

Lyons Architecture

# University of Newcastle, Central Coast Campus Development

## ESD State Significant Development Application Report

December 2022



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## University of Newcastle, Central Coast Campus Development ESD State Significant Development Application Report




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WSP acknowledges that every project we work on takes place on First Peoples lands.  
We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

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# Executive Summary

This report details how the project addresses Section 9 of the Secretary’s Environmental Assessment Requirements (SEARS) issued 26 August 2022, required for State Significant Development Applications (SSDA) for the University of Newcastle Central Coast Campus Development. The approach and project response to the SEARs is summarised below.

Table ES.1 Summary of Approach to SEARS

| SEARS Requirement   | Report Section Reference |
|---|--------------------------|
| Identify how ESD principles (as defined in Section 193 of the EP&A Regulation) are incorporated into the design and on-going operation of the development   | Section 3.1              |
| Demonstrate how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards  | Section 3.2              |
| Demonstrate how the development minimises greenhouse gas emissions (reflecting the Government’s goal of net zero emissions by 2050) and consumption of energy, water (including water sensitive urban design) and material resources. | Section 3.3              |

# 1 Project Background

The University of Newcastle (UoN) Central Coast Campus Development constitutes 3,840 m<sup>2</sup> of multi-disciplinary academic and innovation spaces, stretching across 5 storeys and located at 305 Mann Street, Gosford, NSW, 2250. The project aims, as stated by the University of Newcastle, to “establish a new health, innovation and education campus in the heart of Gosford, that will activate the Central Coast Education and Employment Precinct and catalyse on-going revitalisation of Gosford CBD.”

WSP has been engaged to provide ecologically sustainable development (ESD) support and strategy for the University of Newcastle’s Central Coast Campus Development.

The project is targeting mandatory and voluntary sustainability targets including:

- Compliance with National Construction Code. It is noted that use of Part J of NCC 2019 is permitted until October 2023, with NCC 2022 coming into effect from October 2023 onwards. Project compliance with Part J is proposed under NCC 2019.
- Green Building Council of Australia 6 Star Green Star rating. Corresponding to “World Leadership” under the Green Star Buildings tool v1 Rev B
- Alignment with the University of Newcastle Environmental Sustainability Plan 2018 – 2025

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## 1.1 Secretary’s Environmental Assessment Requirements (SEARS)

This report details how the project addresses Section 9 of the Secretary’s Environmental Assessment Requirements (SEARS) issued 26 August 2022, required for State Significant Development Applications (SSDA) for the University of Newcastle Central Coast Campus Development. The approach and project response to the SEARs is summarised below in Table 1.1.

Table 1.1 Summary of Approach to SEARS

| SEARS Requirement   | Report Section Reference |
|---|--------------------------|
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| Demonstrate how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards  | Section 3.2              |
| Demonstrate how the development minimises greenhouse gas emissions (reflecting the Government’s goal of net zero emissions by 2050) and consumption of energy, water (including water sensitive urban design) and material resources. | Section 3.3              |

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## 1.2 Environmental Planning and Assessment (EP&A) Regulation Principles of Ecologically Sustainable Development

As part of addressing the SEARS, the project will be required to address Section 193 of the EP&A. Section 193 of the EP&A Regulation as at 2021 defines ecologically sustainable development (ESD) according to the following principles:

- 1 *The principles of ecologically sustainable development are the following —*
  - a) *the precautionary principle,*
  - b) *inter-generational equity,*
  - c) *conservation of biological diversity and ecological integrity,*
  - d) *improved valuation, pricing, and incentive mechanisms.*
- 2 *The precautionary principle is that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.*
- 3 *In applying the precautionary principle, public and private decisions should be guided by—*
  - a) *careful evaluation to avoid, wherever practicable, serious, or irreversible damage to the environment, and*
  - b) *an assessment of the risk-weighted consequences of various options.*
- 4 *The principle of inter-generational equity is that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.*
- 5 *The principle of the conservation of biological diversity and ecological integrity is that the conservation of biological diversity and ecological integrity should be a fundamental consideration.*
- 6 *The principle of improved valuation, pricing and incentive mechanisms is that environmental factors should be included in the valuation of assets and services, such as—*
  - a) *polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance, or abatement, and*
  - b) *the users of goods and services should pay prices based on the full life cycle of the costs of providing the goods and services, including the use of natural resources and assets and the ultimate disposal of waste, and*
  - c) *established environmental goals should be pursued in the most cost-effective way by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.*

