Australian Government
High Speed Rail Authority

East Coast High-Speed Rail Strategic Plan

Strategic Plan

December 2023

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Glossary

The glossary provides definitions for common terms or acronyms to provide consistency of terminology throughout the Strategic Plan and attachments.

Term, or acronym	Definition
Business Case	A final or detailed business case seeking an investment decision for a stage of the high-speed rail program. This will be consistent with Stage 3 of the Infrastructure Australia Assessment Framework or Gate 2 of Infrastructure NSW Infrastructure Investor Assurance Framework.
Case Studies	Five projects have been selected to provide lessons learnt for the High Speed Rail Authority based on desktop reviews and interviews.
Catchment	The distance customers are willing to travel to access a high-speed rail station.
CHSR	California High-Speed Rail, one of five case studies included in the Strategic Plan.
Commonwealth Government (Cth)	Also means the Australian Government.
Complementary strategic documents	Supporting material provides a greater amount of detail, which should be read in conjunction with this Plan. Complementary documents include: • Strategic Risk Management Plan – The approach for managing the delivery risks identified in the Strategic Plan, including a live risk register to inform future stages. • Strategic Stakeholder Engagement and Communications Plan – The approach for developing inter-governmental agreements between the Australian and East Coast state and territory governments and broader stakeholder and community engagement in future stages. • Industry Engagement Plan – The approach for industry engagement is to inform the development of delivery and procurement strategies in future stages and identify opportunities for private sector financing to defray government costs. • Strategic Probity Plan – The approach to managing confidential information and potential conflicts of interest.
Concept of operations (CONOPS)	A description of the operational characteristics of the proposed high-speed rail system for interoperability across the East Coast high-speed rail network. This includes the corridor/route alignment, track gauge, dedicated versus existing track, rollingstock, travel speeds, local versus overseas manufacturing, stations, services, signalling, power supply, technologies, commercial principles (including ownership and operation), fares and staging.
CO	Acronym used to categorise strategic directions and initiatives related to corridor definition and concept of operations for East Coast high-speed rail, including the route alignment, rollingstock, stations, services, commercial principles, fares and staging.
Australian Government	The national government of Australia, also referred to as the Commonwealth Government.

Term, or acronym	Definition
Core station	A station locality that is fixed during the High Speed Rail Strategy phase (i.e. the location is not intended to be revised in future stages of high-speed rail network planning, but the exact location may be refined).
Customer value proposition	The customer value proposition is a statement that outlines the user's experience with the high-speed rail product, including the overall look and feel. It is aligned with the vision but presented from the perspective of a high-speed rail customer.
Dedicated track	A rail track that is only used by high-speed rail, typically a new track.
Direction (also Priority Direction and Future Direction).	An overarching recommendation for the HSR Strategy and future business case stages, including Sydney to Newcastle. A Priority Direction is recommended for immediate implementation to meet the timeframes for the High Speed Rail Strategy. Other recommendations that are important but less time-sensitive are included as Future Directions.
East Coast high-speed rail	A high-speed rail network on the East Coast of Australia, including stations in the capital cities of Brisbane, Sydney, Canberra and Melbourne and some intermediate regional cities including Newcastle.
EF	Acronym used to categorise strategic directions and initiatives related to economics, finance and commercial operations, including developing detailed economic and financial appraisals to demonstrate value for money, informed by robust lifecycle cost estimates and updated transport demand modelling.
Final Business Case (FBC)	Equivalent to Business Case.
G	Acronym used to categorise strategic directions and initiatives related to governance, including establishing governance arrangements, developing intergovernmental agreements and drafting terms of reference for governance groups.
HS1	High Speed 1, one of five case studies included in the Strategic Plan.
HS2	High Speed 2, one of five case studies included in the Strategic Plan.
High-speed rail, HSR	High-speed trains capable of travelling more than 250 kilometres per hour, including systems and infrastructure.
High Speed Rail (HSR) Strategy	Stage 1 of the Network Pathway to Delivery Report, defining interoperability principles for East Coast high-speed rail, aligned with key activities from the Network Pathway to Delivery Report included in the HSRA Corporate Plan for completion by 2024-25. This will form a direct input to the S2N Business Case to define overarching requirements for the corridor/route alignment, track gauge, dedicated versus existing track, rollingstock, travel speeds, local versus overseas manufacturing, stations, services, signalling, power supply, technologies, commercial principles, fares and staging.
HSRA Corporate Plan 2023-24 to 2026-27	The HSRA Corporate Plan aligns with the Statement of Expectations issued by the Minister for Infrastructure, Transport, Regional Development and Local Government, the Hon Catherine King MP, on 4 August 2023. It outlines HSRA's purpose, key activities, performance, and operating context.

