CHAPTER 26

Cumulative and residual impacts

ILLABO TO STOCKINBINGAL ENVIRONMENTAL IMPACT STATEMENT

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26. Cumulative and residual impacts

This chapter provides an assessment of the potential cumulative impacts from the Inland Rail—Illabo to Stockinbingal project (the proposal). It describes other projects in the study area and identifies where there is the potential for cumulative impacts to occur. The assessment of the potential for residual impacts following implementation of the mitigation measures provided in Chapters 10 to 25 is also discussed here and provided in full in Chapter 27: Approach to environmental management and mitigation.

The Secretary's Environmental Assessment Requirements (SEARs) relevant to cumulative and residual impacts, and where they are addressed, are provided in Appendix A.

26.1 Overview

The potential for cumulative impacts resulting from the interaction of the proposal with other projects, either existing or proposed, in the surrounding area is considered low. Cumulative impacts are limited to adjacent sections of Inland Rail comprising Stockinbingal to Parkes to the north and Albury to Illabo to the south, and other projects identified as relevant to the proposal.

Based on construction timing of the proposal and the timing of these projects, there are expected to be minor cumulative impacts associated with traffic, transport and access; cultural heritage; noise and vibration; social and economic; and biodiversity. For example, there may be an increase in traffic, and demand for accommodation and workforce; however, cumulative impacts were not considered significant in the assessment.

Coordination and consultation would occur with the proponents of any current development proposals with potential for cumulative impacts at the appropriate proposal stages. Potential cumulative impacts on short-term accommodation due to the concurrent construction of the proposal and A2I would be managed through the workforce accommodation strategy for the Inland Rail program of works.

There are only minor predicted cumulative impacts during operation.

Opportunities would be identified during detailed design to address identified high- and medium-level residual risks, by resolving through design development, developing effective construction methodologies, planning for effective implementation measures, and by implementing a process of review, correction and audit for management measures. Low-level residual risks would also be addressed through an appropriate process of review and continual improvement.

26.2 Methodology

When considered in isolation, the environmental impacts and benefits of an individual project may not be significant; however, when combined with the effects of other developments, the resultant cumulative effects can potentially result in a greater extent, magnitude or duration of impacts. Identifying potential cumulative impacts assists in developing appropriate management measures and provides a basis for coordinated regional planning and environmental monitoring.

The selection of projects assessed as part of this cumulative impact assessment was based on the following criteria:

- The project location—projects in close proximity to the project where there is potential for impacts to spatially overlap. This included potential for shared use of roads for construction access.
- The project timeframe and planning approval—only projects likely to be built concurrently or sequentially with the project were considered.
- The project size—projects considered in this assessment are typically large-scale developments that would involve one or more of the following criteria:
  - substantial temporary changes to existing traffic conditions, including traffic generation and changes to traffic flows, large truck movements and disruptions to key access routes
  - substantial temporary changes to the existing noise environment
  - impacts on numerous and/or significant heritage items
  - substantial changes to the existing land use
  - other environmental and social impacts.

The cumulative assessment was predominantly qualitative based on the current/publicly available information available for each project. Proposed developments with the potential for cumulative impacts to occur with the project were identified through:

- a search of the Department of Planning, Industry and Environment's (DPIE) major projects register in July 2022
- a search of the NSW Independent Planning Commission project register for the Junee Shire Council and Cootamundra and Gundagai Council local government areas in July 2022
- a search of the planning register for the NSW Southern Regional Planning Panel
- a search of the Junee Shire Council, Cootamundra-Gundagai Regional Council and Transport for NSW websites in July 2022.

Key issues identified for the proposal and cumulative impact requirements identified in the SEARs for the proposal have been considered as part of this cumulative impact assessment. The key issues included impacts on traffic and transport; non-Aboriginal and Aboriginal heritage; biodiversity; noise and vibration; flooding; surface water; groundwater; water quality; visual amenity; protected and sensitive lands; soils; socio-economic; land use and property; waste; climate change risk and sustainability. In addition to these key issues, other impact issues were considered where there was likely to be potential cumulative impacts given the nature of the likely interaction with adjacent projects.

26.2.1 Residual impacts assessment

The SEARs also require an assessment of the potential for residual impacts, including consideration of how these would be managed or offset. For the purpose of the Environmental Impact Statement (EIS), residual impacts are considered to be the impacts of the proposal that may remain in the medium- to long-term, even after the implementation of the mitigation measures.

An environmental risks analysis, including a likelihood and consequence analysis, was carried out for each environmental issue identified for the proposal and is provided in Appendix G.

The management approaches for residual impacts are discussed in section 26.4.1.

