Introduction

In October 2017, the GBCA was engaged by the Melbourne Metro Rail Authority (MMRA) to create a public version of the Green Star – Custom rating tools developed for the Regional Rail Authority of Victoria and MMRA.

The resulting rating tool is known as Green Star - Design & As Built: Railway Stations.

This rating tool is applicable to above ground and underground passenger railway stations.

This rating tool is an adapted version of Green Star – Design & As Built v1.2. The changes to the rating tool are based on the custom railway station rating tools, and what we have learned from certifying upwards of 12 railway stations.

Development Process

Upon being engaged to deliver an adapted version of Green Star for railway stations, GBCA engaged Organica Engineering as a technical expert and created a project steering group comprised of representatives of the Melbourne Metro Rail Authority and the GBCA. The development process commenced in October 2017 and is outlined below:

- GBCA performed all relevant customisations in line with the Green Star guiding principles and feedback received from existing custom rating tools, and learnings from the certification of 12 railway stations.

- Technical expert conducted targeted stakeholder engagement with railway related organisations and representatives on behalf of the GBCA and recommended amendments to the existing custom rating tools. Refer to Appendix 1: Green Star Railways Consultation Report.

- GBCA provided initial draft of rating tool with all background information to independent technical expert.

- Technical expert evaluated all amendments and provided endorsement or requested changes.

- Technical expert and GBCA negotiated and implemented recommended changes to the rating tool.

- Draft rating tool issued to project steering group for review.

- Phillip Roos + Associates provided peer reviewer comments, resulting in further changes to the rating tool or responses indicating why suggested changes were not appropriate. Refer to Appendices 2 & 3: Feedback from PR+A and GBCA responses.

- Project Steering Group endorsed the release of draft rating tool for public consultation.

- GBCA opened the rating tool for public consultation.

- The Technical Advisory Group and Industry Advisory Group endorsed the approval process for the draft rating tool.

Consultation Process

Public consultation for the draft Green Star – Design & As Built: Railway Stations rating tool was launched on 20th March and closed on Thursday 19th April. The consultation was open to both organisations that are involved in existing rail station projects nationally, and stakeholders via our website.
In addition the GBCA directly engaged via email with approximately 50 major rail stakeholders across Australia, including consultants, developers and Government representatives, to encourage their awareness and engagement with this consultation process. Refer to Appendix 4: List of Stakeholders for a full list of contacted stakeholders.

Eight submissions were received in response to the Green Star – Design & As Built: Railway Stations consultation. Refer to Appendix 5: Public consultation feedback summary with GBCA responses for a full list of feedback received.

Feedback Summary

The following sections outlines thematic feedback received throughout the consultation period. Sample comments have been included to illustrate the issues raised.

Refer to Appendix 5: Public consultation feedback summary with GBCA responses for the complete list of feedback provided to the GBCA, and resulting actions prior to the intended release of the Green Star - Design & As Built: Railway Stations rating tool.

General tool feedback

Interaction with ISCA IS

The alignment between the rating tool and the Infrastructure Sustainability Council of Australia (ISCA) IS rating scheme was identified throughout the public consultation by 4 out of 8 stakeholders. Greater clarity has been sought to outline where the IS tool directly interacts with the Green Star - Design & As Built: Railway Stations rating tool.

"Good to see that IS tool is recognised as an overlapping method of compliance. What would be good is a cross over table / pathway that details which credits are likely to be covered by IS and vice versa or a link to this document."

ISCA has reviewed the rating tool and has found the content to be 'well laid out and is clear in scope.' ISCA did not propose any change to the draft rating tool.

The GBCA's next step following release of the rating tool is creation of a clear pathway for dual certification, in partnership with ISCA.

Small and Regional stations

Small and Regional railway stations with small or no enclosed spaces, or complex building systems was also identified as an area for further investigation, due to a potentially high number of 'not applicable' points.