Term, or acronym	Definition
HSRA	The High-Speed Rail Authority (Australian Government).
IGA	Intergovernmental agreement.
IGACC	Intergovernmental Agency Consultative Committee.
ILR	Inland Rail, one of five case studies included in the Strategic Plan.
Infrastructure Australia (IA)	Infrastructure Australia is the independent assurance agency that works on behalf of the Australian Government.
Initiative, Strategic Initiative	Provides more detail on how to implement a Direction in practice.
Integrated complementary transport networks	Multi-modal passenger and transport networks that are close to high-speed rail stations and enable convenient interchange between different transport modes to expand the catchment of high-speed rail.
Intermediate station	A station locality or location between Core Stations where their inclusion or location is flexible post the Network Pathway to Delivery phase (i.e. can be revised in future stages of high-speed rail network planning).
Interoperability	The ability for trains, infrastructure and control systems from different segments or stages of the East Coast high-speed rail network to work together without any compatibility or safety issues.
Infrastructure	The physical structure that supports and enables the functioning of the system.
INSW	Infrastructure NSW is the independent assurance agency for the New South Wales government.
Location	A specific geographic area where a high-speed rail station will be located.
Locality	A general geographic area where a high-speed rail station could be located without identifying a specific location.
MCA	Multi-criteria analysis, an options assessment framework that includes ratings against criteria aligned with the objectives, incorporating both quantitative and qualitative evidence.
Mixed rollingstock	Different types of trains using the same track, regardless of whether it is a dedicated or shared track.
Mixed services	A range of operating services, including express, limited, or all-stop services.
MOU	Memorandum of understanding, a starting point of negotiations between multiple parties to signal the intent of coming to an agreement and establish key objectives.
Network	Physical infrastructure and systems.
Network Pathway to Delivery Report	The report contemplated in the HSRA Corporate Plan (2023-24 to 2026-27) was built on the 2013 High-Speed Rail Phase 2 Report and was to be completed by the end of 2024-2025. This plan has now been rescoped in response to the Sydney to Newcastle HSR emphases and names as the High Speed Rail Strategy, to be completed by mid-2024.

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Term, or acronym	Definition
	The HSRA Corporate Plan 2023-24 to 2026-27 includes a requirement to complete an East Coast high-speed rail network pathway to delivery report by the end of 2024-25, which will include identification of route alignment, station locations, costs and benefits, city-shaping and land use opportunities, emissions reduction and environmental impact mitigation strategies, financing delivery options, commercial interfaces and interoperability.
Network Pathway to Delivery (Stage 1)	Equivalent to the High Speed Rail Strategy and consists of the first stage of the East Coast Network Pathway to Delivery.
Objectives	The goal or desired outcomes from an East Coast high-speed rail are arranged into several objective themes aligned with the vision.
PO	Acronym used to categorise strategic directions and initiatives related to program versus project objectives, including defining project-specific objectives that are aligned with the overall program objectives but reflect the nuances of specific projects.
Program	The entire East Coast high-speed rail corridor from Brisbane to Melbourne that is made up of several stages or segments that will be delivered sequentially or concurrently as Projects.
Project	A particular stage or segment included in a Business Case seeking investment funding.
RP	Acronym used to categorise strategic directions and initiatives related to risk and probity, including accelerating endorsement of the strategic probity plan to guide and support current activities.
SE	Acronym used to categorise strategic directions and initiatives related to stakeholder and industry engagement, including developing innovative community and industry engagement approaches to help gather ideas, information, and test concepts early in the process.
S2N	Sydney to Newcastle segment of the high-speed rail program
Shared track	Existing tracks used by high-speed rail and other rail services.
SMNW	Sydney Metro Northwest, one of five case studies included in the Strategic Plan.
SN	Acronym used to categorise strategic directions related to the High Speed Rail Strategy and Sydney to Newcastle Business Case, including creating a team, appointing key positions, endorsing the vision and objectives, transport demand model set-up and calibration, developing travel time targets, defining the options assessment criteria, and developing the concept of operations.
Stage	Particular segments of the high-speed rail network forming part of East Coast high-speed rail.
System	A group of interconnected components that work together to achieve a specific goal or function. This is broader than infrastructure and includes features like customer service, onboard amenities, fare structure, and origin or destination transport connectivity.

