# M1 Pacific Motorway Extension to Raymond Terrace - Stage 1 – Black Hill to Tomago

## Annual Sustainability Review Report 24-25

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Revision Number: 0

Issue Date: 12/12/2025

# Revisions

## Revisions

Draft issues of this document are identified as Revision A, B, C, etc. Upon initial issue (generally Contract Award) this will be changed to a sequential number commencing at Revision 0. Revision numbers will continue at Revision 1, 2, etc.

| Rev | Date | Prepared By | Reviewed By | Approved By | Remarks |
|---|---|---|---|---|---|
| A | 6/11/2025 | CM | BW | KL | Initial draft of annual review report (Nov 24 to Nov-25) |
| 0 | 12/12/2025 | BW | KL | KL | Minor updates in response to comments.<br>Approved for distribution & publication. |
| 1 | | | | | |
| 2 | | | | | |

| | |
|---|---|
| Client's Representative | [redacted] |
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| People Lead | [redacted] |

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## Terms and Abbreviations

| Term/Abbreviation | Definition/Expanded text |
|---|---|
| BH2T | Black Hill to Tomago, or the Project |
| BSR | Baseline Sustainability Requirements |
| CEMP | Construction Environmental Management Plan |
| CERT | Carbon Estimate Reporting Tool |
| CMP | Communications Management Plan |
| CoA | Conditions of Approval |
| CSSI | Critical State Significant Infrastructure |
| D&C | Design and Construct |
| DJV | Design Joint Venture |
| E&S | Environment and Sustainability |
| EIS | Environmental Impact Statement |
| ENM | Excavated Natural Material |
| EPD | Environmental Product Declaration |
| FMC | Forest Management Certification |
| GHG | Greenhouse Gas |
| IECA | International Erosion Control Association |
| IS | Infrastructure Sustainability |
| ISC | Infrastructure Sustainability Council |
| ISP | Independent Sustainability Professional |
| ITT | Invitation to tender |
| HDPE | High-density polyethylene |
| JHG | John Holland Group |
| JHGA JV | John Holland Gamuda Australia Joint Venture |
| LED | Light-emitting diode |
| LGAs | Local Government Areas |
| M12RT | M1 Pacific Motorway Extension to Raymond Terrace |
| NGER | National Greenhouse and Energy Reporting |
| PPW | Project Pack Web |
| PTD | Progress to date |
| PVC | Polyvinyl chloride |
| RAP | Reclaimed Asphalt Pavement |
| SCM | Supplementary Cementitious Material |
| SLT | Senior leadership team |
| SWTC | Scope of Works and Technical Criteria |
| Transport | Transport for New South Wales, or Transport |
| UZF | Upper Zone of Formation |
| VENM | Virgin Excavated Material |
| WELs | Water Efficiency Labelling and Standards |

## Executive Summary

The annual construction phase sustainability review was carried out on the 5th of November 2025. This is an internal review completed by the senior sustainability advisor, with findings and recommendations then reviewed by the Environment and Sustainability Lead. This marks the second annual review of the construction phase, in addition to routine audits.

The scope of this review included:

- Previous annual review findings
- Overall compliance health check
- Performance against Baseline Sustainability Requirements and Contractor Nominated Targets
- Implementation of the Sustainability Management Plan (construction focus):
    - Part A: Management Systems
    - Part B: Leadership Collaboration and Support
    - Part C: Risk and Opportunity Assessment
    - Part D: Sustainable Procurement
    - Part E: Integrating Sustainability in Construction
- Infrastructure Sustainability Council IS Rating v1.2:
    - Status of interim ratings
    - Opportunities and deficiencies

A count of the findings and recommendations for each review aspect is provided in Table 1.

*Table 1 Summary of review findings and recommendations*

| Review Focus Area | Count of Recommendations |
|---|---|
| 1. Previous annual review findings | 1 |
| 2. Overall compliance health check | 3 |
| 3. Baseline Sustainability Requirements and Contractor Nominated Targets | 0 (captured under Focus Area 2) |
| 4. Implementation of the Sustainability Management Plan during construction:<br>a) Part A: Management Systems<br>b) Part B: Leadership and Collaboration<br>c) Part C: Risk and Opportunity Assessment<br>d) Part D: Sustainable Procurement<br>e) Part E: Integrating Sustainability During Construction | 3 |
| 5. Infrastructure Sustainability Council IS Rating v1.2: | 4 |
| **Total recommendations** | **11** |

# 1. Introduction

## 1.1. Background

Transport for New South Wales (Transport) has gained approval to extend the M1 Pacific Motorway from Black Hill to the Pacific Highway at Raymond Terrace (M12RT), about 15 kilometres, bypassing Beresfield, Hexham, and Heatherbrae. M12RT traverses the City of Newcastle and Port Stephens Council local government areas (LGAs). The suburbs of Beresfield, Tarro, Heatherbrae, and Raymond Terrace are located to the north, with Black Hill, Hexham and Tomago located to the south. M12RT will provide a critical link in the National Land Transport Network, particularly for the coastal Sydney to Brisbane corridor. M12RT will be delivered as follows:

- Stage 1 - Construction - Southern Package (BH2T), delivered by the John Holland Gamuda Australia Joint Venture (JHGA JV)
- Stage 2 - Construction - Northern Package (Heatherbrae Bypass), delivered by Seymour Whyte.

The John Holland Gamuda Joint Venture (JHGA JV) has been appointed by Transport for the Design and Construct (D&C) contract for BH2T, which involves the design and construction of 10 kilometres of new dual carriageway motorway with two lanes in each direction, with interchanges at Black Hill, Tarro, and Tomago.

## 1.2. Purpose of this Report

This Report has been prepared in accordance with SWTC clause 51.5 (i) to present findings of the annual sustainability manager's review. This report provides an opportunity to detail the Project achievements between November 2024 and November 2025 and to highlight risk areas requiring attention. This report will be distributed to key stakeholders and made available on the Project website to facilitate community review.

## 1.3. Requirements

This review presents progress to date (PTD) and outlines performance for the period November 2024 and November 2025. The annual review tracks the Project's performance against key requirements, as well as items outlined in SWTC 51.5 (i), as presented in Table 2.

*Table 2 Review Requirements*

| SWTC Reference – 51.5 (i) | Requirement | Report Reference |
|---|---|---|
| ii | the sustainability review must address the following as a minimum: | |
| A | assess and report on progress against the Sustainability Management Plan | Section 3.3 |
| B | provide a provisional update to the interim IS Ratings submitted under sections 51.5(d)(i) and 51.5(e)(i) | Section 3.5 |
| C | identify opportunities or deficiencies to be addressed to meet the IS Rating requirement nominated in sections 51.5(f) and 51.5(g) | Section 3.5.2 |
| iii | the Sustainability Manager's report must be submitted to the Principal's Representative within 10 business days of the completion of the sustainability review. As a minimum, the Sustainability Manager's report must address and document the requirements as detailed in section 51.5 h)(i). | Review completed 11-12 November 2024. |

It is noted that the Project adopted an establishment period for the 6-months following contract award (December 2022). The purpose of this period is to allow for development of management plans, systems and procedures specific to the JHGA JV and Project scope of works. Construction commenced in November 2023, following approval of the Construction Environmental Management Plan (CEMP) and associated Sub-plans.

## 2. Sustainability Performance Review Scope

The JHGA senior sustainability advisor completed a review of sustainability performance on 5th November 2025. The scope of this review is presented in Table 3.

*Table 3 Sustainability Performance Review Scope*

| No. | Review Focus Area |
|---|---|
| 1 | Status of previous annual review findings |
| 2 | Overall compliance health check, including:<br>• Minister's Conditions of Approval<br>• Revised Environmental Mitigation Measures (REMM)<br>• SWTC Main Body<br>• SWTC Appendix 4 – Additional Environmental Requirements<br>• SWTC Appendix 24<br>• SWTC Appendix 51 |
| 3 | Performance against key Baseline Sustainability Requirements and Contractor Nominated Targets |
| 4 | Implementation of the Sustainability Management Plan during construction:<br>• Part A: Management Systems<br>• Part B: Leadership and Collaboration<br>• Part C: Risk and Opportunity Assessment<br>• Part D: Sustainable Procurement<br>• Part E: Integrating Sustainability During Construction |
| 5 | Infrastructure Sustainability Council IS Rating v1.2:<br>• Overall rating performance to date<br>• Opportunities and deficiencies |

# 3. Review Findings

A complete list of review findings and recommendations is included in Appendix B. Brief summaries of each review topic, performance highlights and resulting recommendations are outlined in the following sections.

