SBEnrc Project Progress – Quarterly Report
01 July 2026 to 30 September 2026

Project Number & Title	2.11.2 Improving Productivity, Carbon and Resilience Through Interoperable Built Environment Data
PSG Chair	Andrew Curthoys
Project Leader	Peng Wu, Curtin University

Overall Project Health and Delivery	Major issues or delays	☐	Minor issues or delays	☐	Progressing as planned	☒

Comments on project health/delivery:
The project is progressing as per planned milestones and deliverables.

Progress against milestones/deliverables:

No.	Description	Milestone or Deliverable?	Planned Due Date	Completion/ Forecast Date
1	PSG#1 Project Commencement • Pre-Payment Approved by Board • Uptake and Impact Measures • Final Factsheet • Final Case Study Summaries	Milestone	05/05/2026	Completed
2	PSG #2 – • Literature Review • Any other specific deliverables per project as agreed by SBEnrc • Quarterly Report 1	Milestone	03/08/2026	Completed
3	PSG #3 – • Half Year Review • Quarterly Report 2 • Industry Partner Engagement Sessions as agreed by SBEnrc	Deliverable	19/10/2026	Completed
4	PSG #4 – • Quarterly Report 3 • Research and Case Study Summary Presentations as agreed by SBEnrc • Draft Uptake and Impact Report	Milestone	08/02/2027	
5	PSG #5 – • Half Year Review • Quarterly Report 4 • Including Industry Dissemination Outputs (Project Website) as agreed by SBEnrc • Knowledge transfer/Industry Adoption Plan (Item 2.7) as agreed by SBEnrc • Draft Research Report • Draft Industry Report	Milestone	10/05/2027	
6	PSG #6 (Final) – • Quarterly Report 5 • Final Industry Report (pre-approval) • Final Research Report (pre-approval) • Communications package (includes YouTube video and graphically designed and technically reviewed 16-24 page Industry Report).	Milestone	09/08/2027	

	• Final Uptake and Impact Report			
7	Knowledge transfer/research into practice, Executive Briefing as agreed by SBEnrc	Milestone	30/09/2027	
8	Project Completion – Final approved Industry Report and Research Report	Deliverable	30/09/2027	
9	Final Project Video	Milestone	30/09/2027	
10	Final Uptake and Impact Report	Deliverable	30/09/2027	

Progress <u>this quarter</u>:

Case study 1: TfNSW Infrastructure Common Data Model

During the current reporting period, the research team successfully developed an online standards management platform to support TfNSW in managing the evolving MCL, ACS and ECCL standards. A key focus of the platform is version management, allowing TfNSW to maintain, update and publish different versions of these standards as they continue to evolve over time. In parallel, the team is developing APIs that enable internal and external systems to reference these standards directly, creating a more consistent and reusable standards framework across TfNSW digital engineering workflows. This integration is also being extended to the BIM Object Library developed in the earlier phase of the project, enabling BIM objects and associated asset information to be directly linked to relevant MCL and ACS requirements.

TfNSW users can now publish individual BIM objects from existing as-built BIM models, as well as publish selected groups of objects representing higher-level assets, into the BIM Object Library. Relevant MCL or ACS information can then be assigned to each individual object or asset group.

Case study 2: SCC 12d model case study

During the current reporting period, SCC provided the research team with a new IFC model for the Sunrise Drive, Maroochydore – Raised Pedestrian Crossing project to support testing of the BIM-based carbon estimation methodology. Following an initial review of the IFC model, associated PDF drawings and available project information, the project was identified as a suitable case study for demonstrating the proposed carbon estimation workflow because it contains a range of civil infrastructure components and construction activities. However, the IFC model supplied by SCC, which was exported from the 12D design model, does not currently contain all of the 3D elements required for a complete carbon assessment. In particular, several assets visible in the project drawings, including the raised pedestrian crossing, drainage infrastructure and other associated elements, are missing from the IFC model. The original 12D model also appears to contain relatively limited 3D information, indicating that some project elements may have been developed in other design or modelling software. The research team will therefore continue testing the carbon estimation methodology using the available model while working with SCC to identify whether additional design models or source files are available. Providing these additional models, where available, would enable a more complete demonstration of automated quantity extraction and project-level embodied carbon estimation.

For the missing materials and emission factors, we will test the use of TfNSW's ECCL for carbon estimation.

Case study 3: Automatic carbon accounting using MetaBIM

The team has been working on refining some of the calculation processes in MetaBIM and will liaise with John for a demonstration once this is completed.

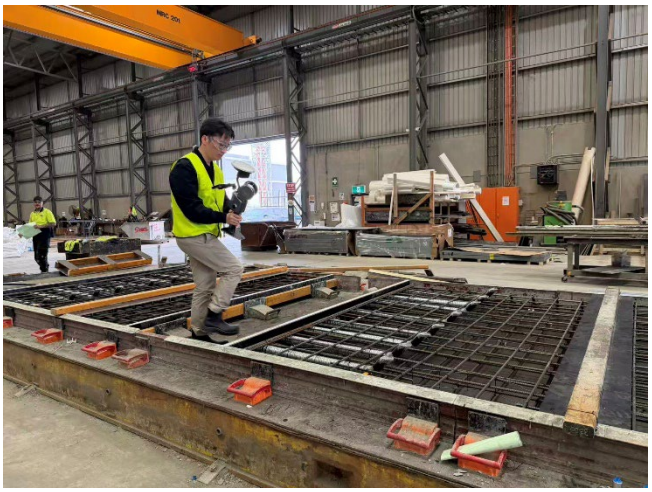
Case study 4: MRWA LiDAR

The research team continues to improve the performance of the AI algorithms for more challenging ground-level road assets and surface classes. Current development activities are focusing on classes including sealed surface, medium flat areas, medium vegetation, medium barriers, road shoulders, kerbs and line markings, where segmentation performance is generally more sensitive to variations in geometry, surface condition, vegetation, occlusion and point-cloud density.

Case study 5: Atlas mobile laser scanning in quality assurance

During the visit, the team used a Lixel Pro2 mobile laser scanner to scan selected precast wall panels at different stages of the manufacturing process, including both partially completed reinforcement assemblies and finished concrete panels. Atlas has also provided the corresponding Tekla BIM models for the scanned panels, which gives the research team an important as-designed reference for comparison with the as-built geometry captured on site. The current research is therefore investigating a BIM-to-point-cloud comparison workflow that can automatically identify dimensional deviations, geometric inconsistencies and potential manufacturing defects, with the longer-term objective of reducing manual inspection effort and providing more systematic quality assurance during prefabrication.





Recent engagement/investment/collaborations this quarter
Presentation to the MRWA DE Working Group on 31 July.

Project outputs and communications <u>this quater</u>:
The Communications matrix is being populated with opportunities for dissemination pathways as the project evolves.

Industry Quotes:

“It is exciting to continue our groundbreaking work with SBEnrc. I am very keen to push the boundaries on what is possible. The most important thing that this project will contribute is to help migrate all our existing work into the Transport for NSW environment – getting the existing Library of Objects up and into production, so we can launch internally and to industry." **David Kelly – Transport for NSW, September 2026**

"It's exactly what we need to build the automated inspection system for our new factory: every panel can be checked against its design model before it leaves the plant." **Karim Yngstrom – Atlas, September 2026**

“Thank you so much for provide the presentation, it was an eye-opening to me. I think you've done a great job of impressing them” **Qindong Li, Main Roads Western Australia (MRWA DE Working Group), July 2026**