Term, or acronym	Definition
States and ACT	The East Coast states of Victoria (Vic), New South Wales (NSW) and Queensland (Qld) and the Australian Capital Territory (ACT).
Vision	The vision is a high-level, future-focused statement of the overarching purpose and outcomes expected from high-speed rail. It is a summary of the objectives.
WP	Acronym used to categorise strategic directions related to detailed work plans, which include converting strategic roadmaps to detailed program schedules.

1 Executive summary

1.1 Document overview

1.1.1 Background

This Strategic Plan for an East Coast high-speed rail (the Plan) sets out the emerging vision, objectives, strategic directions, and priority initiatives over the next three years. This Plan informs the subsequent development of a High Speed Rail Strategy (the HSR Strategy, also Stage 1 of Network Pathway to Delivery Report), which will finalise these elements in 2024. The Plan is supported by four complementary strategic documents focused on stakeholder engagement and communications, risk, industry engagement, and probity.

The Plan is aligned with the High-Speed Rail Authority (HSRA) Corporate Plan requirements to develop a Network Pathway to Delivery Report in 2024-25 and a Sydney to Newcastle (S2N) Business Case in 2025-26. Through the process of developing this Plan, HSRA has identified an opportunity to prioritise the S2N Business Case to target substantial completion by December 2024, contingent on an Australia-New South Wales (NSW) Government Intergovernmental Agreement (IGA) being entered into from February 2024 at the latest. This Plan considers the S2N Business Case timeframes together with the development of a HSR Strategy that defines interoperability principles for the East Coast corridor. This overlaps between the HSR Strategy and S2N Business Case activities in 2024 but has been accounted for in the governance, work plan, and resourcing.

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1.1.3 High Speed Rail (HSR) Strategy

Key components of the HSR Strategy include supporting the establishment of IGAs, finalising the Program vision and objectives, defining the corridor, establishing the Program concept of operations (CONOPS) and interoperability principles, Program benefit analysis, Core Station localities, targeted stakeholder and market sounding, delivery options and ownership considerations, and planning approvals pathway to support corridor preservation activities.

The CONOPS includes the corridor/route alignment, track gauge, dedicated versus existing track, rollingstock, travel speeds, local versus overseas manufacturing, stations, services, signalling, power supply, technologies, commercial principles (including ownership and operation), fares and staging.

The Program-level activities in the HSR Strategy are critical to support the S2N Business Case because:

- The network needs to be interoperable in the future, which requires 'locking down' fundamental aspects of the CONOPS early while retaining the flexibility to allow future innovation and responsiveness to changes in the strategic context, technologies or other innovations.

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- A clear and shared vision and objectives are needed, supported by CONOPS, which define interoperability principles for the corridor, Core Station localities, signalling system, power supply, rolling stock, rail gauge, travel time targets, customer experience, ultimate service plans, dedicated versus shared rail, commercial principles, fare strategy and interoperability requirements.

- Early corridor definition is also needed to provide certainty around corridor preservation and the associated planning approvals pathway so that strategic land in the corridor is retained and opportunities to acquire strategic land are realised.

Table 2 summarises the approach and assumptions for key elements of the CONOPS in the 2013 High Speed Rail Study Phase 2 Report (the 2013 Study) and subsequent changes driving these elements being reconsidered in the HSR Strategy.