## 3.1. Focus Area 1 - Previous Annual Review

The previous annual construction phase sustainability review was carried out across a two-day period, 11-12 November 2024. All findings and recommendations from this review (24) have since been implemented except for one which remains in progress. A full list of previous actions and close out comments confirming implementation is provided in Appendix A. The remaining action is outlined in Table 4 and will be carried over to the findings and recommendations for this review period.

*Table 4 Remaining actions from previous annual review*

| Category | Recommendation | Status | Close out comments |
|---|---|---|---|
| Sustainability General Requirements | Ensure sustainability is embedded in the Maintenance Plan required in accordance with SWTC Appendix 21.7. | In progress | A draft Maintenance Plan is in development and relevant sustainability inclusions have been communicated to the document writer. The sustainability advisor will undertake a review of the draft plan once prepared. |

## 3.2. Focus Area 2 - Compliance Health Check

An overview of performance against sustainability requirements is presented in Figure 1. Overall, the Project is performing well with 89% of the sustainability requirements, objectives and targets having already been achieved (Compliant) or well underway with a high confidence of achievement (On Track).

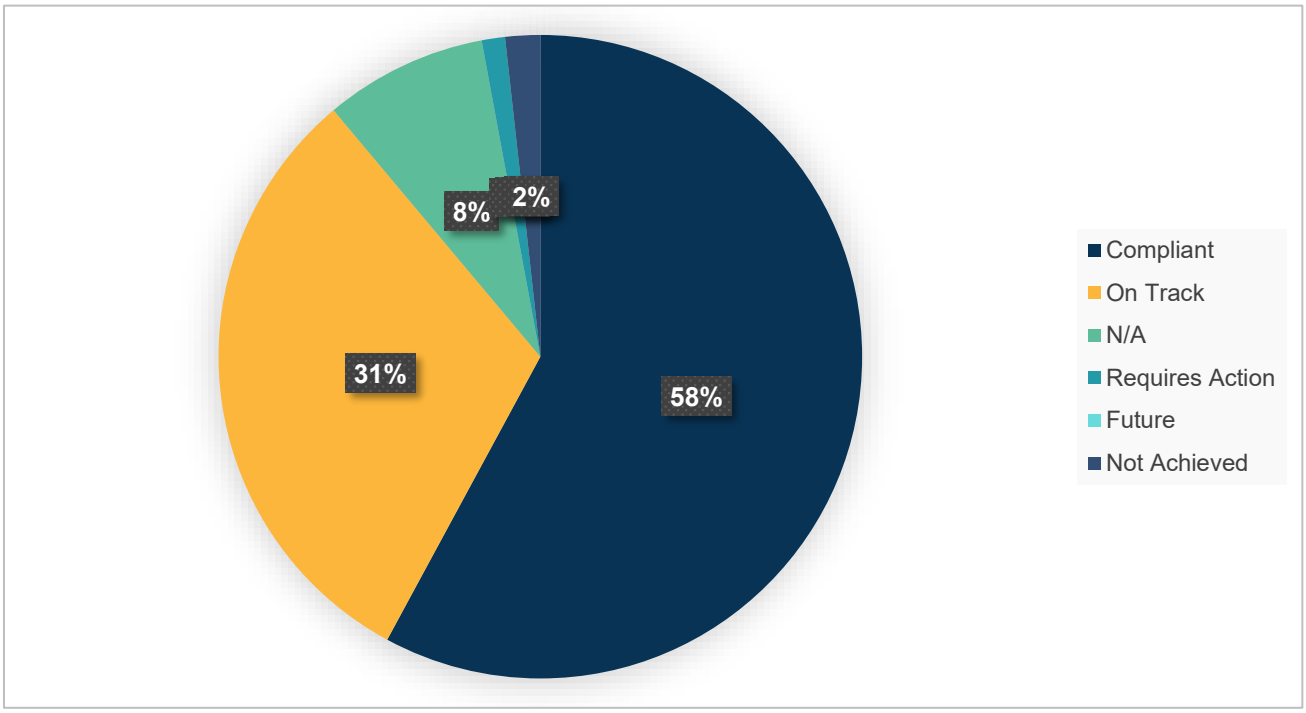



*Figure 1 Compliance Health Check Results*

JHGA did not achieve the timing specified by three (3) requirements, however, the associated deliverables have since been completed or are progressing well. These requirements are marked as 'Not Achieved' and are outlined in Table 5.

*Table 5 Sustainability requirements that were not achieved*

| Source | Classification | Reference | Description | Compliance Approach or Deliverable |
|---|---|---|---|---|
| SWTC Appendix 4 - Additional Environmental Requirements | Sustainability Workshop | 4.4.4 (a) | Early in the development of the Design Documentation and no later than 4 weeks after the date of the deed, a sustainability workshop must be held by the Contractor to develop sustainability goals, strategies, targets, initiatives and share knowledge. | The Sustainability Workshop was completed in April 2023 and was delayed due to resourcing constraints. |
| SWTC Appendix 51 | Infrastructure Sustainability Rating | 51.5 (d) | Within three months of the commencement of any design under the deed, the Contractor must complete and submit via the Project Data and Collaboration System (PDCS) to the Principal's Representative the following:<br>(i) using the IS Rating tool, calculation of an updated IS Design Rating score for the design of the Project Works and Temporary Works;<br>(ii) identification of the key steps required to achieve each IS Credit and IS Credit Level; and<br>(iii) nominated responsibility for the achievement of each IS Credit. | Timing requirement not met<br><br>Infrastructure Sustainability (IS) Rating Management Plan: M1RTBH2T-JHGM-6003-SB-PLN-000001<br>This plan was submitted and approved in June 2023. Detailed design commenced in February 2023. |

| Source | Classification | Reference | Description | Compliance Approach or Deliverable |
|---|---|---|---|---|
| SWTC Appendix 51 | Infrastructure Sustainability Rating | 51.5 (f) | The Contractor must achieve an IS Design Rating score for the design of the Project Works and Temporary Works within six months of the last Substantial Detailed Design Stage Design Documentation submission. The IS Design Rating score must be independently verified in accordance with the IS Rating process described in the IS Rating scheme, which is administered by the ISC. The IS Design Rating score must meet or exceed the target identified in the Planning Approval. | The last SDD package for permanent works was FN-02 which was submitted on 24 October 2023. Despite taking all reasonable measures to achieve this timeframe, JHGA submitted round 1 of the IS Design Rating on 17 July 2024. Design Round Two was submitted in Q2 2025, allowing sufficient time to obtain further evidence, respond to feedback and prepare a quality submission. The Project's IS Design Rating received a 'Leading' rating of 83.7 which was officially certified in August 2025.<br><br>It is noted that a timeframe extension was approved by DPHI 27 September 2024. Alternate timeframe is as follows:<br>'within one month of ISC issuing certification of the 'Design' rating'. |

During the review, two requirements were identified as requiring action to improve performance. These findings and recommendations are detailed in Table 6. All actions are to be complete within a timely manner.

*Table 6 Compliance Health Check Recommendations*

| Category | Recommendation |
|---|---|
| Materials and Waste | Review the Project's office waste management processes and implement changes to minimise contamination in consultation with the waste subcontractor and the Project's cleaning staff. |
| Water | Drive the prioritisation of non-potable water sources for construction activities through communication with key construction personnel. |
| Water | Investigate opportunities to digitise non-potable water usage records e.g., Synchro |

## 3.3. Focus Area 3 – Sustainability Requirements and Targets

The Project regularly reports on performance against baseline sustainability requirements and contractor nominated targets as part of monthly Client reporting. Performance highlights across key sustainability target areas are illustrated in Figure 2.

Currently, only one target requires action and is consistent with the findings and recommendations identified in the compliance health check (Focus Area 2). The Project is not currently meeting BSR No. 22 (a):

'*Reduce the use of potable water during construction: 20% of water must be sourced from non-potable water sources during construction*'.

Non-potable usage makes up 17.09% of total water usage to date. Strategies to improve performance in this area have been identified and captured as actions under Focus Area 2 of this review (refer to Table 6).