26.3 Projects considered for cumulative impact assessment

26.3.1 Adjacent sections of Inland Rail

Adjacent sections to be constructed as part of Inland Rail comprise the Stockinbingal to Parkes (S2P) project, which would tie into the proposal in the north and the Albury to Illabo (A2I) project, which would tie in to the south.

The S2P project is a series of enhancement works to several discrete work sites to 173 kilometres (km) of existing rail corridor. The works would increase vertical and horizontal clearances along the rail corridor to accommodate 1.8-km long double-stacked freight trains. Planning approval of the proposal was obtained in June 2022. The proposal includes replacing the Lachlan River rail bridge, vertical clearance work (track lowering) at the Wyndham Avenue bridge over the rail track in Forbes, the new Daroobalgie crossing loop, and horizontal clearances. The closest S2P site is located at Milvale Yard about 40 km north of the proposal. Construction of S2P is scheduled to commence in mid 2023 and be completed in late 2024. Construction of the construction loop at Daroobalgie and track lowering at the Wyndham Avenue road bridge are expected to commence in mid 2023, while construction of the Lachlan River bridge and horizontal clearances is expected to commence in early 2024.

Based on this schedule, construction of S2P may overlap with construction of the proposal for up to six months; however, the S2P sites are located at or greater than 40 km from the proposal (the distance to Milvale Yard) and the works at Milvale Yard are minor, and are anticipated to take two days to complete.

The A2I project is an enhancement project and includes work at multiple sites within 185 km of existing rail corridor from the VIC/NSW border to Illabo. Twelve existing structures, including bridges, footbridges and a rail underpass, between Albury and Illabo, would be modified to accommodate double-stacked freight trains. The closest A2I site is located between Junee and Illabo, about 500 metres (m) south-west of the proposal, which includes track slews, drive access paths, and provision of signalling and infrastructure and aerial cable clearances. Subject to planning approval, construction of A2I is planned to commence in late 2023 and will be completed by early 2026. Based on this schedule, construction of A2I may overlap with construction of the proposal for up to two years.

Given the proximity and timing of the S2P and A2I projects, there are likely to be cumulative impacts with the construction of the proposal, which are detailed in Table 26-2. Potential cumulative impacts with the adjacent sections of Inland Rail include:

- traffic, transport and access during construction
- heritage
- noise and vibration
- social- and economic-related impacts:
  - workforce demand
  - workforce accommodation availability
- biodiversity.

26.3.2 Other projects considered

Additional developments with the potential for cumulative impacts with the proposal were identified for further consideration in Table 26-1, along with their indicative timeframe (as known at the time of preparation of this EIS). This table also briefly considers the key potential impacts/issues that may have a cumulative impact between the proposal and these proposed developments.

The developments assessed have been considered as they are large-scale developments that may result in a cumulative impact during the construction or operation of the proposal. Potential cumulative impacts with these other projects include:

- traffic, transport and access during construction
- heritage
- noise and vibration
- social- and economic-related impacts:
  - workforce demand
  - workforce accommodation availability
- biodiversity.

TABLE 26-1: PROJECTS CONSIDERED FOR POTENTIAL CUMULATIVE IMPACTS WITH THE PROPOSAL

Project	Distance from the proposal site	Project details	Status and indicative timing	Potential cumulative impacts

Illabo Solar	4 km south	Development of an 80 MW solar farm with energy storage and associated infrastructure.	The project is currently on hold (and, as such, does not formally require consideration)
			The construction phase of the proposal would take between 12 and 24 months; however, no construction start date has been provided.
				• There may be cumulative impacts from the project if construction of this project overlaps with the proposal. Based on the current status, construction of Illabo Solar may overlap with the proposal. Timing of this project will be further investigated when more information is available.
				• The following are expected cumulative impacts if this project overlaps with the proposal:
				  ◦ traffic impacts during construction
				  ◦ amenity impacts during construction
				  ◦ socio-economic related impacts during construction and operation including workforce demand and workforce accommodation availability.