Table 2: Summary of updates to the 2013 Study

Area	Approach and assumptions	Changes requiring reconsideration	Priority
Vision and objectives	An engineering-led approach focusing on costs, environment, constructability and patronage.	Changes to government strategies (e.g. net zero and housing) and updated objectives will change the criteria for updated options assessments.	High
Costs	Capital costs are $114 billion ($2012) with 144 kilometres of tunnelling (8% of corridor).	Significant cost escalation, a current funding-constrained environment and opportunities to reduce costs from tunnelling/increased use of viaducts.	High
Demand	A market-share approach (city-to-city only) informed by detailed customer willingness to pay surveys.	Changing customer preferences post-COVID-19, updated information to calibrate models, new information such as mobile phone data, new modelling techniques and the need to model regional services.	High
Economics	Focus on conventional transport benefits only and estimated negative environmental benefits.	New airport investments (new capacity will impact the counterfactual 'Base Case'), environmental benefits, and new/accepted approaches to quantify land use and wider economic and social benefits.	Medium
Corridor	The 1,748-kilometre corridor is informed by environmental constraints and station locations.	Updated objectives and opportunities for flexibility in corridor and station definition to encourage innovation.	Medium

Area	Approach and assumptions	Changes requiring reconsideration	Priority
Stations	21 stations, including 4 capital city, 4 city peripheral and 13 regional stations.	New investments and updated planning include Sydney Metro and Suburban Rail Loop, impact station feasibility, constructability, and interchange opportunities.	High
Rollingstock	Speeds of 200km/h (urban) to 350km/h (regional), around 3 hours between capital cities, maximum 12 to 16-car trains.	Speeds of at least 250km/h, updated customer value proposition, and rollingstock assumptions are significant drivers of costs (e.g. station platform lengths) and opportunities to refine travel time targets.	High
Systems	Double-track standard-gauge electrified line.	Interoperability of systems, including signalling, represents a significant Program risk, and decisions around dedicated versus shared track can significantly impact costs, speed and reliability.	High
Services	A mixture of inter-city express and regional services (36 per day in each direction).	Service number/mix is a significant driver of costs for fixed infrastructure, including terminus stations, passing loops and signalling.	Medium
Fares	Designed to offset the operating costs of high-speed rail.	Limited commercial opportunities to offset costs of tracks, driving fares being designed to cover operational costs, but opportunities to reduce/subsidise fares to achieve other objectives.	Low
Staging	Based on costs and patronage, Sydney to Canberra is recommended as the first stage, followed by an extension to Melbourne.	S2N was identified as the first stage in the HSRA Corporate Plan, which includes a $500 million funding commitment from the Australian Government. The Central Coast and Newcastle have been prioritised in land use planning because of their central location (smaller section enabling extension to Canberra) and potential for lessons learnt because of the challenging topography of this section).	Low

1.1.4 Sydney to Newcastle (S2N) Business Case

Since a high-speed rail system on Australia's East Coast was last assessed, Transport for New South Wales (TfNSW) developed a strategic business case for various rail connections between S2N, including high-speed rail options. An opportunity exists to maintain momentum by simultaneously developing a HSR Strategy that can serve as a model for the whole Program and the S2N Business Case in 2024. This Plan has made allowances to maintain momentum by undertaking this simultaneous work.

The S2N Business Case will seek investment funding for the first stage of the Program, to be developed consistent with Infrastructure Australia and Infrastructure NSW requirements. This includes documenting the service need, alternative options assessment, project definition, lifecycle costs, economic appraisal, funding and finance strategy, delivery strategy, program schedule, resourcing strategy, forward governance, change management and benefits realisation strategy.

Development of the S2N Business Case utilises the opportunity of a 'no regrets' first stage of the Program that is supported by the following strategic considerations for its prioritisation:

- The Central Coast and Newcastle are two of the six most important cities in the Sydney Greater Metropolitan Area. As part of the Six Cities Region Plan and supporting City Plans currently in development, these cities are expected to accommodate a significant increase in housing. The development of high-speed rail in station catchments would catalyse the growth of housing and commercial properties.

- The Central Coast is a major commuting hub for Sydney, leading to heavy traffic on the M1 Motorway and overcrowded intercity rail services. Commuting by car takes around 1 hour and 25 minutes while taking

the train takes approximately 1 hour and 44 minutes[1]. High-speed rail is expected to encourage more people to switch from cars to trains, easing road congestion and freeing up the existing rail network to accommodate additional freight and local/regional passenger services.