"Allowing this type of station to be rated could skew or de-value the Green Star definitions as to what constitutes best practice, Australian excellence or world leader in green building design"

Further consultation with Rail Projects Victoria indicated that the uptake of the Rating Tool for railway stations of this size and capacity was unlikely to occur. Eligibility criteria to be updated with guidance that small stations with little or no enclosed space are to contact the GBCA to discuss pathways for certification. A pilot station will be used to identify opportunities for regional stations with guidance is to be issued as an addendum to the rating tool.

Eligibility of projects

Building Type, Timing of Registration and Certification Eligibility criteria were raised as items requiring amendment.
"Building Type - Not relevant to train stations? Typical class types within stations could be mentioned here."

"Consider extending the expiration of the Design Review certified rating (currently 24 months) to be more inline with Rail project timeframes. This would enable projects to do the Design Review rating in the early stages to benefit the design process."

The Eligibility criteria for Building Type will be amended to address railway stations specifically, excluding items such as stabling yards and maintenance sheds. Design Review ratings expire two years after Practical Completion and therefore will remain current for the duration of the project’s development and construction phase.

Development of the Green Star - Design & As Built: Railway Stations

"Distinct tools for different building classes is something the GBCA deliberately moved away from for GS D&AB. My concerns are exacerbated by timing that coincides with the GBCA just embarking on industry consultation for the next major tool update. Is a formal tool release really in the GBCA’s interests here?"

While custom railway station rating tools exist for projects in Victoria and New South Wales, there is a desire to have a common rating tool which can be used by all projects to enable a common comparison and to demonstrate a clear and consistent message to stakeholders. It also increases transparency and simplifies and streamlines the work required by the GBCA to maintain multiple custom rating tools.

General comments

Feedback was received regarding inconsistency of general nomenclature throughout the rating tool. The GBCA will amend nomenclature throughout.

Management Category

Three of eight stakeholders indicated concern with the inclusion of Air Permeability Performance Testing within the Commissioning and Tuning credit. External advice had been sought prior to the release of the draft rating tool on the applicability of this criterion in the railway station context, and it was confirmed that the criteria could be applied to enclosed areas such as ticketing offices and associated breakout spaces in railway stations.

"Air Permeability Performance Testing may not be applicable in open, naturally ventilated station environments i.e stations are not sealed buildings. Ticket Counters will not be sealed due to service requirements."

"Pressure testing will generally be of little value for the majority of train station projects."

Public consultation consistently indicated that pursuing low levels of permeability and conducting the testing would be of little to no value for a railway station, due to the continual presence of a significant opening in the building in the ticket window. As a result, the Air Permeability Performance Testing criteria will be removed from the final version of the rating tool.

Indoor Environment Quality Category

Feedback for the Indoor Air Quality credit indicated the need for further investigation on the requirements for Ventilation Systems, particularly due to spatial limitations of underground stations.

"Separation distances are unrealistic is where buildings are located above the station and exhaust are required to pass through this building. Given the scale of the separation distances this is difficult in many instances and also typically falls outside the control of the station developer."
The GBCA acknowledges the spatial limitations of underground stations, noting that separation distances may be difficult to achieve. It is recommended that project specific technical questions should be lodged where project teams are meeting the intent of the credit, or the credit cannot be claimed.

Clarity around the how underground stations can target the Visual Comfort credit was requested, noting the differences in ability to provide daylight to ‘shallow’ underground stations and deeper underground stations.

"Concourses can be more than 10m below ground level. Even with large open skylights in some areas a DF of 2 cannot be achieved (especially with the glass required for security and safety and corresponding VLT). Skylights to concourse areas are often removed where their outputs cannot be ‘justified’ as they do not achieve a Green Star point, hence these high levels does not encourage daylight intrusion to below ground station areas."

The GBCA will amend the credit by updating the definitions and provide further guidance for underground stations. The GBCA notes that some underground stations may not be able to achieve this credit.

A number of issues were identified for the Thermal Comfort credit which may impact the effectiveness of the rating tool and the perception of the end user or patron.

"Flexibility for station designers / providers should be given so that ‘down’ stations [platforms primarily used as an exit] be very simple and ‘up’ stations [platforms primarily used for waiting for a train] have more comfort design features. This is common for most suburban and regional train facilities. One problem that can occur is that a down station takes budget from an up station when the down station is very likely to have a small number of waiting patrons. E.g. the station is used 90% for alighting patrons."