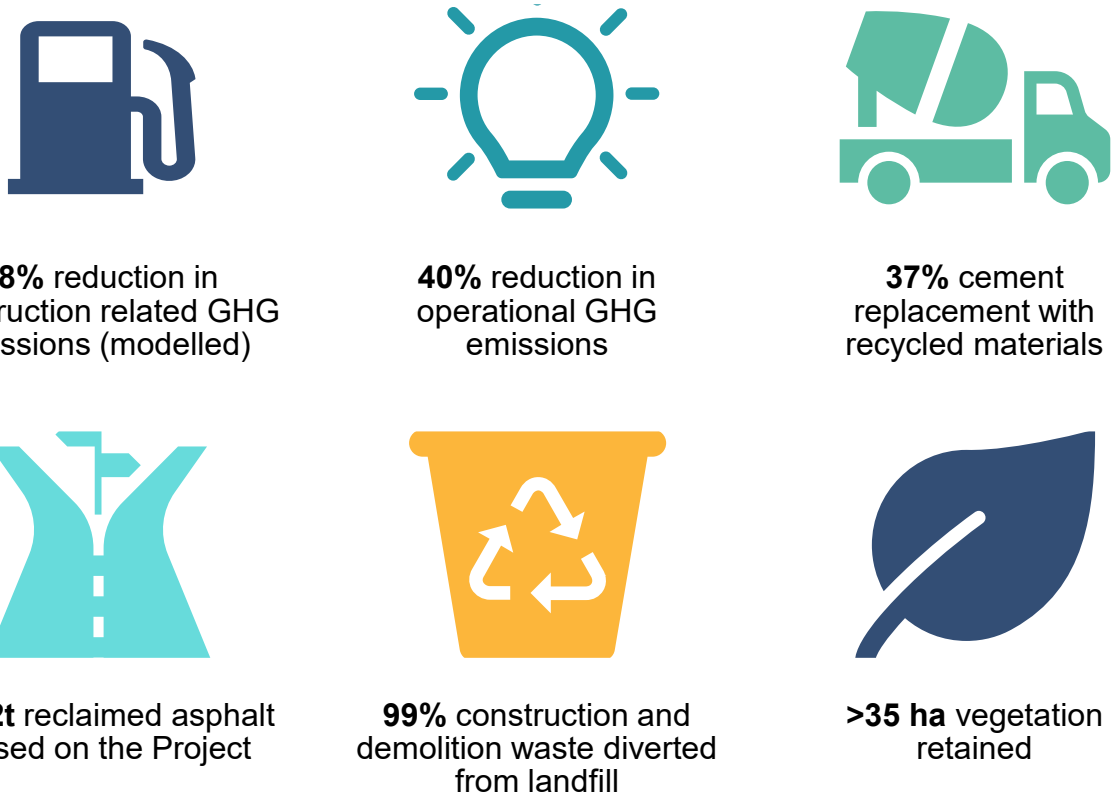



*Figure 2 Project Performance Highlights - Requirements and Targets*

### 3.4. Focus Area 4 - Adherence to Sustainability Management Plan

Implementation of the Project's Sustainability Management Plan during construction formed a key component of this review. The main elements of the SuMP are presented in Figure 3. The following sections summarise implementation activities that have been carried out during construction and identify any areas for improvement.


*Figure 3 Flow Chart of SuMP Format*

### 3.4.1. Part A: Management Systems

Part A of the Sustainability Management Plan outlines the purpose of the Plan as well as the Project's sustainability requirements and targets. As such, an in-depth review of compliance measures and performance against requirements and targets was completed as part of this review and is outlined in Section 3.2 and Section 3.3. Findings and recommendations resulting from this review are provided in Table 6. No further recommendations were identified relating to management systems.

### 3.4.2. Part B: Leadership Collaboration and Support

#### 3.4.2.1. Roles, responsibilities and decision-making

The Project's SuMP is currently undergoing its sixth revision. No major changes to the processes and strategies outlined in the plan have occurred since the previous revision. A current version of the Project Org Chart has been included to present resource changes to key roles with sustainability responsibilities.

#### 3.4.2.2. Knowledge Sharing

The Project has carried out various knowledge-sharing and training activities during this review period. Key examples include:

- Workshop on ecological enhancement calculation methods presented to environmental staff delivering the Western Harbour Tunnel Project (January 2025)
- Attended Resourceful Living facility in Kurri Kurri to observe plastic recycling processes and opportunity to source products such as formwork (February 2025)
- IS Rating overview workshops facilitated by the Project sustainability team for all staff (July-August 2025)
- Shared cost-benefit-analysis on the use of B5 biodiesel on the Project which indicated a 3.53% saving based on fuel burn efficiencies reported by a major subcontractor (August 2025)
- Newcastle Environment and Sustainability Knowledge Share attended by representatives from Heatherbrae Bypass, Rankin Park to Jesmond, Hexham Straight Widening, Belmont Desalination Plant and Transport for New South Wales (August 2025)

#### 3.4.2.3. Reporting

All sustainability reporting is being carried out in accordance with the requirements and methods outlined in the SuMP. John Holland have recently updated reporting procedures to align with changes to the Corporations Act which now require companies to publicly disclose their climate-related risks and opportunities. These changes affect the quantity and frequency of reporting using the system Project Pack Web.

Recommendations relating to Part B of the SuMP are outlined in Table 7.

*Table 7 Recommendations relating to Part B of the SuMP*

| Category | Recommendation |
|---|---|
| Reporting | Refine data capture and reporting mechanisms to improve efficiency of monthly reporting now required by John Holland. |

### 3.4.3. Part C: Risk and Opportunity Assessment

#### 3.4.3.1. Risk Management

Sustainability risks and opportunities have been identified and are reviewed regularly in line with the Project's risk management processes. Sustainability risks and opportunities (including climate change) are captured in the following documents:

- Overall Project Risk and Opportunity Register
- Sustainability Initiatives Register
- Workplace Risk Assessment Register, including through reviews of Activity Method Statements
- Climate Change Risk Assessment Report and Register

#### 3.4.3.2. Audits, inspections and reviews

The Project's sustainability performance has been regularly reviewed and audited in the line with the E&S Audit Schedule. During construction, this includes:

- 6-monthly external audits completed by the John Holland National Sustainability Lead
- 6-monthly internal audit completed by the JHGA Quality Lead

All findings and associated actions from these audits have been closed within the required timeframes. This is recorded using Soteria and action reports are distributed by the John Holland HSEQ Data Analyst weekly.

The sustainability team meet on a weekly basis to review key items and set clear goals for the following week. Environment and sustainability inspections are also completed weekly and are recorded in Soteria. To date, 132% of scheduled weekly inspections have been completed, as illustrated in Figure 4.

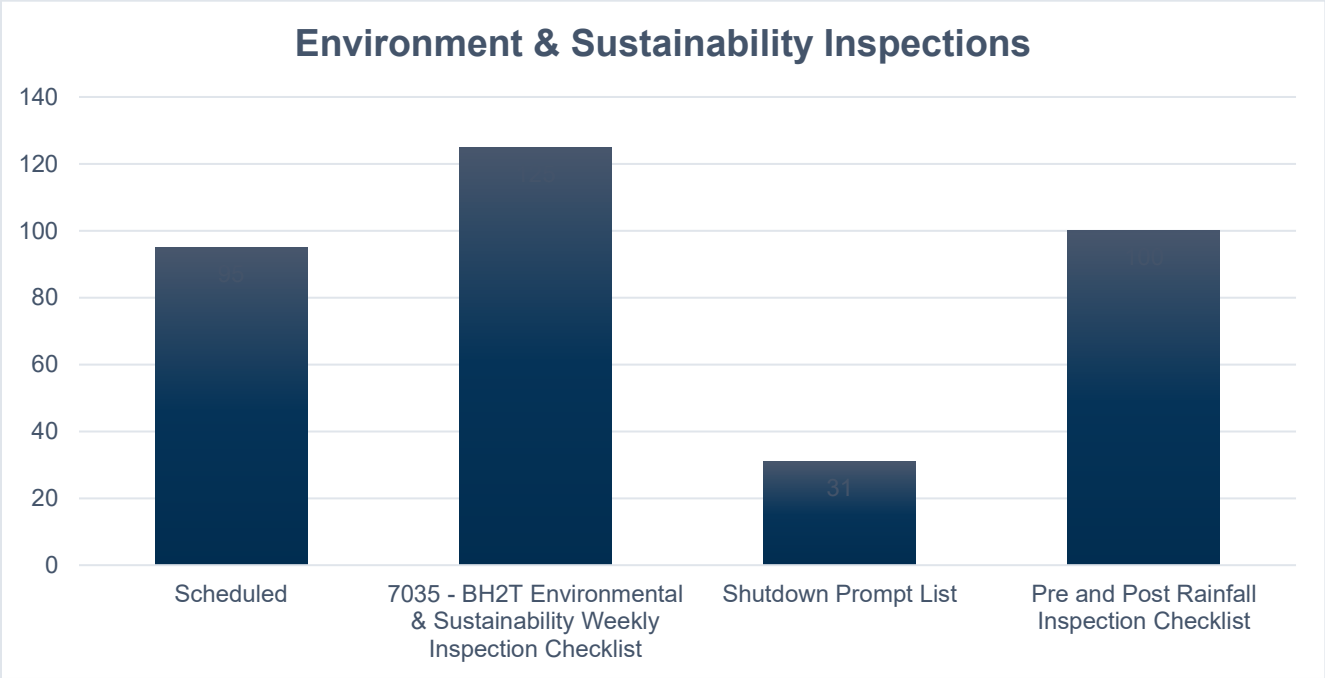



*Figure 4 Environment and Sustainability Inspections*

Recommendations relating to Part C of the SuMP are outlined in Table 8.

