)	▼ Certificate of approval to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme**.** *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates.*	At time of product acceptance	N/A
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	▼ Test report demonstrating compatibility of lamp with the dimmer, **and** ▼ Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Light Output	The same or higher than the existing equipment, as defined in Table 4.5.2 of this document	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body	At time of implementation	1

4.5.2 Minimum Light Output for Activity E11

For Activity E11, ACPs must ensure that the Light Output (measured in lumens) of the new lighting equipment is the same or higher than the existing lighting equipment it is replacing. This will be checked as part of any audit conducted of the ACP.

To ensure that ACPs meet this requirement, they must:

- check the type of the existing lighting equipment and its LCP
- refer to Table 4.5.2 and note the minimum Light Output required for the new lighting equipment, and
- ensure that the new lighting equipment they install has a Light Output that is the same, or higher than this.

Table 4.5.2 Activity Definition E11 - Minimum Light Output for LED Lamp Only – 240V Self Ballasted to replace different types of lighting equipment

Existing equipment – LCP (Watts)			New equipment – Minimum Light Output (lumens)
Incandescent	Halogen	CFL[12]	LED Lamp Only – 240V Self Ballasted
25 ≤ 39	18 ≤ 27	4 ≤ 6	250
40 ≤ 59	28 ≤ 41	7 ≤ 10	500
60 ≤ 74	42 ≤ 51	11 ≤ 14	800
75 ≤ 99	52 ≤ 69	15 ≤ 18	1100
100 or above	70 or above	19 ≤ 23	1500

Note: The values in this table are based on the Light Globe Conversion Table on the 'Energy Rating' website: www.energyrating.gov.au.

12 Compact fluorescent light

4.6 Activity Definition E13 – Replace a T5 luminaire with a LED luminaire

This section outlines the equipment requirements that apply to Activity Definition E13 of the HEER method for the following eligible classes of equipment:

- LED Luminaire - Linear Lamp (Table 4.6.1).

4.6.1 E13: LED Luminaire – Linear Lamp

Description: An LED Luminaire intended for use as an alternative to a linear fluorescent Luminaire, where the Luminaire houses a matching Linear LED tube or a linear array of integrated LEDs. Where the Luminaire uses a Linear LED tube, the Luminaire must not be compatible with a linear fluorescent Lamp.

Relevant Australian safety standards:

- Luminaire: AS/NZS 60598.2.1 Luminaires - Particular requirements - Fixed general purpose luminaires.
- Control Gear: AS/NZS 61347.1 Lamp control gear – General and safety requirements, and AS/NZS 61347.2.13 Lamp control gear – Particular requirements for d.c. or a.c. supplied electronic control gear for LED modules.

Table 4.6.1 - Activity Definition E13 - Equipment Class: LED Luminaire – Linear Lamp

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lamp Circuit Power (LCP)	LCP (as Published by the Scheme Administrator)	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform IES LM-79-08 (if required)	At time of product acceptance	10
Minimum true power factor	≥ 0.55			
Minimum Colour Rendering Index (CRI)	Average ≥ 80			
Lifetime	L_{70} (70% of initial Downward Light Output) at 20,000 hrs	**Option 1** ▼ Test report using IES LM-84-14 from a Laboratory that is accredited by National Association of Testing Authorities NATA or equivalent body and accredited to perform IES LM-84-14, **and** ▼ IES TM-28-14 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-84-14	At time of product acceptance	10

Table 4.6.1 - Activity Definition E13 - Equipment Class: LED Luminaire – Linear Lamp

Parameter	Requirement	Documentation Requirement	Documentation Required	Minimum test sample size
Lifetime	L_{70} (70% of initial Downward Light Output) at 20,000 hrs	**Option 2** ▼ IES LM-80-08 or ANSI/IES LM-80-15 test report from a Laboratory that is accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15, **and** ▼ Manufacturer's declaration stating that the brand and model of the LED chip tested in the IES LM-80-08 or ANSI/IES LM-80-15 report is identical to that supplied with the lamp, **and** ▼ In-situ temperature measurement test (ISTMT) report conducted on one sample using Section 12.4.1 of IEC 60598.1 (or equivalent) or Clause 14 of ANSI/UL 1598 from a laboratory accredited by NATA or equivalent body to perform that test. The ISTMT must be conducted in accordance with Annex A of IES LM-84-14 (the testing laboratory does not have to be accredited to LM-84-14) ▼ The ISTMT report must include: – Statement that the ISTMT was conducted in accordance with Annex A of IES LM-84-14 (the laboratory does not have to be accredited to IES LM-84-14) – The brand and model of the LED chip(s) – The forward current of the LED chip(s) – Clear photos identifying the product and the exact position of the thermocouple. ▼ Manufacturer's declaration stating the brand, model and forward current of the LED chip(s) when used under normal operating conditions in Australia, **and** ▼ IES TM-21-11 test report from a laboratory accredited by NATA or equivalent body and accredited to perform IES LM-80-08 or ANSI/IES LM-80-15. The IES TM-21-11 test report must be based on the IES LM-80-08 or ANSI/IES LM-80-15 test report and the L_{70} value must use the temperature and forward current reported in the ISTMT report or a higher temperature and/or forward current *Note: ISTMT reports must be issued in the exact brand and model as the product applied for. Brand/model reconciliation documents are not accepted for ISTMT reports.*	At time of product acceptance	10
Electro-magnetic compatibility (EMC)	Compliance with AS/NZS CISPR 15:2011	▼ Test report using AS/NZS CISPR 15:2011 from a laboratory accredited by NATA or equivalent body, **and** ▼ Documentation showing the laboratory is accredited to perform AS/NZS CISPR 15:2011	At time of product acceptance	5

Table 4.6.1 - Activity Definition E13 - Equipment Class: LED Luminaire – Linear Lamp				
Parameter	**Requirement**	**Documentation Requirement**	**Documentation Required**	**Minimum test sample size**
Safety	Luminaire complies with relevant Australian safety standard (AS/NZS 60598.2.1)	▼ Certificate of suitability to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme, **or** ▼ JAS-ANZ endorsed certificate showing compliance to relevant Australian safety standard *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates*	At time of product acceptance	N/A
	If Control Gear is independent	▼ Certificate of approval to relevant Australian safety standard issued by: – NSW Fair Trading or an equivalent state regulator, **or** – an Independent certifier recognised by NSW Fair Trading as a Recognised External Approval Scheme *Note: Certificate must be issued in the exact brand and model as the product applied for. Brand/model reconciliation is not accepted for safety certificates.*	At time of product acceptance	N/A
Dimmer Compatibility	If the lamp is to be installed in a dimmable circuit, demonstrated compatibility with the dimmer	▼ Test report demonstrating compatibility of lamp with the dimmer, **and** ▼ Electrician declaration that the installed dimmer is a compatible model listed in the above test report	At time of implementation	1
Light Output	As specified in Table E5.1 of the ESS Rule	▼ Test report using IES LM-79-08 or other methodology from a laboratory accredited by National Association of Testing Authorities (NATA) or equivalent body.	At time of implementation	1