"Above ground stations - Consider increasing windbreak percentage. Shelter from wind greatly increases quality of experience and comfort across a broader range of weather conditions."

The GBCA notes that thermal comfort requirements may conflict with other sustainability and investment drivers. The GBCA will provide guidance for pedestrian modelling and its interaction with thermal comfort requirements.

**Energy Category**

The GBCA will continue to review the applicability of the Greenhouse Gas Emissions credit to small stations without enclosed habitable areas and/or only deliver lighting as a source of energy consumption.

"Potential solutions may be:
- To allow railway stations with no habitable spaces to only be able to achieve a 4 Star only (this could be written up in the eligibility section). Or perhaps 4 or 5 Star only
- Create a different scorecard for railway stations with non-habitable spaces. Potentially in combination with the suggestion above (4 Star only)
- Only allow buildings with habitable spaces to be rated."

The GBCA acknowledges the limitations in reducing the greenhouse emission impacts of these railway station type.

Further consultation with stakeholders has indicated that uptake of the rating tool for stations of this size is unlikely. Where a project team wishes to register a project that fits this description, they will be encouraged in the Eligibility section of the rating tool to contact the GBCA. The GBCA will explore alternative pathways and methods of compliance for this railway station type and further engage with stakeholders where this occurs.

The change to the Onsite Renewable Energy innovation points was raised as a concern to two stakeholders.
"The onsite renewable energy target is very difficult to achieve for below ground stations with a minimal above ground footprint."

The GBCA acknowledges that this change is significant compared to existing custom rating tools and for projects registered for older versions of Green Star - Design & As Built, however these changes are in line with the GBCA’s strategic direction, shown in the Carbon Positive Roadmap and Powered by Renewables Innovation Challenge.

The process to adapt to upcoming changes to the NCC was raised.

"How will the credit adapt to the 2019 NCC update? Intent of stipulating minimum GHG points is good, but considerations will need to be added of how this impacts projects complying with the 2019 version of the NCC."

The GBCA has been reviewing the proposed changes to the National Construction Code and their impact to Green Star – Design & As Built. While we are encouraged by the proposed changes and the increase in stringency, we have identified that the impacts to the rating tool are significant and are looking to provide certainty to those that may be impacted beginning from next year.

Transport Category

The Transport category is currently comprised of prescriptive criteria to facilitate the reduction of dependency on private car use. It is acknowledged that railway stations serve a different role in the context of the built environment, and sustainable transport initiatives may not be able to be demonstrated in the rating tool's current form.

"A new station's role as catalyst for a community and their mobility. The priorities that are set from the beginning in terms of how people travel to a station is crucial in fostering behaviours. This may differ in different locations (e.g. rural vs regional city) but in any case Green Star should foster adaptability to future technology and system changes (e.g. through autonomous vehicles or ride share services, which may drastically reduce car parking requirements) and always prioritise the modal hierarchy. To that end consideration could be given to a station/community specific start/end-of-trip strategy/plan that demonstrates respective prioritisation and planning for adaptability."

The GBCA has consequently explored alternative methodologies to respond to the needs of railway stations. As a result, the GBCA will adopt the Innovation guidance from the Green Star - Communities Sustainable Transport and Movement credit, and create connections between other sections of the rating tool including the Urban Precincts credit.

Specific feedback about the prescriptive pathway was provided and summarised below.

Intermodal Connectivity

"Assessment of what constitutes accessible in the sustainable transport credit is not realistic for central city locations."

"We have found this calculation methodology does not necessarily award best practice for densely populated areas with an abundance of public transport."

An alternative pathway for Railway Stations located within Central Business districts will be clarified further for the Intermodal Connectivity criterion. This takes the approach of Legacy tools, where a postcode-based methodology is adopted.

Active Transport Facilities
"Secure parking is not always the best option to provide bicycle parking. Recent experience would suggest cages are less used than bicycle rails and this comes down to a number of factors, including position (of cages/rails) and security (linked to position, footfall with service frequency, surrounding land uses and passive surveillance)."