*Table 8 Recommendations relating to Part C of the SuMP*

| Category | Recommendation |
|---|---|
| Audits, inspections and reviews | Schedule 2026 audits to minimise risk of resource demobilisation impacting timing of completion. |

### 3.4.4. Part D: Sustainable Procurement

Procurement activities during this period have been minimal and there has been no change to implementation activities outlined in the previous review report. Certified material suppliers have continued to be exclusively used, with 22.5% of materials (by cost), coming with an additional Environmental Product Declaration (EPD) certificate.

There has been an increased focus on subcontractor management to ensure sustainability performance requirements are met. JHGA have introduced a Subcontractor Reward Program. This program aims to encourage, identify and reward subcontractors that 'go above and beyond' sustainability criteria stipulated within their contract. The subcontractor sustainability reward program is part of the 'Principles Award Program' under the We Care category which states: "*We work together to create win-win outcomes, including with our subcontractors*". The subcontractor performance monitoring process is illustrated in Figure 5.

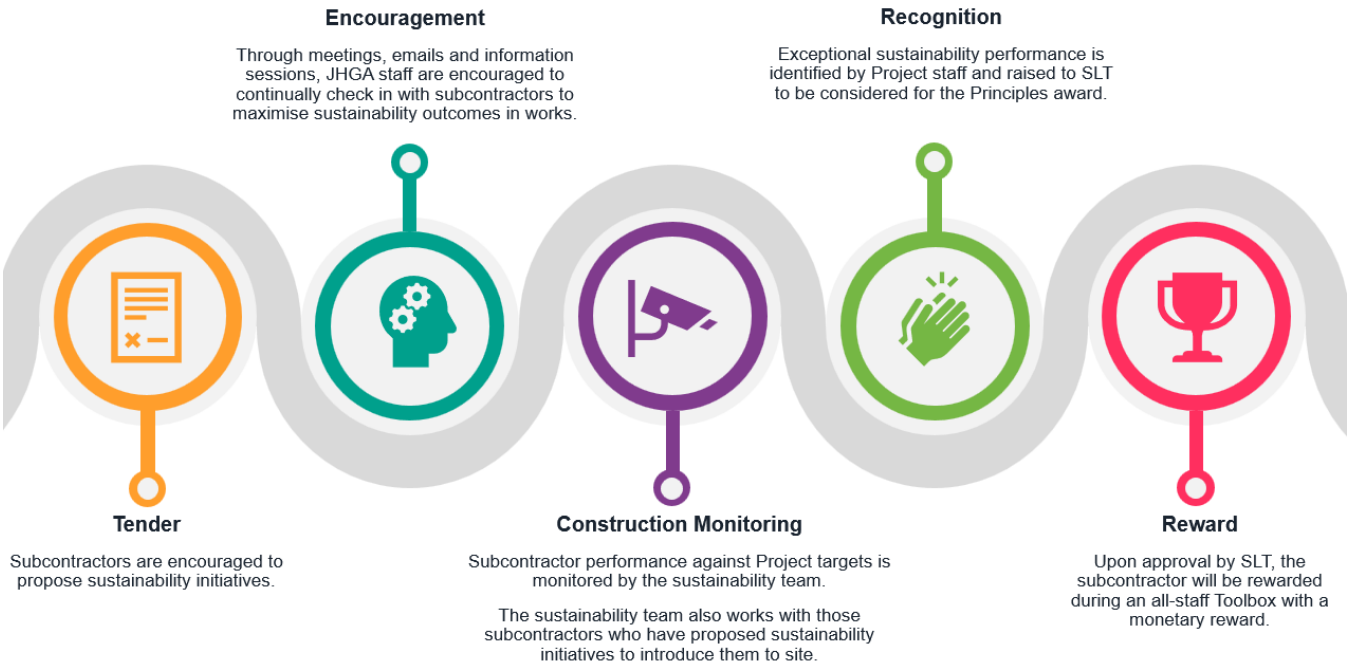



*Figure 5 Subcontractor Sustainable Performance Monitoring Process*

Two subcontractors have been awarded to date, including:

- B&K Revegetation and Landscaping; and
- Vital Chemical

#### 3.4.4.1. Subcontractor Award – B&K Revegetation and Landscaping

B&K Revegetation and Landscaping communicated the opportunity to use a biochar additive in the hydromulch blend. Key benefits of biochar include amelioration, improved soil health and carbon sequestration. Photos featuring the Project's landscaping activities and hydromulch growth are presented in Figure 6, Figure 7 and Figure 8.

*Figure 6 Initial hydromulch growth in cut 5 (Nov-24)*

*Figure 7 Hydromulch growth at bridge-6 (Nov-24)*

*Figure 8 Landscaping at Black Hill interchange (Aug-25)*

#### 3.4.4.2. Subcontractor Award – Vital Chemical

Vital Chemical maintain a strong reputation as innovators, continuously liaising with the infrastructure market to identify opportunities and develop new products to meet desired needs. Vital Chemical supplied the biochar product recommended by B&K Landscaping and Revegetation and have also collaborated with the Project on a trial of a biodegradable starch-based netting that can be used as an alternative to jute mesh in batter and drainage stabilisation.

*Figure 9 Vital Eco-nett Trial Application*

No findings or recommendations relating to Part D of the SuMP were identified during the review.

### 3.4.5. Part E: Integrating Sustainability in Construction

#### 3.4.5.1. Resource Impact and Efficiency

Resource impact in construction is monitored as part of the Project's Baseline Sustainability Requirements. The Project's most intensive GHG emission activities include fuel burn associated with bulk earthworks, vegetation clearing and material import. The proportion of cumulative GHG emissions across Scope 1, 2 and 3 is illustrated in Figure 10.

The Project is not connected to the NSW energy grid, therefore, no electricity has been consumed during construction. A hybrid power system consisting of a 100kW battery energy storage system support by a 99kW solar panel was implemented at the main ancillary facility in December 2024. This system has produced 49% of the consumed electricity from solar.

Cumulative water use consumption by source is shown in Figure 11. As identified in Focus Area 2, the Project is not currently meeting this target and improvement measures have been identified. The Project has used 7,300 kilolitres of fuel in construction activities, more than 60% of which has been B5 biodiesel. Resource efficiency and initiatives are detailed in Section 3.4.5.2.