## 2 Relevant Frameworks

### 2.1 The University of Newcastle Environmental Sustainability Plan 2019 - 2025

The University of Newcastle Environmental Sustainability Plan (ESP) 2019-2025 details the University of Newcastle’s “commitment to equity, sustainability and creation of a better future”. The ESP provides a strategy for the University to deliver on environmental and social responsibilities and initiate positive action, including through alignment with the United Nations Sustainable Development Goals and other international frameworks.

The primary commitments made by the University made through the ESP 2019-2025 are detailed below in Table 2

Table 2 University of Newcastle's ESP 2019-2025 Commitments

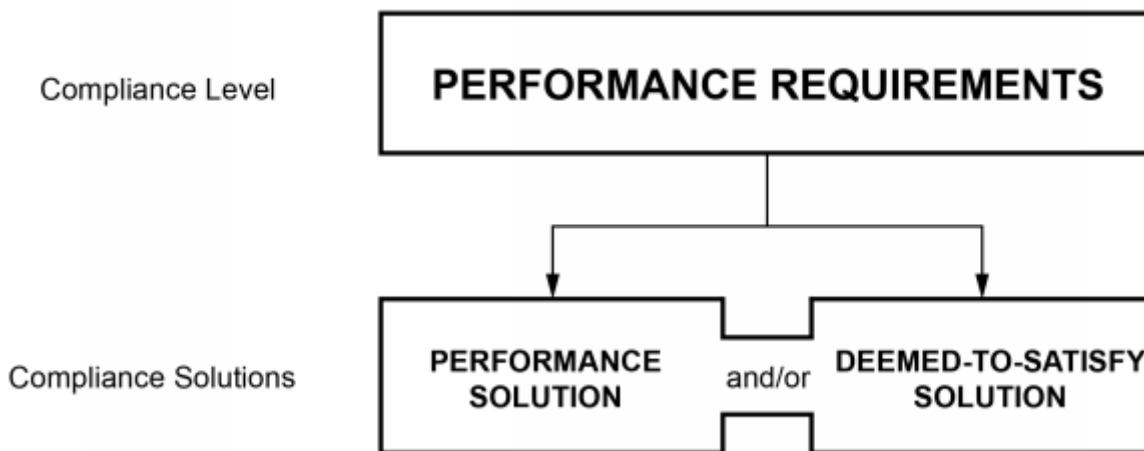
| Sustainability Focal Area          | Commitment   |
|------------------------------------|--|
| Energy and Carbon                  | Deliver 100% renewable electricity across our Newcastle and Central Coast campuses from 1 <sup>st</sup> January 2020<br>Achieve carbon neutrality by 2025  |
| Water                              | Achieve a 15% reduction in mains water usage per square meter across Gross Floor Area by 2025  |
| Waste and Recycling                | Achieve a 70% recycling rate for general solid waste generated across the University by 2021   |
| Biodiversity and Landscaping       | Implement a university-wide Biodiversity Management Plan by end 2020   |
| Environmentally Sustainable Design | All new buildings will achieve a minimum six-star Green Star ‘Design & As Built’ by 2025   |
| Transport                          | No net increase in car space provisions across UON (on a 2018 baseline).<br>Complete an inventory of all emissions from staff air travel and fleet vehicles and offset emissions by 2025                                     |
| Engagement                         | Increase staff and student awareness of university environmental sustainability issues via the Your Voice survey (on a 2016 baseline), and the Student Feedback on the University (SFUN) annual survey (on a 2018 baseline). |
| Education                          | All students graduating from the University of Newcastle will have exposure to environmental sustainability principles through their degree by 2025.   |