- Currently, it takes nearly 2.5 hours to travel from Newcastle to the Sydney CBD by car or train[2]. However, a 2013 study suggests that implementing high-speed rail could reduce travel times to just 39 minutes, making Newcastle a major commuter hub for Sydney.

- The central location of Sydney to Newcastle within the East Coast high-speed rail network provides flexibility for future extensions. It is a relatively small section (around 160 kilometres) but is topographically and technically challenging and will provide important lessons learnt for developing and delivering future sections. In comparison, whilst a longer segment, extending to Canberra is technically more straightforward, consistent with the optimal staging in the 2013 Study.

- Planning on the S2N segment is already relatively advanced based on past studies, including the NSW Fast Rail Program.

- There is a $500 million commitment from the Australian Government to progress planning and corridor works for the S2N segment of the East Coast high-speed rail network.

1.2   Vision and objectives

The Plan sets out the emerging vision, customer value proposition, and objectives for developing an East Coast high-speed rail system as a head start to the HSR Strategy to be developed in 2024, which will finalise and endorse these. These interrelated concepts will provide the 'bookends' to govern future decision-making around high-speed rail system elements such as corridor, route alignment, station locations, rollingstock, rail systems, service types, fare setting and staging. The following Program-level vision, objectives and customer value proposition developed in this Strategic Plan will be finalised in the HSR Strategy, reflected in intergovernmental agreements and endorsed through formal governance processes.

1.2.1 Vision

The vision is a high-level, future-focused statement of the overarching purpose and outcomes expected from the Program. It is forward-looking and essentially summarises the objective themes in a few sentences. The vision reflects that an East Coast high-speed rail system is about more than just transport outcomes and provides opportunities to achieve broader sustainability, population growth and distribution, housing, and economic and social objectives aligned with government priorities. The vision is expanded into more detailed objectives below.

<u>**Vision**</u>

Connecting the East Coast with high-speed rail capable of travelling more than 250 km/hr will revolutionise mobility, sustainability and quality of life for generations of Australians.

An East Coast high-speed rail system will revolutionise Australian mobility and population settlement by connecting our cities and regions with fast and reliable services that contribute to Australia's net zero emission targets. It will promote improved quality of life, provide opportunities for local skills and manufacturing, and provide better access to public services.

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[1] Google Maps, 2023. Based on an average weekday trip from Wyong to the Sydney CBD departing around 7am.
[2] Google Maps, 2023. Based on an average weekday trip from Newcastle to the Sydney CBD departing around 7am.

1.2.2 Customer value proposition

The customer value proposition is a statement that outlines the user's experience with the high-speed rail product, including the overall look, feel and experience. It is aligned with the vision and presented from a customer's perspective.

<u>Customer value proposition</u>

High-speed rail will carefully balance inter-city and regional customer needs to maximise community value.

High-speed rail will provide a range of city-to-city and regional services that integrate with complementary transport systems. Stations and trains will be designed with the comfort, convenience and safety of customers in mind, equipped with amenities needed to work or relax while accommodating luggage. They will also be integrated into high-amenity precincts in station catchments and support affordable housing and complementary commercial and community facilities.

1.2.3 Objectives

The objectives are specific outcomes that guide developing and delivery of a high-speed rail system on Australia's East Coast. These objectives serve two separate but crucial functions. Firstly, they will guide the Australian, State, and ACT Governments on the type of high-speed rail systems that must be developed. Secondly, they act as specific and measurable signposts to guide, coordinate, and prioritise all HSRA activities.

Figure 2 below shows the six objective themes for an East Coast high-speed rail system: transport, environment, land use, economy, social equity, and costs and risks. These are defined in more detail below.

Figure 2: Program objective themes

- Better connectivity and genuine alternatives
- Environmental sustainability and resilience
- Urban and regional development
- Productivity and job creation
- Access to public services and social opportunities
- Constructability and value for money

Objective 1

Better connectivity and genuine alternatives

A high-speed rail system capable of travelling more than 250km/hr that connects Australia's East Coast, offers superior convenience and quality and represents a genuine alternative to conventional air, road, and rail transport.