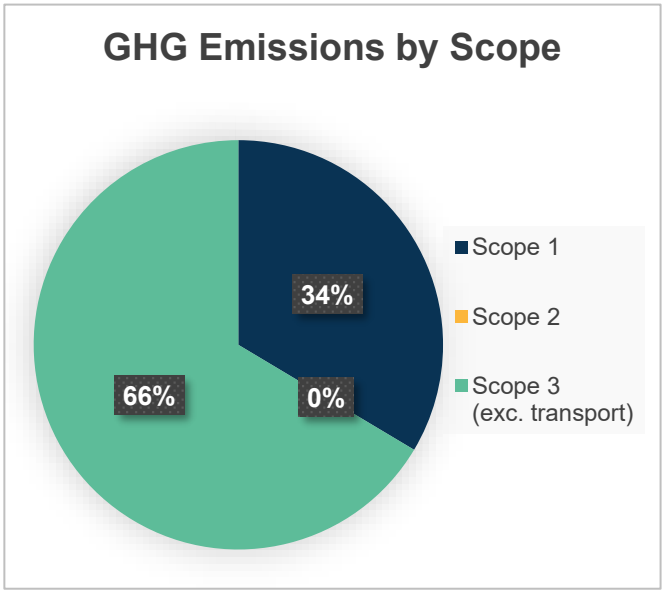



*Figure 10 Construction GHG Emissions*

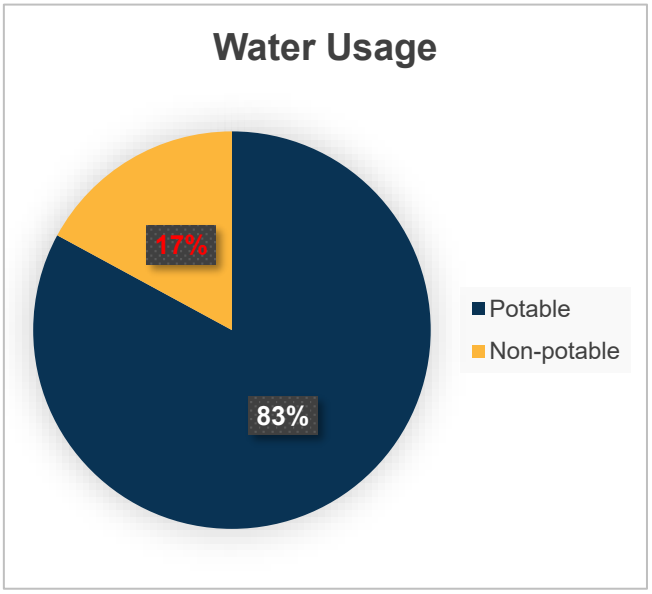
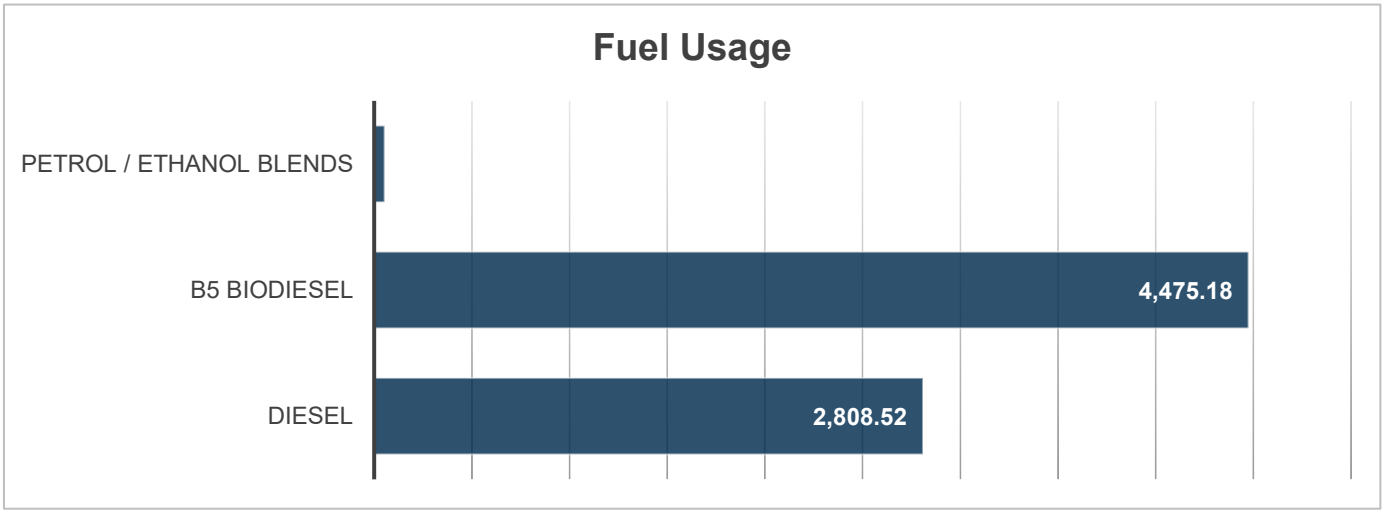



*Figure 11 Water use by source*




### 3.4.5.2. Construction phase sustainability initiatives

A variety of sustainability initiatives have been investigated and implemented during the construction phase. JHGA maintain a Sustainability Initiatives register to monitor the investigation and implementation of initiatives. A full copy of the register is provided in Appendix C. Key sustainability initiatives that have been implemented during the period covered by this review are presented in Figure 12.

### Transmutation Bar chairs

- Used to support reinforcing bar / mesh in concrete pavements
- 100% manufactured from plastic waste
- 52.2% fewer carbon emissions
- It is estimated the Project will divert 58,370kg of plastic from landfill

### Vital Eco-nett

- Biodegradable product formulated from constituents derived from renewable content, including corn starch.
- Alternative to jute mesh for use in erosion control, soil stabilisation, revegetation and drainage reinforcement
- Trial commenced and in June 2025 and performance reviews are ongoing

### STEM School Engagement Program

- The Project has hosted a number of local primary and high school students to participate in STEM education days
- Environment and sustainability activities included making native seed bombs, contributing to, water quality testing and treatment and building glider nest boxes

### Micro-tunnel Construction Methdology

- The Project altered the methdology to install a drainage line under the existing Pacific Highway, avoiding signficant temporary works
- This method reduces fuel consumption by ~60 kilolitres, reducing GHG emissions by 70%

### LIVEfree Project

- LIVEfree Project is a non-profit organisation based in Newcastle, dedicated to supporting individuals who have experienced hardship and trauma, particularly victims of domestic and family violence.
- The Project has supported the LIVEfree Project in 2025 by providing regular dontations raised through site activities such as awards barbeques and end of year raffles

*Figure 12 Construction phase sustainability initiatives (Nov-24 to Nov-25)*

#### 3.4.5.3. Climate Change

JHGA undertook a Climate Risk Assessment for the construction and operational stages of the Project. This built upon an initial assessment carried out as part of the EIS and was workshopped with key internal and external stakeholders. The climate risk assessment identified risks associated with flooding and increased temperatures and the effect that these risks would have on material tolerances. Following the identification and implementation of risk treatments, no residual risks were identified as 'high' and seven were identified as 'medium' associated with increases in flooding, high temperatures and bushfires under climate conditions. Design controls have sought to minimise these impacts. Risk ratings prior to and post risk treatment are summarised in Table 9.

*Table 9 Summary of climate change risk rating prior to and post risk treatment*

| Prior to risk treatment | Post risk treatment | Risk level reduction |
|---|---|---|
| 5 'high' risks | All lowered to 5 'medium' risks | 100% of the original 'high' risks have been lowered to 'medium' risks |
| 5 'medium' risks | 3 lowered to 'low' risks, 2 remained as medium risk | 60% of the original 'medium' risks have been lowered to 'low' risks |
| 9 'low' risks | 2 lowered to 'negligible' risk, 7 remained as 'low' risks | 22% of the original 'low' risks have been lowered to 'negligible' risk. |

Recommendations relating to Part E of the SuMP are outlined in Table 10.

*Table 10 Recommendations relating to Part E of the SuMP*

| Category | Recommendation |
|---|---|
| Climate Change | Considering the intention to utilise Transport's EMS during operations as opposed to developing an Operational Environmental Management Plan, it is recommended that a review of operational risk treatment measures is undertaken to ensure these remain consistent with Transport's EMS. |

## 3.5. IS Design Rating

### 3.5.1. Status of IS Design Rating

The Project achieved a 'Leading' Design Rating which was officially certified in August 2025, marking a significant milestone for the Project and exceeding the targeted 'excellent' benchmark.

Key achievements in the project's sustainability performance for the design phase include:

- Use of innovative solar-powered safety bollards, reducing reliance on fuel-based lighting – an Australian-first technology under the rating scheme
- Significant reduction in high-carbon materials including concrete and steel achieved through optimisation of the drainage infrastructure - adopting vegetated swales as opposed to concrete-lined channels and basins
- Prioritised vegetation retention in the design and development of construction methodologies, saving over 35 ha of native vegetation
- Use of concrete mixes containing high proportions of supplementary cementitious material
- On-site native revegetation, landscaping and biodiversity offsets to enhance ecological value
- Refined land-based pile design of the viaduct, reducing quantities of high emitter materials

The team are now in the process of reviewing feedback and collaborating with project personnel to prepare the As-Built Rating. It is anticipated that the first-round submission will occur in the second quarter of 2026.

*Figure 13 Solar bollards on site*

### 3.5.2. Opportunities and deficiencies

The IS Design feedback identified key areas requiring improvement for the As-Built submission.

It is noted that deficiencies identified are typically the result of lack of supporting documentation or misinterpretation of process descriptions and are not always a reflection of actual performance. Key improvement areas and recommended actions are explained in Table 11. The actions and opportunities for improvement identified in other areas of this review also link to categories assessed under the IS Rating Scheme v1.2. As such, the items highlighted below are not an exhaustive list and represent the material categories based on points.