|                          |   |
|--------------------------|---|
| Research                 | Lead partnerships with local, regional, and global industries to deliver environmental sustainability research innovation projects with a focus on energy efficiency and renewable energy.                              |
| Governance               | Develop and implement a university-wide Environmental Sustainability Charter that includes the United Nations Sustainability Development Goals to embed environmental sustainability across the University by end 2019. |
| Compliance and Reporting | Report publicly on the University’s environmental sustainability impacts via the University Annual Report.  |

## 2.2 National Construction Code, Part J Energy Efficiency

The National Construction Code Section J Energy Efficiency is the minimum mandatory energy efficiency requirement for all buildings in Australia. The code allows for the performance requirements to be met through either compliance with the “Deemed to Satisfy” solution or a “Performance Solution” as per Figure 2.1. It is noted that use of Part J of NCC 2019 is permitted until October 2023, with the transition period of part J of NCC 2022 coming into effect from October 2023 onwards.

Figure 2.1 Figure A0.2 from NCC



The project is located within Climate Zone 5 – Mild temperate, and as such will require a balanced design to address both heating and cooling requirements of the development.

The project is proposing to meet the NCC requirement through a performance solution.

## 2.3 Green Star Rating Scheme

Green Star is an industry tool for benchmarking sustainability performance in the built environment. It is administered by the Green Building Council of Australia, formed in 2002, and are a non-government, member-based organisation whose purposes is to rate, educate and advocate for a more sustainable built environment.



University of Newcastle’s Central Coast Campus project will target a 6 Star rating under the Green Building Council of Australia’s Green Star Buildings tool v1 Rev B. This target demonstrates World Leadership in sustainability, is the highest possible rating available under the tool and is an ambitious target.



Figure 2.2 Green Star Rating Scale

The Green Star strategy covers the following sustainability areas:

- Responsible construction and management
- Healthy and comfortable buildings
- Resilience
- Low upfront carbon emissions
- Energy efficiency
- Powered by renewable energy
- Low potable water consumption
- Placemaking and contribution to liveability of surrounding urban context
- Inclusive building design and construction practices
- Biodiversity enhancement and protection
- Waterway protection

The project will also achieve the “Climate Positive Pathway” within the tool, which is depicted below in Figure 2.3.

