Transport for NSW

Sustainable Infrastructure Program

Concrete Mix Register

November 2024

NSW GOVERNMENT

Acknowledgement of Country

Transport for NSW acknowledges the traditional custodians of the land on which we work and live.

We pay our respects to Elders past and present and celebrate the diversity of Aboriginal people and their ongoing cultures and connections to the lands and waters of NSW.

Many of the transport routes we use today – from rail lines, to roads, to water crossings – follow the traditional Songlines, trade routes and ceremonial paths in Country that our nation's First Peoples followed for tens of thousands of years.

Transport for NSW is committed to honouring Aboriginal peoples' cultural and spiritual connections to the lands, waters and seas and their rich contribution to society.

It is our vision at Transport for NSW for sustainability to be a primary consideration on every Transport project from the earliest stages of a project's lifecycle. One way we are driving this change is through the Sustainable Infrastructure Program (SIP).

Through SIP we are exploring ways to streamline and drive decarbonisation and circularity on transport infrastructure project.

This program is focused on creating practical tools, policies and solutions to drive tangible change.

Addressing productivity through the Concrete Mix Register

SIP is aligned to the 2026 Decarbonising Infrastructure Delivery Roadmap and is a pathway for Transport and industry to collectively deliver on infrastructure-related net zero targets.

The SIP is built on five key workstreams. Through the engagement process and conversations on workstream four, Decarbonising Construction Phase, it was clear the Concrete Mix Register (CMR) would be crucial tool to embed reform.

The CMR is an online resource that lists concrete mixes that are provisionally approved for use on Transport projects.

A key challenge associated with the concrete mixes and the CMR is the emerging requirement for registered suppliers to develop Environmental Product Declarations (EPD) across regularly changing mixes. This is a significant resourcing burden for the supply chain, and with over 500 mixes on the CMR there is an opportunity to improve the productivity of this important work.

To address this, Transport has adopted a two-phase implementation approach to allow for immediate and effective action through the adoption of an interim solution while we develop with industry a long-term process and outcome.

Two-phased approach

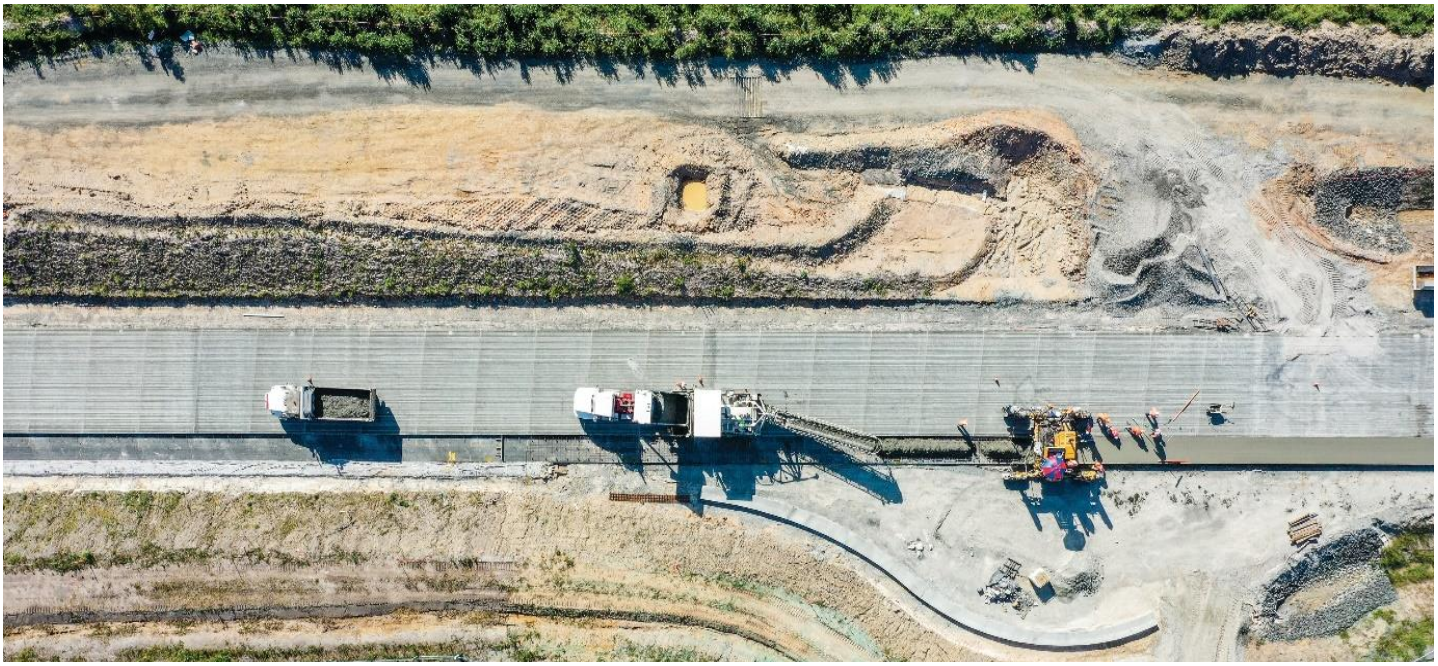
Phase one is focused on consistency and driving significant financial savings for the industry through reducing our supply chain partners reliance on third-party EPD providers.