*Table 11 Key IS Rating Findings and Recommendations for As-Built*

| Category | Summary of Feedback | Action |
|---|---|---|
| Climate change adaptation | Further confirmation that the design considered potential flood impacts under climate change conditions. | 1. Provide details on the flood modelling undertaken by the DJV to demonstrate consideration of climate change and confirm design consistency and/or integration. |
| Climate change adaptation | Additional evidence to demonstrate treatment of extreme, high and medium risks is required. | 2. Obtain relevant red line markup drawings to confirm where risks have been immediately treated as part of the asset design and construction<br>3. Simplify response in submission credit summary form to better convey treatment measures and associated evidence e.g., table format. |
| Innovation | Further substantiation of ‘exceptional’ sustainability benefits required | 4. Identify opportunities to expand implementation of current innovative technologies in use on site |

## Appendix A Previous Review Findings and Recommendations (Nov-23 – Nov-24)

| No. | Review Scope | Category | Recommendation | Status | Close out comments |
|---|---|---|---|---|---|
| 1 | | Sustainability General Requirements | Ensure sustainability is embedded in the Maintenance Plan required in accordance with SWTC Appendix 21.7. | In progress | A draft Maintenance Plan is in development and relevant sustainability inclusions have been communicated to the document writer. The sustainability advisor will undertake a review of the draft plan once prepared. |
| 2 | | Energy and Greenhouse | JHGA to transfer model data to CERT following verification of the IS Design Rating. | Closed | The Project finalised the Carbon and Energy Reporting Tool following certification of the IS Design Rating, confirming a modelled carbon emission reduction of 28% for construction. This was delayed due to initial IT restrictions and was officially transmitted to Transport 5th September 2025. |
| 3 | | Energy and Greenhouse | • Using the Coates case study, complete general awareness training with project personnel to encourage the hire of hybrid power solutions. | Closed | Performance statistics were shared with key construction personnel to encourage the uptake of hybrid power solutions. This system was decommissioned due to diminished performance of the battery and increased operating costs. |
| | | | • Identify opportunities to roll out the Coates system to other suitable ancillary facilities, with consideration to asset life. | Closed | |
| 4 | | Pollution Control | JHGA Sustainability team to complete Q4 review of Chemwatch system to ensure relevant products contain low total organic volatile compounds (TVOC) | Closed | It is noted that buildings do not form part of the scope of the M1 BH2T Project. However, this requirement has been communicated to internal staff as part a pre-construction workshop. It has also been communicated to potential suppliers / subcontractors in the project E&S Schedule which forms part of the standard Invitation to Tender (ITT) documentation.<br><br>Products are monitored using chemwatch and are typically reviewed every quarter. To date, there has been limited use of these types of products. All paints, adhesives and sealants used to date are low TVOC. |
| 5 | | Climate Resilience | Complete a review of current adaptations and update based on feedback received following the IS Design Round One rating. | Closed | Climate change adaptation measures, specifically those identified as having an operational optimal timing and scale, were identified and updated in consultation with Transport. |

| No. | Review Scope | Category | Recommendation | Status | Close out comments |
|---|---|---|---|---|---|
| 6 | | Materials and Waste | Complete review of quarry import and on-site crushing activities to isolate base/subbase materials and confirm sources. | Closed | The Project has undertaken a detailed review of road base (heavily bound base - HBB) and SMZ (subbase) material supply.<br><br>HBB production has commenced in the South with the incorporation of site won gravel and recycled fly ash/GGBFS in the binder. HBB production in Zone 1 and Zone 2 combined has incorporated 15.2% recycled or reused content. Due to delays, the amount of access track material identified for reuse may decline. Future reuse options for the excess material will be investigated closer to completion and handover of areas.<br><br>SMZ has been sourced from tunnel spoil, demolition projects, site won concrete and overburden / defective sandstone blacks. This material has undergone crushing and screening on site to produce conforming SMZ. Currently, SMZ has been sourced from 100% reused materials.<br><br>Overall, 66.45% of base and subbase material has been from recycled or reused sources. |
| 7 | | Materials and Waste | Review supply details for the timber noise walls to ensure compliance with this requirement. | Closed | Noise wall subcontractor provided certification, confirming timber is sustainably sourced and distributed in accordance with the PEFC chain of custody standard. |
| 8 | | Materials and Waste | Sustainability team to engage with construction teams and store person to identify potential opportunities. | Closed | Following discussion with construction team and stores person, no opportunities to initiate a packaging take-back scheme were identified.<br><br>It is noted that material packaging is mostly avoided due to material size, type and prioritisation of bulk orders. The Project does work with the Infrabuild One Steel recycling facility in Hexham to recycle metal scrap for reuse in steel products. |

| No. | Review Scope | Category | Recommendation | Status | Close out comments |
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| 9 | | Community Benefit | Complete review to confirm implementation of measures outlined in the Aboriginal Heritage Management Sub-Plan (M1RTBH2T-JHGM-6003-HE-PLN-000002) | Closed | The Project aligns with the Aboriginal Culture and Heritage Framework by incorporating Indigenous voices into design and early works, managing construction and monitoring construction to ensure there is no damage to Aboriginal heritage values and including artwork that reflects Country.<br><br>Section 2.3.6 of the Design and Landscape Plan outlines the consideration of local heritage and designing with Country, as detailed in the Aboriginal Culture and Heritage Framework. |
| 10 | | Infrastructure Sustainability Rating | JHGA will revise the IS Rating Management Plan and submit to the Principal by 20 December 2024. | Closed | Project prepared and transmitted the As-Built phase IS Rating Management Plan on 8 January 2025. This was informally sent to Transport for initial review 20 December 2024. |
| 11 | SuMP Part B | Competencies | Whilst this is not an immediate action, it is recommended that the team review ISAP accreditations to ensure these are renewed within required timeframes. | Closed | All sustainability personnel have completed the required examination to maintain current ISAP accreditation. |
| 12 | | Knowledge sharing & training | Update sustainability knowledge sharing register to capture training facilitated by the sustainability ream. Currently only included in monthly client progress reports. | Closed | Internal project sustainability training and workshops have been captured in the knowledge share register. |
| 13 | | Reporting | First SLT meeting of each month to include an in-depth sustainability focus to improve awareness. | Closed | The E&S lead has communicated sustainability achievements and road blocks more regularly to improve SLT awareness. Other avenues of reporting to and receiving feedback from project and client senior leaders have been identified and include:<br>- Monthly Project Control Group meetings<br>- Fortnightly check in with Project Director<br>- Bi-monthly Environmental Review Group meetings |

| No. | Review Scope | Category | Recommendation | Status | Close out comments |
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| 14 | | Stakeholder engagement – negotiable issues | Review construction phase collaboration opportunities identified during design and re-assess viability to strengthen carry over of initiatives from design to construction. | Closed | Reviewed in consultation with Community and Stakeholder Engagement Lead and incorporated in most recent stakeholder audit completed October 2025. The resolution of issues regarding the temporary closure of Old Punt Road has been achieved through collaborating with affected stakeholders. This has seen the implementation of a left-turn slip lane onto the Pacific Hwy and construction of a turn-around bay to facilitate safe access to business premises for heavy vehicles during stage two of the temporary closure. |
| 15 | SuMP Part C | Risk & Opportunity | Meet with risk manager on a quarterly frequency to improve consideration of social, environmental and economic risks and opportunities in the financial R&O system. | Closed | Meetings with the risk manager have been carried out as required to capture prominent social, environmental and economic risks. |
| 16 | SuMP Part D | Suppliers / Subcontractor Management | Develop supplier / subcontractor management procedure and roll out a reward and recognition scheme to celebrate positive sustainability performance. This will solidify monitoring process and support the transition from design to as-built rating phase. | Closed | Sustainability performance is rewarded as part of the Project Principles Award Program under the principle 'We Care'. B&K Landscaping and Revegetation and Vital Chemical have been recognised for significant contributions to the Project's sustainability performance. |
| 17 | SuMP Part D | Resource Modelling & Monitoring | Identify construction phase initiatives and work with relevant teams to quantify associated reductions e.g., fuel reductions associated with the use of a borrow pit, minimising extraction from Cut 5. | Closed | The sustainability team facilitated two workshops in Q3 2025 to communicate outcomes of the IS Design Rating and to request support in the identification of construction phase initiatives that could be highlighted in the As-Built phase. Additionally, the sustainability team have closely monitored the change management process to identify post-IFC design changes and construction methodologies likely to result in reduced resource consumption. Two examples include:<br>- The adoption of a micro tunnel construction methodology to partially install drainage line C9480 (reduced fuel); and<br>- Reduced steel strand thickness in girders for bridge-1, bridge-5 (span1-25) and bridge-6. |
| 18 | IS Design Rating | Resource modelling | Prepare a timeline of each initiative to illustrate the baseline vs actual scenario and communicate when key changes or decision occurred. | Closed | Resource models, particularly concerning materials, have been refined to provide a clear outline of timing of initiative identification and implementation. |
| 19 | | Resource modelling | For clearing, prepare a map to illustrate and quantify where impacts have been reduced. Number each separate initiative and link to | Closed | Completed with support from E&S lead, utilities area manager and senior GIS manager. |