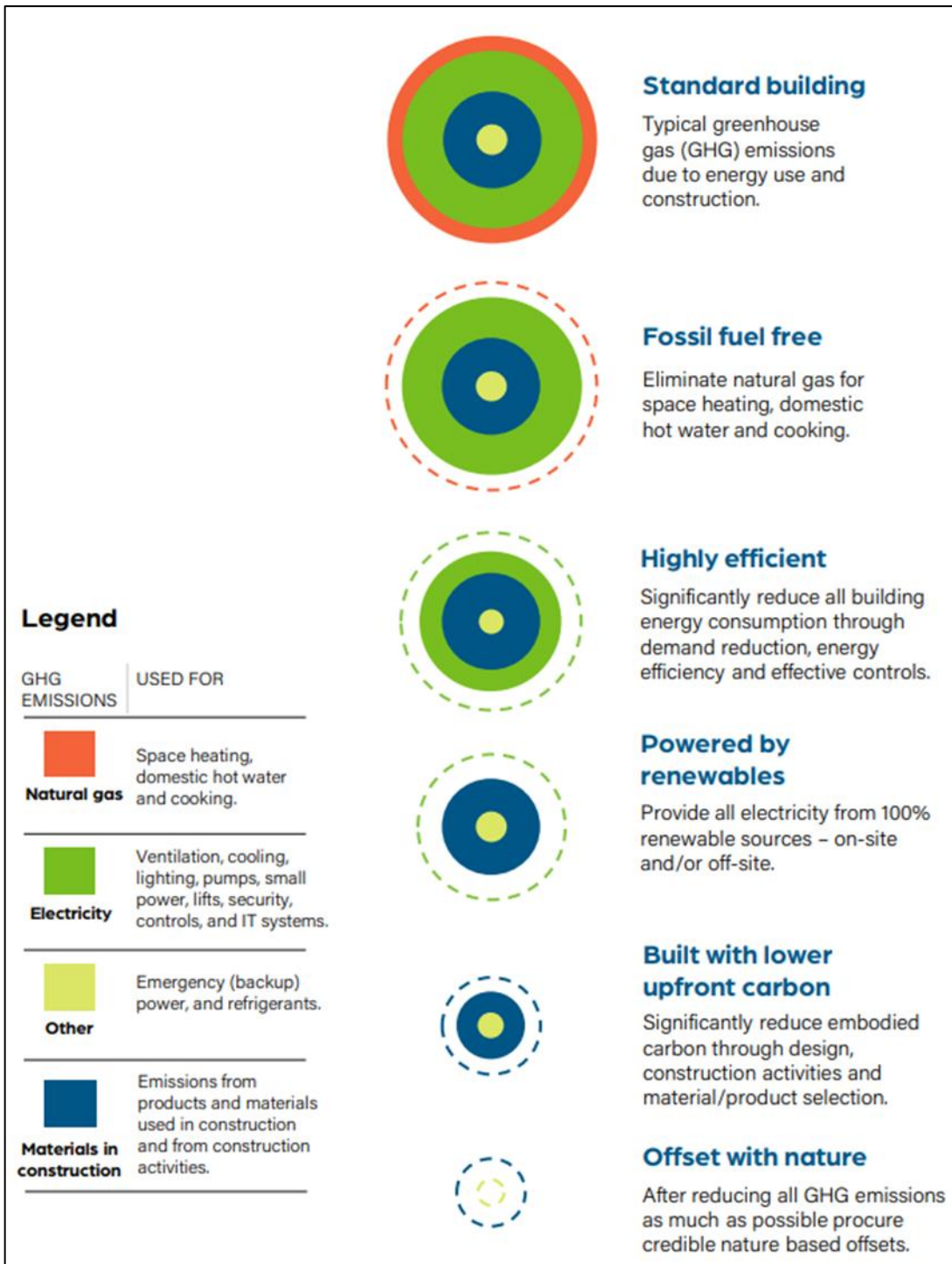


Figure 2.3 Climate Positive Pathway (Courtesy of GBCA)

# 3 Project Response

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## 3.1 Response to ESD Principles

- **The Precautionary Principle:** The project does not pose any serious threat to the environment, nor any irreversible damage to the environment. Construction of the project does not involve any land clearing and the site does not contain old growth forest, prime agricultural land, wetlands, or aspects considered to be ‘Matters of National Environmental Significance’. Additionally, the project will provide biodiversity enhancement through significant areas of landscaping containing a high proportion of indigenous plant species, improved nature connectivity and land restoration activities. Waterway pollution will be minimised through stormwater management techniques and 90% of construction and demolition waste will be diverted from landfill.
- **Inter-generational Equity:** The project will deliver on inter-generational equity by not consuming more resources than are required to sufficiently operate the building. Energy consumption will be minimised as far as practicable through a net zero design and delivery of 100% renewable electricity to the site, in line with the University of Newcastle’s Environmental Sustainability Plan 2019-2025. Additionally, the project will be designed to achieve a 30% improvement on the National Construction Code 2019 energy efficiency requirements. Inter-generational equity will be pursued further through the achievement of climate resilience, operational resilience, healthy internal environment for occupants, indigenous design and inclusion, contribution to the surrounding urban context and responsible construction facilitated by the projects 6 Star Green Star Buildings rating.
- **Conservation of Biological Diversity and Ecological Integrity:** As part of the project’s 6 Star Green Star pathway, credits are targeted that specifically aim to enhance biological diversity and maintain ecological integrity. The Central Coast Campus will provide landscaping equivalent to 30% of the site area and will include at least 80% indigenous plant species, as well as 1 significant nesting tree or equivalent habitat per 250m<sup>2</sup>. Provision of such landscaping will contribute to nature connectivity between the site and surrounding area.
- **Improved Valuation, Pricing, and Incentive Mechanisms.** The project is designed to minimise pollution and waste through responsible construction practices that divert construction and demolition waste from landfill, responsible management of operational waste and stormwater pollution and run-off is minimised. Major components of the project design have been driven by whole-of-life cycle cost decisions including structural design and building services design.