This will be achieved through the adoption of generic emissions factors for mixes on the CMR. For example, Transport understands that gaining an EPD can cost tens of thousands of dollars, and this process must be undertaken for every mix on our register whenever a mix is updated. While EPDs will continue to have an important role, the current process presents significant financial impacts for our supply chain partners, that will be mitigated with this initial approach.

Phase two will incorporate supplier-specific information, helping broadscale creation and uptake of EPDs across the infrastructure sector. This will be achieved through exploring the development of a Transport-owned EPD tool, which would potentially benefit broader value chain members, local councils and other infrastructure agencies.

Both phases focus on making it easier for our delivery partners to make more transparent procurement decisions to reduce emissions.

Phase One: Oct - Nov 2024	**Phase Two: early 2025**
Include A1-A3 Global Warming Potential (GWP) for each mix on the CMR. Use generic emissions factors based on individual mixes constituents.	Explore the development of a Transport managed EPD tool with industry partners in 2025



Engaging with industry

On the 5th September 2024 we held an online consultation process as part of phase one on proposed changes to our CMR.

The proposal was to include A1-A3 Global Warming Potential (GWP) ($kgCO2e/m^3$) for each mix on the CMR using generic emissions factors. This would be achieved by automating carbon assessment as part of the current concrete mix submission process. The use of generic emissions factors is already commonplace through tools such as the 'Transport for NSW Carbon Tool' and the 'Sydney Metro Carbon Tool'.

A1–A3 (product stage) cover the extraction, transportation and manufacturing processes necessary to produce any construction products, including components and mechanical, electrical and plumbing (MEP), required to construct the asset.

The detailed proposal

The embodied carbon values will not be supplier specific. Proposal is to apply generic embodied carbon data to the constituents, to get estimated A1-A3 GWP ($kgCO2e/m^3$) for that concrete mixture.
Preference for datasets such as AusLCI, AusLCI shadow database and then Integrated Carbon Metrics (ICM UNSW) database. (A preference for Australia-specific data has been enacted. Admixture embodied carbon factors from Inventory of Carbon and Energy (ICE) database or EPDs).
Transport assumptions (of constituent parts to point of concrete production) will be consistent for all stated regions and mixes. NSW specific transport distances will be used for Cements and Aggregates.
Embodied carbon factors for general purpose cement (GP) and shrinkage limited cement (SL) will be considered the same.
Embodied carbon factors for concrete batching process energy will be referenced to an AusLCI factor and will not account for local condition variables.

Covers only modules A1-3 (cradle to gate). A4 transport to site has not been included, nor has any impacts at A5, B or C (end of life), but these will be addressed as part of the Transport for NSW Engineering Cost & Carbon Library.
These proposed changes are aimed at streamlining and automating carbon assessment as part of the standard mix approval process, driving consistency and reducing financial costs for our supply chain partners.

Phase one consultation

A key element of the SIP is genuine consultation and co-creation with industry. To ensure industry's views were incorporated, a two-stage consultation process was undertaken.

Firstly, the peak industry body Cement Concrete and Aggregates Australia (CCAA) was briefed on the proposed changes and their initial feedback was sought. The CCAA were supportive of the initiative and the intent of the proposed changes.

The second stage involved a targeted consultation with the broader supply chain. All organisations who have a mix on the CMR were invited to attend an online briefing and provide feedback on the proposed changes.