| No. | Review Scope | Category | Recommendation | Status | Close out comments |
|---|---|---|---|---|---|
| | | | specific explanations and evidence in a supporting report | | |
| 20 | | Climate change adaptation | Liaise with Transport asset operations representative to understand and obtain standard asset operating standards, manuals and procedures | Closed | Climate change adaptation measures, specifically those identified as having an operational optimal timing and scale, were identified and updated in consultation with Transport. |
| 21 | | Climate change adaptation | Review design documentation to explain specific requirements of standards (i.e., temperature ranges) and obtain maintenance diaries. | Closed | Climate change adaptation measures refined to achieve required level of specificity. |
| 22 | | Climate change adaptation | Revise the adaptations identified in the CCRA Report and Register in response to new evidence. | Closed | Changes to climate change adaptation measures reflected in CCRA report and register. |
| 23 | | Innovation | Work with suppliers to obtain required endorsement letters. In future, this should be prioritised as early as possible. | Closed | Endorsement letters obtained for all innovations submitted as part of the IS Design Rating. This will be prioritised for future innovation submissions should opportunities in the construction (As-Built) phase be identified and implemented. |
| 24 | | Innovation | Continue knowledge sharing and fostering innovation with the Project's supply chain to identify trial opportunities. | Closed | Two new products have been trialled and/or implemented in 2025. These include:<br>- Recycled plastic bar chairs used to support reinforcement in concrete pavements; and<br>- a biodegradable starch-based mesh used as an alternative to jute mesh for batter and drainage line stabilisation. |

## Appendix B Current Annual Review Findings & Recommendations

| No. | Review Scope | Category | Recommendation |
|---|---|---|---|
| 1 | Previous Annual Review Actions | Sustainability General Requirements | Ensure sustainability is embedded in the Maintenance Plan required in accordance with SWTC Appendix 21.7. |
| 2 | Overall Compliance Health Check | Materials and Waste | Review the Project's office waste management processes and implement changes to minimise contamination in consultation with the waste subcontractor and the Project's cleaning staff. |
| 3 | Overall Compliance Health Check | Water | Drive the prioritisation of non-potable water sources for construction activities through communication with key construction personnel. |
| 4 | Overall Compliance Health Check | Water | Investigate opportunities to digitise non-potable water usage records e.g., Synchro |
| 5 | SuMP Part B | Reporting | Refine data capture and reporting mechanisms to improve efficiency of monthly reporting now required by John Holland. |
| 6 | SuMP Part C | Audits, inspections and reviews | Schedule 2026 audits to minimise risk of resource demobilisation impacting timing of completion. |
| 7 | SuMP Part E | Climate Change | Considering the intention to utilise Transport's EMS during operations as opposed to developing an Operational Environmental Management Plan, it Is recommended that a review operational risk treatment measures be undertaken to ensure these remain consistent with Transport's EMS. |
| 8 | IS Rating | Climate change adaptation | Provide details on the flood modelling undertaken by the DJV to demonstrate consideration of climate change and confirm design consistency and/or integration. |
| 9 | | Climate change adaptation | Obtain relevant red line markup drawings to confirm where risks have been immediately treated as part of the asset design and construction |
| 10 | | Climate change adaptation | Simplify response in submission credit summary form to better convey treatment measures and associated evidence e.g., table format. |
| 11 | | Innovation | Identify opportunities to expand implementation of current innovative technologies in use on site |

# Appendix C Sustainability Initiatives Register (Construction)

M1 Motorway Extension to Raymond Terrace
Black Hill to Tomago

# M1BH2T Sustainability Initatives Register - Construction

JOHN HOLLAND GAMUDA Australia

| Item No. | Discipline | Opportunity / Innovation | Description | Initiative Type | Sustainability Benefit | Status | Comments |
|---|---|---|---|---|---|---|---|
| 1 | Ancillary Facilities | Solpod | Installation of solpod panels on AS5 | Energy | Renewable energy / reduction in carbon emissions / reduced need for carbon offsets | Accepted/Implemented | Connected to batteries December 2024 |
| 2 | Site wide | Water supply | Access to water from Hunter River for use in construction activities e.g., dust suppression. | Water | Substitution of potable water for non-potable alernative. | Abandoned | Abandoned due to high salinity |
| 3 | Pavements | PV Glass | Trial of PV glass in asphalt and subbase | Materials | Contributes to circular economy and encourages innovation in the market. | Abandoned | Waste classification currently does not allow this product to be reused in ground application. Anticipated timing of resolution too late to meet project's programme requirements regarding pavement mix trials.<br><br>Re-investigated 11/11/2024 as supplier has now obtained resource recovery order / exemption from the EPA. Trial mix testing well underway so to incorporate a new constituent would have significant cost impacts. |
| 4 | Pavements | Reuse of quarry material | Reuse of approximately 14000t of rock for permanent access tracks or crushed into pavement. | Materials & Energy | Contributes to circular economy by maximising reuse on site as opposed to sending material to landfill. Reduces scope 3 emissions associated with supply of additional quarried material. | Accepted/Implemented | Approximately 100,000t of temporary recok to be reused in HBB on the Project or nearby. In addition to this, the binder prioritises the use of recycled content in lieu of traditional hydrated lime. It is estimated this will result in a 60% GHG emission reduction. |
| 5 | Pavements | Use of waste products in pavement mixes i.e., icreased % of recycled content. | Use of waste products in pavement mixes, including use of concrete waste from our project, and adjacent projects in the local area where they are having to jack-hammer out old pavements to build new works, as well as by-products from local coal fired power stations that operate around Lake Macquarie and up the Hunter Valley. | Materials | Beneficial resuse contributing to circular economy. Reduced scope 3 emissions. | Abandoned | Abandoned as a result of contamination risk |
| 6 | Pavements | Reclamation of existing pavement material | Use of excess spoil from other major NSW project | Materials | Reduced scope 3 emissions and contribution to circular economy. | Accepted/Implemented | Spoil import from sydney tunnelling projects and development projects ongiong. This material has been used in pavement subbase, avoiding the import of virgin quarry material. |
| 7 | Pavements | Pavement Production | Pavement production process being refined to minimise waste and scope 1 emissions. | Energy | Energy and waste reduction | Under Investigation | No evidence to demonstrate this has occurred. |
| 8 | Pavements | Pavement Production | Recycled asphalt products from our project as well as other works around the local area are reincorporated in our new asphalt mix designs through our asphalt contractors. | Materials | Reduced scope 3 emissions and contribution to circular economy. | Accepted/Implemented | All RAP has been reclaimed by the asphalt subcontractor. To date, 9,362t has been collected and will be incorporated into new asphalt on the Project. |
| 9 | Pavements | Fostering innovation with subcontractors | Encourage suppliers to think outside the box when delivering to our project, including back-loading empty trucks and exploring lower emissions transportation measures including rail. | Energy | Reduced scope 3 emissions and contributes to market transformation. | In Progress | No evidence to demonstrate this has occurred. |
| 10 | Ancillary Facilities | Solar / Hydrogen Generator | Investigate opportunity to utilise solar or hydrogen generators at site compounds. | Energy / Innovation | Renewable energy / reduction in carbon emissions / reduced need for carbon offsets | Accepted/Implemented | Hybrid power systems have been used at the main compound (AS5) and trialled at AS10. |
| 11 | Site Wide | Solar LED Bollards | Investigate opportunity / benefit in using solar LED Bollards for night works. | Energy / Social | Use of renewable energy / reduction in energy associated with needing less lighting towers. Safety benefits and reduced light pollution for sensitive receivers. | Accepted/Implemented | Verified as innovation in Design. Additional 20 bollards have been procured during construction. Case study and benefits to be updated to reflect this implementation. |
| 12 | Environment | FOD mats | Investigate opportunity to use FOD mats for tracking control at egress / ingress points. | Innovation | Verified Aus First (3 points) | Rejected | Not economically feasible |
| 13 | Safety | Safety Shield | Human form recognition safety system | Innovation | Potential Australian 1st initiative | Accepted/Implemented | |
| 14 | Environment | Biochar Hydromulch | Use of biochar in revegetation works | Innovation | Potential Australian 1st<br>Increased moisture holding capacities (drought tolerance), nutrient retention, microbial health, amelioration in regenerative and carbon farming protocols can all be provided through the use of Vital Biochar. | Accepted/Implemented | Incorporate carbon sequestration benefits in as-built energy model. Not accepted as an innovaiton in Design. |
| 15 | Pavements | Bio-bitumen | Pyrolisis of straw waste to create oil used as subsitute for bitumen | Innovation / Materials | Reduced embodied carbon<br>Aus First | Abandoned | Project is not progressed enough for safe use on projects. Still require further testing. Inability to produce in bulk at this stage. |
| 16 | Community | Indigenous pre-employment Program | Opportunity to collaborate across Newcastle major projects and with Aboriginal organisations and businesses to introduce an Indigenous Pre-employment program in which participants would take part in a 3 week program to receive training and the opportunity to complete a Cert III in civil construction apprenticeship with one of the projects following completion of the program. | Social / Economic | Social and economic - responds to the Hunter Region's need for entry level construction support staff.<br><br>Training and skills provided to participants, benefiting the local workforce. | Accepted/Implemented | |
| 17 | Bio-retention basins | Reactive Filter Media | Use of recycled material in the biofiltration material | Innovation / Materials | | Abandoned | MCA completed - not a feasible option even considering prolonged design life. |