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## 3.2 Meeting or Exceeding Relevant Industry Standards

Compliance with the National Construction Code for the University of Newcastle’s Central Coast Campus will be achieved through the following:

- Section J, part J1.5 total system R-value, total system U-value and SHGC requirements for wall-glazing constructions and display windows, inclusive of thermal bridging effects
- Section J, part J5.4, part J5.7, part J 5.10 and part J5.12 requirements for fan systems, pump systems, refrigerant chillers, and heat rejection equipment.
- Section J, part J6.2 requirements for artificial lighting systems

As part of the UoN Central Coast Campus Green Star strategy, the project will achieve a 30% reduction in energy use in addition to compliance with the NCC Section J.

By targeting 6 Stars through Green Star Buildings, equivalent to World Leadership, the project will exceed sustainability performance for projects of a similar type, size, and location. 6 Stars is the most ambitious target available under the Green Star Rating scheme.

The full Green Star Buildings pathway for the University of Newcastle Central Coast Campus can be found in Appendix A. This summary presents the current approach to achieving a 6 Star Green Star rating. It is acknowledged that strategies change during design development and construction, and as such, the final pathway to achieving the 6 Star rating may differ from the current strategy, however the Project team are committed to achieving a 6 Star Green Star Rating.

### 3.2.1 Approach to 6 Star Rating

The 6 Star Green Star pathway includes initiatives targeted under the following categories in Table 3.1.

Table 3.1 Approach to 6 Star Rating - Credit Categories

| Category    | Credit                          | Achievement level | Points |
|-------------|---------------------------------|-------------------|--------|
| Responsible | Industry development            | CA                | 1      |
|             | Responsible construction        | CA                | 1      |
|             | Verification & Handover         | CA                | 1      |
|             | Responsible Resource Management | ME                | N/A    |
| Responsible | Responsible Procurement         | CA                | 1      |
|             | Responsible Structure           | CA                | 3      |
|             | Responsible Envelope            | CA                | 2      |
|             | Responsible Systems             | CA                | 1      |
|             | Responsible Finishes            | CA                | 1      |
| Healthy     | Clean Air                       | CA                | 2      |
|             | Light Quality                   | EP                | 2      |
|             | Acoustic Comfort                | CA                | 2      |
|             | Exposure to toxins              | CA                | 2      |
|             | Amenity and comfort             | CA                | 2      |
|             | Connection to nature            | EP                | 2      |
| Resilience  | Climate change resilience       | CA                | 1      |
|             | Operations resilience           | CA                | 2      |
|             | Community Resilience            | CA                | 1      |
|             | Heat Resilience                 | CA                | 1      |
|             | Grid Resilience                 | CA                | 3      |
| Positive    | Upfront carbon emissions        | EP                | 6      |
|             | Energy use                      | EP                | 6      |
|             | Energy Source                   | EP                | 6      |
|             | Other carbon sources            | CA                | 2      |
|             | Water use                       | CA                | 3      |
|             | Life Cycle Impacts              | CA                | 2      |
| Places      | Movement and Place              | CA                | 3      |