Project	Distance from the proposal site	Project details	Status and indicative timing	Potential cumulative impacts
Cootamundra Solar Farm	15 km east	Development of a 5 MW solar farm with a Battery Energy Storage Facility (BESS) and associated infrastructure	Environmental assessment of the project is currently being completed. No published timeframe for construction at the time of writing.	▸ There may be cumulative impacts from the project if construction of this project overlaps with the proposal. ▸ No published timeframe for construction at the time of writing. Timing of this project will be further investigated when more information is available. ▸ No significant cumulative impacts are anticipated at the time of writing based on the available project information. Further consultation would occur with the proponent at the appropriate project stages to confirm where mitigation and management of potential cumulative impacts is required.
Humelink	60 km south-east	Development of a new 500 kV transmission line, which will connect Wagga Wagga, Bannaby and Maragle.	Environmental assessment of the project is currently being completed. Subject to planning approval, the construction phase of the project is anticipated to commence in 2024 and be completed in 2026.	▸ There may be cumulative impacts from the project if construction of this project overlaps with the proposal. Based on the current status, construction of Humelink may overlap with the proposal. Timing of this project will be further investigated when more information is available. ▸ No significant cumulative impacts are anticipated at the time of writing based on the available project information. Further consultation would occur with the proponent at the appropriate project stages to confirm where mitigation and management of potential cumulative impacts is required.
Grade-separating road interfaces	1.5 km south west	Transport for NSW is currently in the early planning stages to grade-separate road and rail interfaces at four locations where Inland Rail crosses the NSW road network. The nearest grade-separation proposal is the Olympic Highway at Harris Gates proposal, located north of Illabo.	Subject to planning approval, the construction phase of the project is anticipated to commence in early 2025 and be completed in early 2027.	▸ There may be cumulative impacts from the project if construction of this project overlaps with the proposal. Based on the current status, construction of the project may overlap with the proposal. Timing of this project will be further investigated when more information is available. ▸ No significant cumulative impacts are anticipated at the time of writing based on the available project information. Further consultation would occur with the proponent at the appropriate project stages to confirm where mitigation and management of potential cumulative impacts is required.

26.4 Cumulative impacts

Table 26-2 summarises the key cumulative impacts with the adjacent Inland Rail sections and other projects as described in section 26.3.1 and assessed in this EIS.

TABLE 26-2: POTENTIAL CUMULATIVE IMPACTS ASSOCIATED WITH ADJACENT SECTIONS OF INLAND RAIL AND OTHER PROJECTS

Cumulative impact	Overview of impacts with adjacent sections of Inland Rail	Overview of impacts with other projects
Traffic, transport and access Further detailed in Technical Paper 3: Traffic, Transport and Access Impact Assessment	The following minor cumulative impacts are expected: ▸ increased vehicles and traffic in the regional area during construction ▸ use of the identified construction routes to the proposal, by vehicles relating to the A2I or S2P proposals is not anticipated. There may be potential overlap with routes on the northern and southern construction routes, with the adjacent Inland Rail sections and will be further investigated as the respective projects develop.	For the other projects identified, there may be cumulative impacts if construction of the projects overlaps with the proposal. While some additional impacts to traffic may occur from increased vehicles and traffic in the regional area during construction, this is not anticipated to result in significant cumulative impacts to haul roads utilised by the proposal. Timing of these projects will be further investigated when more information is available.
Cultural heritage Further detailed in Technical Paper 7: Aboriginal Cultural Heritage Assessment Report	A review of the EIS for the A2I project indicated that no impacts to cultural heritage are anticipated for the project; therefore, there are no cumulative impacts with the proposal. A review of the environmental impact assessments for two parts of the S2P project (Lachlan River Bridge, and Horizontal Clearances) indicated that no impacts to cultural heritage are anticipated. The environmental impact assessment of other parts of the S2P project was not available at the time of writing, and potential cumulative impacts to cultural heritage could not be confirmed.	For the other projects identified, the heritage impact assessment is not publicly available at the time of writing, or the assessment concluded that no direct impacts to cultural heritage are anticipated.
Noise and vibration Further detailed in: ▸ Technical Paper 8: Construction Noise and Vibration Impact ▸ Technical Paper 9: Operational Noise and Vibration Impact Assessment (Rail) Report ▸ Technical Paper 10: Operational Noise and Vibration Impact Assessment (Non-rail)	The following minor cumulative impacts are expected: ▸ Subject to the final construction schedule, the noise levels may be up to 3 dB louder than the maximum predicted impacts for either project, where cumulative impacts occur ▸ operational rail noise will occur throughout the proposal and adjacent Inland Rail projects ▸ adjacent daily rail operations near sensitive receivers will not increase ▸ railway noise and vibration to sensitive receivers will not be defined by a specific section of Inland Rail.	For the other projects identified the projects are located at a sufficient distance from the proposal, and cumulative impacts from noise are not anticipated.
Social and economic Further detailed in: ▸ Technical Paper 12: Economic Impact Assessment ▸ Technical Paper 13: Landscape Character and Visual Impact Assessment	Cumulative benefits and impacts for this proposal and adjacent Inland Rail sections have similar cumulative benefits and impacts as the projects have similar construction timing and are part of the Inland Rail Program. Below are identified cumulative benefits and impacts. Cumulative benefits are expected due to: ▸ increased demand for labour in the trade and construction industry ▸ increased skills and job training for locals and indigenous residents ▸ economic boost to the local industry and businesses from increased and prolonged spending from the construction workforce staying in local accommodation	Similar cumulative impacts to those identified for adjacent sections of Inland Rail would potentially occur for other projects identified, where construction of both projects overlaps.