"Provision versus outcome. Is it good enough just to measure provision of an asset, or will the effectiveness be the measure? Could existing and outcome mode splits (% patrons cycling to station) be measured instead?"

"The guidance reference staff bicycle parking and changing facilities but no mention on number of parks required or points awarded for it."

The GBCA will revise the Active Transport Facilities criteria, compliance requirements and guidance sections to ensure consistency throughout the credit.

Walkable Neighbourhoods

"Acknowledgement is required that railway stations are often catalytic, forward thinking projects that 'arrive first' and therefore should be encouraged to provide not only for day-one scenarios but also short and long-term scenarios"

"This precludes greenfield developments which are providing train connections to growth areas for the first time."

The GBCA will adopt the Green Star - Communities Sustainable Transport and Movement: Performance Pathway as an alternative pathway.

Water Category

"The potable water calculator for the custom tool appear to be derived from the office tool and assume unrealistically high usage rates for fixtures and fittings."

The GBCA will include guidance on inputs for usage rates within the Potable Water calculator guide, and amend the Potable Water calculator where required.

"Rainwater reuse is usually not viable for underground stations due to the smaller catchment area."

The GBCA recommends submitting a project specific technical question to demonstrate an alternate compliance method or size of tank. The GBCA also notes that the performance pathway uses are more holistic view of rainwater tank sizing.

Materials Category

Sustainable Products

"Please specify the benchmark for the percentage of compliant products in the credit criteria e.g. sliding scale where 1 point is 50% and 2 points are 100% compliant."

The GBCA will include a scale outlining the award of points within the Sustainable Products credit.

Low Maintenance Design

"Suggest avoiding reference to specific materials such as 'timber', to ensure high-quality design solutions can be explored which, if maintenance requirements can be met, will deliver high-quality experiences."
The GBCA will remove references to specific materials.

Positive feedback was provided for the inclusion of Innovation points for concrete.

Land Use and Ecology Category

Contamination and Hazardous Materials

"When would this credit be NA? e.g. what if there are no existing buildings or structures and not contamination is found? Propose for NA criteria to be added."

The GBCA confirms that the Contamination and Hazardous Materials credit cannot be claimed not applicable on the basis that the scope of works includes any remediation and hazardous material removed at any stage of the project delivery.

Heat Island Effect

"Consider the exclusion of car parks for suburban stations from this calculation - these will be large areas of asphalt (and will be primarily covered with cars that we cannot control the colour of) and we are encouraging people to drive to train stations to then take public transport into the city."

"Further clarification required for ‘Project surface areas’ - How are entry and exit areas defined (especially for below ground stations)?"

The GBCA notes that car parks are a key contributor to heat island effect and as such, will remain in the credit criteria. The GBCA will include guidance on the treatment of carparks and underground access points in the project surface areas.

Emissions Category

"The Microbial Control credit is not achievable for almost all water based heat rejection systems as the premise of water based heat rejection is to reject heat to the air through evaporation, which requires an aerosol spray to be remotely effective. Therefore this credit should either be not achievable at all for water based systems or the ‘no aerosol spray’ requirement should be removed."

The GBCA acknowledges that the legionella risk associated with evaporative coolers is low, however, there is still a level of risk and as such cannot be excluded from this credit.

Next Steps

The proposed release of the rating tool is First Quarter 2019. This is due to the need to coordinate with the Melbourne Metro Rail Authority who were the key sponsors of the rating tool. The GBCA and technical reviewer will make the stated amendments to the rating tool based on the responses.

GBCA will seek endorsement from the Green Star Advisory Committee and GBCA Board for release of the rating tool.
Appendices: List of Supporting Documentation

The following documentation has been provided to the GBCA throughout the development process of the Green Star - Railway Stations tool.

Appendix 1: Organica Engineering stakeholder report

Appendices 2 & 3: Feedback from PR+A and GBCA responses

Appendix 4: List of Stakeholders contacted to provide feedback on the draft rating tool

Appendix 5: Public consultation feedback summary with GBCA responses.