| Category                        | Credit                              | Achievement level | Points           |
|---------------------------------|-------------------------------------|-------------------|------------------|
|                                 | Enjoyable places                    | CA                | 2                |
|                                 | Contribution to place               | CA                | 2                |
|                                 | Culture, Heritage and Identity      | CA                | 1                |
| People                          | Inclusive Construction Practices    | CA                | 2                |
|                                 | Indigenous Inclusion                | CA                | 2                |
|                                 | Procurement and Workforce Inclusion | CA                | 2                |
|                                 | Design for inclusion                | CA                | 2                |
| Nature                          | Impacts to nature                   | CA                | 2                |
|                                 | Biodiversity enhancement            | CA                | 2                |
|                                 | Nature connectivity                 | CA                | 2                |
|                                 | Nature Stewardship                  | CA                | 2                |
|                                 | Waterway protection                 | CA                | 2                |
| <b>Total</b>                    |                                     |                   | <b>81 Points</b> |
| <b>6 Star Green Star Target</b> |                                     |                   | <b>70 points</b> |

\*ME = Minimum Expectation

\* CA = Credit Achievement

\*EP = Exceptional Performance

### 3.3 Energy, Water and Materials Consumption

Through the University of Newcastle’s Environmental Sustainability Plan 2019-2025, the Central Coast Campus will be designed and constructed to achieve the following:

- Low upfront embodied carbon through timber structure and low impact concrete
- Fossil fuel free operations through all electric operations, onsite renewable energy and offsite renewable energy
- High level of energy efficiency
- Residual carbon footprint offset with nature for a carbon neutral outcome

Additionally, as part of the project’s Green Star Buildings pathway targets the following initiatives:

- A 30% reduction in energy use in addition to compliance with the NCC
- A 45% reduction in potable water consumption
- Emit 20% less upfront carbon emissions compared to a reference project and offset remaining carbon emissions
- Achieve a 30% reduction in life cycle impacts compared to a standard practice project
- Procurement of responsible finishes, systems, façade components and structural materials including products with EPDs, Climate Active certification, ISO 14001 certification and products with third party certification

# 4 Conclusion

In summary, the UoN Central Coast Campus project addresses Section 9 of the Secretary’s Environmental Assessment Requirements (SEARS) as outlined in the above SSDA Report. The project is targeted the highest possible industry benchmarks in relation to sustainability, corresponding to world leadership outcomes. The relevant sections are noted below in Table 2.

Table 2 Summary of Approach to SEARS

| SEARS Requirement   | Report Section Reference |
|---|--------------------------|
| Identify how ESD principles (as defined in Section 193 of the EP&A Regulation) are incorporated into the design and on-going operation of the development   | Section 3.1              |
| Demonstrate how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards  | Section 3.2              |
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# Appendix A

UoN Central Coast Campus Green Star  
Buildings Pathway













|              |            |
|--------------|------------|
| Project Name | UoN CCC    |
| Date         | 2022.10.14 |
| Updated By   | SNH        |

**Green Star Buildings Pathway**

|    |  |
|----|--|
| ME | Minimum Expectation - compulsory to enable certification |
| CA | Credit Achievement - beyond and in addition to ME        |
| EP | Exceptional Performance - beyond and in addition to CA   |

15+ points = 4 Star  
 35+ points = 5 Star  
 70+ points = 6 Star



|             |
|-------------|
| low risk    |
| medium risk |
| high risk   |

| Category | Credit | Number | Level | Pathway | Criteria | Available Points | Not targeted | Points Target | Architect Lyons | Mechanical | Electrical | Hydraulic | Fire | Facade | Structural | Civil | Waste | Environmental | Ecologist | Community / Social | Landscape & Irrigation | Acoustic | QS | ICA | Traffic | Vertical | Airtightness | ESD | Client / Owner | Builder | App | Comments and risk |
|----------|--------|--------|-------|---------|----------|------------------|--------------|---------------|-----------------|------------|------------|-----------|------|--------|------------|-------|-------|---------------|-----------|--------------------|------------------------|----------|----|-----|---------|----------|--------------|-----|----------------|---------|-----|-------------------|
|          |        |        |       |         |          |                  |              | 81            |                 |            |            |           |      |        |            |       |       |               |           |                    |                        |          |    |     |         |          |              |     |                |         |     |                   |