Cumulative impact	Overview of impacts with adjacent sections of Inland Rail	Overview of impacts with other projects
	▸ expanded demand for a range of local infrastructure and services (e.g. housing, health care, childcare and education) ▸ increased supply chain for construction materials like fuels, equipment and quarried material. Cumulative impacts that may occur are: ▸ increased demand and supply shortage of local housing, accommodation and affordability (in the absence of a temporary workers accommodation facility) ▸ loss of community connection and values from an influx of non-local construction workers ▸ prolonged influx of non-resident workers increasing demand of local social infrastructure, limiting access for existing residents ▸ potential labour draw from the regional economic catchment.	

Biodiversity	Based on publicly available biodiversity impact assessments completed for the A2I and S2P projects, impact to biodiversity includes:
	▸ A2I—removal of 4.4 hectares (ha) of native vegetation
	▸ S2P:
	  ▸ Horizontal clearances—removal of 3.3 ha of native vegetation
	  ▸ Lachlan River bridge—removal of 0.1 ha of native vegetation.
	Biodiversity impact assessments for other sites within the S2P project were not publicly available at the time of writing.
	Based on the information above, there is the potential for minor cumulative impact associated with habitat and other biodiversity loss where common habitats or species occur.
	However, based on the scale of impact and information completed at the time of writing, further detailed assessment of the overall impact to biodiversity has not been completed.
		For the other projects identified, the biodiversity impact assessment is not publicly available at the time of writing, or the assessment concluded that no direct impacts to native vegetation are anticipated.

26.4.1 Residual impacts

26.4.1.1 High and medium residual risks

The risk analysis outlined in Appendix G has identified several high- and medium-level residual risks. Opportunities will be identified during detailed design to:

- resolve residual impacts and risks through design refinement
- develop effective construction methodologies and planning to ensure that management measures can be effectively implemented
- implement a process of review, correction and audit for the management measures that have been identified in Chapter 27: Approach to environmental management and mitigation. A process of continuous improvement will allow for management measures to be updated and improved during construction and operation, where feasible and reasonable.

Where high- and medium-level residual risks are still likely, additional and, where appropriate, refined management measures will be developed to ensure those risks are suitably mitigated.

26.4.1.2 Low residual risks

Regardless of the low risk rating for some residual risks identified in Appendix G, an appropriate process of review and continual improvement will be applied to address these potential impacts during construction and operation as far as is reasonable and feasible.

26.5 Summary of results

Based on information available at the time of writing, the following environmental issues were identified to have cumulative impacts that were considered to be minor in nature and not assessed in its respective technical paper:

- hydrology and flooding
- water quality
- groundwater
- land use and property
- landscape and visual
- soils and contamination
- waste management
- air quality
- biodiversity.

Cumulative sustainability and climate change assessments are not relevant to the proposal. The sustainability assessment required by the SEARs is for an assessment of the sustainability of the proposal using the Infrastructure Sustainability rating tool and current guidelines and targets. This cannot be applied to a cumulative assessment. In relation to climate change, the SEARs requires an assessment of the impacts of climate change on the proposal, not an assessment of the influence the proposal would have on climate change.

The potential for cumulative impacts between the proposal and other existing or proposed projects is low. Cumulative impacts with the adjoining sections of Inland Rail are likely as they have an overlapping construction period, as discussed in Table 26-1 and section 26.3.1.

Although there are some minor cumulative impacts during construction of the proposal and operation of the projects identified above, the assessment concludes that the impacts from the proposal, combined with other projects in the study area, would not result in significant cumulative impacts.

The mitigation measures identified throughout this EIS are considered appropriate and adequate to address any potential residual cumulative impacts for these issues.

26.6 Mitigation and management

To manage and mitigate the potential cumulative impacts, the mitigation measures outlined in Table 26-3 would be implemented.

TABLE 26-3: CUMULATIVE AND RESIDUAL IMPACTS MITIGATION AND MANAGEMENT MEASURES

Ref	Impact	Mitigation measure	Timing
CR-1	Cumulative impacts	Coordination and consultation would occur with the proponents of any current development proposals with potential for cumulative impacts at the appropriate project stages. If consultation with these proponents during detailed design confirms the likelihood of a cumulative impact, ongoing consultation and coordination would include: ▸ provision of regular updates on construction planning for the proposal ▸ identification of key potential conflict points with other construction projects ▸ developing mitigation strategies in order to manage conflicts. Depending on the nature of the conflict, this could involve coordination of traffic management arrangements between projects, where reasonable and feasible.	Detailed design/ pre-construction