Eleven organisations registered to take part in the consultation. Following the briefing, participants were invited to a secure data room where they were able to review the presentation, supporting materials and provide their feedback through an online form. Participants had two weeks to submit their feedback.

Three submissions were received and Transport's response to the feedback is summarised in table one. Feedback received through the processes indicates industry support for the proposed changes.

Supply chain partners who took part in the consultation

Boral	Cement Australia	Daracon, Greytech Services
Hanson Australia	Holcim Australia	Humes
Hunter Readymixed Concrete	Mawsons	Redicrete
Reinforced Earth	Sunstate Cement	

Consultation questions

- **What level would you say your organisation is at in terms of carbon assessment for your concrete mixes?**
- **What are the main barriers your organisation faces with assessing A1 to A3 Global Warming Potential (GWP)?**
- **Is the cost of Environmental Product Declarations (EPDs) one of the primary factors in not producing EPDs for your concrete mixes?**
    - Outline any other factors.
- **Do you support TfNSW Phase 1 approach of applying 'generic emissions factors' to assess carbon for the Concrete Mix Register, such has been done with the Carbon Estimation Reporting Tool (CERT) or Sydney Metro Carbon Tool (SMCT) for the past 5 to 10 years?**

- **Do you think Phase 1 will drive efficiencies for your organisation by having the carbon assessed automatically as part of the existing mix submission processes?**
    - Outline any barriers and opportunities with this approach.
- **Do you support using the 'generic emission factors' proposed as part of Phase 1?**

  There is a preference for datasets such as AusLCI, AusLCI shadow database and then ICM (UNSW) database. A preference for Australia-specific data has been enacted. Admixture embodied carbon factors from ICE database or EPDs.
    - Any other comments?
- **How should Transport for NSW approach Phase 2?**

  Transport for NSW is proposing to develop a more long-term approach with industry partners in 2025 as part of Phase 2, this could involve developing an EPD tool or similar.
    - Be specific in feedback as this will form input to our overall approach, also how we begin engagement in 2025.
- **Any other comments or general feedback?**

Feedback and action summary

The following outlines the key Industry feedback received during the consultation process and Transport's response.

1. Support for proposal

Overall support for phase one utilising generic emissions factors applied consistently across the CMR.

We will: Implement the phase one proposal with consideration of other suggested improvements by industry as outlined in this section.

2. Precast and ready-mix clarity

Further clarity needed on precast and ready-mix GWP values, as well as further definition required on precast batched on-site processes, and broader precast production processes.

We will: Include further clarity on precast elements and activities linked to standards and specifications as part of the Engineering Cost & Carbon Library.

We will continue to explore this further as part of phase two.

3. Cost and time associated with EPDs

EPDs can be both financially restrictive and take considerable time to complete, negatively impacting productivity. Industry also outlined concerns that EPDs can be interpreted differently, and potentially introduce inequality into the market.

We will: Investigate this as part of phase two and co-create potential solutions with our industry partners that will increase transparency and robustness of EPDs.

4. Data set preferences

Preference is for AusLCI datasets, with ICM and ICE used only where needed.

We will: Adopt a preference for AusLCI datasets first, then ICM and ICE where needed.

5. AusLCI factor value

Issue with AusLCI concrete production factor value.

We will: Amended accordingly with value updated in the Engineering, Cost & Carbon Library.

6. Phase two support

Strong support for the development of an EPD tool provided this is developed with industry

We will: Accelerate phase two development of an EPD tool with engagement starting in early 2025.

What's next?

We will implement the proposed changes to the CMR and action feedback received in the Feedback and action summary.

The CMR was updated to include GWP for mixes on 27/10/2024 and was officially launched at the CCAA's Council Dinner on 07/11/2024. Industry are now able to more easily identify and review the impact of the concrete mixes used on projects.

There was also strong support from industry on Transport exploring the development of an EPD tool as part of phase two. The SIP team will incorporate early feedback on phase two and will consult with industry on next steps in 2025.

Thank you

Transport is committed to continuous improvement and making it easier for industry to work with us to deliver our project pipeline. We would like to thank you, our industry partners, for taking time to provide feedback on the proposed changes to the CMR.

For more information and to join the conversation around the SIP, please visit the Transport Infrastructure Industry Portal.