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| 18 | Pavements | Wattway | Installation of pv panels in road and pavement surfaces | Innovation / Materials | Operational energy reduced<br>Potential Aus first innovation | Abandoned | Limited scope and operational energy demand. Not suitable option for the asset type considering the use of this product on load bearing roads has been unsuccessful on other projects (France). |
| 19 | Pavements | eMesh | Recycled plastic alterantive to steel mesh reinforcement | Innovation / Materials | Carbon reductions associated with improved construction methodology and lower embodied carbon product i.e., steel substituted for recycled macro fibres | Abandoned | Aproval to use this product came with conditions which limited the resulting benefits. |
| 20 | Temporary Works | MasterCarbA | Trial of asphalt like product containing biochar for the pugmill access route | Innovation / Materials | Opportunity for carbon neutral / negative temporary pavement as material is made up of recycled content (biochar)<br>Likely to be awarded an innovation under the IS rating<br>Would inform future inclusion of the product in permanent works leading to market transformation | Abandoned | Area intended for trial was required for other activities and trial costs became unfeasible |
| 21 | Temporary Works | Techno-crete | Alterantive to concrete | Innovation | Reduces concrete used in signage footings for temporary works.<br>Material is compact and expands when mixed. Less labor intensive and suitable for remot locations. | Accepted/Implemented | |
| 22 | Earthworks | Electric Excavator | Alternative to diesel powered plant | Innovation | Reduces GHG emissions<br>Saves cost on fuel<br>Quieter operations with no fumes | Abandoned | Unfortunately this type of machinery requires mains electricity for charging and regular charging every 5-6 hours. This is not suitable for the M1 site (generator powered) |
| 23 | Drainage | Vital Eco-nett | Alternative to plastic turf reinforcement of jute mesh | Innovation | Biodegradable product<br>Minimises plastic pollution | Accepted/Implemented | Trial completed 26 June 2025. Monitoring performance.Submit as innovation in As-Built. |
| 24 | Miscellaneous Structures | Solar panel noise walls | Alternative to plastic / timber noise walls | Innovation | Renewable energy / reduction in carbon emissions during operations | Abandoned | Timing does not align with operational noise requirements of the project nor connection to utilities. Future design initiative that should be reviewed for other road projects. |
| 25 | Ancillary Facilities | Container mounted solar panels | Fast install option to make allow more accessible shift to renewable energy options during construction | Innovation | Piggyback innovation - facilitating transition to renewable energy options during cosntruction | Accepted/Implemented | |
| 26 | Community | Landscaping supply | Opportunity to collaborate with local business, Hunter Region Botanic Gardens, to select and supply shrubs for garden bed display. | Social / Economic | Maintaining collaborative relationship established during design consultation process.<br><br>Prioritising local busineses in the supply chain<br><br>Garden entrance to be revitalised as part of the design and landscape plan which will encourage tourism. | In Progress | HRBG lost seedlings in May-2025 flood event so will no longer be able to supply plants. Project looking at other avenues to collaborate / provide support. |
| 27 | ERSED | Recycled Silt Sock | Alternative to plastic & sand silt socks | Innovation | Recycled material<br>Social enterprise | Abandoned | Cost not feasible compared to traditional sand bags |
| 28 | Pavements | Retained pavements | Opportunity to retain additional exisiting pavements identified | Materials | Reduces pavement materials | Accepted/Implemented | Sustainability benefits and quantification in progress |
| 29 | Temporary Works | Recycled Plastic Formwork | Partner with Resourceful Living in Kurri Kurri to recycle plastic into useable producs e.g., furniture, formwork, survey pegs etc. | Recycling / Materials | Closed loop recycling opportunity<br>Prioritisation of materials with high recycled content in temporary works<br>Ability to use up to 10 times and take back arrangements with Resourceful Living | Abandoned | Risk of plastic shavings polluting environment when material is cut<br>Not cost competitive to plywood supplier<br><br>May be more suitable for building fit out or bespoke structures requiring specialised formwork. |
| 30 | Workforce | PPE Recycling | Partner with UPPARREL to recycle any damaged or unwanted PPE from staff members. The fabric is either reused or recycled into other items, from stuffed toys to furniture pieces. | Recycling / Materials | Reduced clothing to landfill, increasing circularity. | Accepted/Implemented | 10kg items donated with a carbon saving of 20kg. |
| 31 | Plant & Equipment | Battery powered milwaukee pump | Battery powered pump for dewatering as an alternative to petrol/diesel powered technology. 40min power, 10min charge. | Energy | Fuel reduction | Under Investigation | No implementation evidence received at this stage. |
| 32 | Drainage | Material substitution | Use of site won sand from zone 1 cut 7 for BH backfill | Materials | Material subsitution | Accepted/Implemented | |
| 33 | Earthworks | Material avoidance | Removal of separation geofabric from between E6 layer (earth fill) and exisiting pavement. | Materials | Material avoidance | Accepted/Implemented | |
| 35 | Earthworks | Material substitution | Replace the C5 drainage layer with a C2 layer at Cut 9 (Ch 180 - 400 MCEW) and Cut 7 (approx. Ch 2975 - 3100) | Materials | Material subsitution | Accepted/Implemented | |
| 36 | Pavements | Material substitution | Use of site won concrete in pavement subbase (SMZ) | Materials | Material subsitution | Accepted/Implemented | |
| 37 | Drainage | Recycled plastic in drainage materials | Use of BIDIM Green Geofabric and MEGAFLO Green subsoil (underkerb) drainage pipes. Both of these products are made from 100% recycled plastic and are present in virtually the whole alignment. | Materials | Material subsitution | Accepted/Implemented | Implemented - suatinability benefits currently being reviewed and quantified. |
| 38 | Plant & Equipment | Instagrid One | Trial the use of Intagrid One - rechargeable battery that can replace up to a 10kVA generator. | Energy | Fuel reduction | Accepted/Implemented | Minimal savings but positive feedback received from work crew:<br>"After using the battery pack for the last 4 weeks we as a crew have found it to be highly convenient as it has eliminated the need to lug around a generator and fuel and it has been awesome not having to refuel or have the noise of a generator running all day. We have been able to run a Milwaukee 6 bay charger for 2 10-hour shifts charging approximately 30 Milwaukee batteries each day before needing to recharge the battery pack. We also trialled running a jackhammer and a welder off the unit for approximately 20 minutes and found it used a quarter of the battery capacity per task. The battery pack being fairly light and compact has eliminated manual handling of loading/unloading a generator each day. The need for running a high voltage tool for long periods of time would still require us to use a generator but for normal daily battery tool usage it has been highly convenient". |

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| 39 | Pavements | Material substitution | 100% recycled plastic bar chairs | Materials | Material subsitution | Accepted/Implemented | 89,800 bar chairs purchased from Transmutation. Installation commenced in August 2025. Draft innovation submission prepared. |
| 40 | Community | STEM events with local schools | Opportunity to invite local schools to site, encouraging STEM pathways by showcasing the various role opportunities on large infrastructure projects. | Social | Boosts interest and uptake in STEM career pathways | Accepted/Implemented | |
| 41 | Structures | Reduced girder strand | Steel reduction achieved by adjusting girder strand from 15.7mm to 15.2mm on select bridges / spans | Materials | Reduced materials | Accepted/Implemented | Post-IFC design change |
| 42 | Earthworks | Microtunnel methodology | Adoption of micro-tunnelling to avoid significant switching and re-alignment to Pacific Hwy. | Energy | Fuel reduction | Accepted/Implemented | |