Placing high-speed rail stations strategically near population and commercial centres will allow passengers to enjoy shorter access times, fewer transfers, and timely, reliable travel, with minimal disruptions from delays. An excellent customer experience at stations and on trains travelling over 250km/hr makes high-speed rail a genuine alternative to other transport modes for convenient and enjoyable travel.

Objective 2

Environmental sustainability and resilience

A high-speed rail system that provides the foundation for an ambitious step change in environmental and sustainability outcomes, contributing to Australia's net zero targets and supporting a cleaner, greener future as part of a complementary suite of transport initiatives.

High-speed rail will provide a clean, green transport alternative to meet net-zero emission commitments alongside other complementary transport initiatives such as electrification and alternative fuels. It will reduce carbon emissions and lower the overall carbon footprint from transport, supported by sustainable construction techniques and innovative technology. Enhancing the rail network's capacity also increases reliability and resilience during natural disasters, serving as an alternative evacuation route and logistical support, thus minimising delays, injuries, and fatalities associated with such events.

Objective 3

Urban and regional development

A high-speed rail system that facilitates sustainable, long-term population growth by unlocking land use and place-making opportunities not possible with conventional transport solutions, attracting investment in housing around stations and within the wider catchment, relieving pressure on our capital cities to accommodate growth.

Integrated land use planning and place-making in high-speed rail station catchments that leverages existing population-supporting infrastructure and capitalises on reduced regional land costs will provide new and attractive places to live. This will support increased housing affordability and diversity, alleviate urban congestion by accommodating growth and elevate living standards. The resultant infrastructure savings to support population growth can then be redirected to other essential or strategic priorities.

Objective 4

Productivity and job creation

A high-speed rail system that provides all the necessary amenities for business travellers and workers while also catering for high-value or time-sensitive freight. This system is designed to meet the needs of tourists regarding luggage and information. It aims to connect workers to businesses better and support a sustainable domestic rail manufacturing industry.

Business travellers will benefit from high amenity facilities with reduced disruptions. Tourists will be able to easily travel with and store their luggage, be provided with clear information and have access to attractive food, beverage and retail options. High-speed rail will provide a superior freight service for high-value or time-sensitive freight and free up capacity for freight or regular passenger services on existing rail networks. High-speed connections between commuting and business hubs will enhance businesses' reach, attract new talent, and improve information sharing. Construction and maintenance will also create opportunities for training and secure employment, particularly in regional communities.

Objective 5

Improved access to public services and social opportunities

A high-speed rail system that is designed for all passengers, including those with disabilities or mobility challenges, and improves equitable access to essential services. It also helps people better connect with friends, family and other social networks.

An accessible high-speed rail network with differentiated fares (including concessions) and better connections to public services and social networks will improve social outcomes and quality of life, especially for regional or disadvantaged communities. It also reduces the need for people to move away from their family and social networks to access jobs, education and healthcare or makes it easier for them to reconnect when they do.

Objective 6

Embracing innovation to deliver value for money

A high-speed rail system that is incrementally staged and delivered in an efficient, effective and pragmatic way that proactively manages risks, takes on board lessons learnt from overseas and previous stages, leverages best-practice tools and techniques, including digital engineering, takes on board public and industry views to build social license and carefully considers commercial and private financing opportunities.

Incremental delivery and industry engagement will provide opportunities to reduce or offset costs by defining smaller projects, encouraging competition between contractors, leveraging private sector innovations and identifying commercial opportunities (such as strategic land holdings, private sector contributions, commercial development or private financing). Transparency in planning that embraces lessons learnt from overseas and leverages the latest innovations, including digital engineering, will also instil public and industry confidence, create a shared stake in the long-term success of high-speed rail, and build social and industry licenses that could otherwise undermine or delay the program.

1.2.4 Program versus project objectives

Project objectives will need to be developed for the S2N Business Case and future stages. These will be directly aligned with the Program objectives to achieve the overarching vision, objectives, and interoperability but will include more corridor-specific details (e.g. specific urban and regional development opportunities in that section). Like the Program objectives, Project objectives will be included in IGAs between the Australian Government and the States or ACT developed for specific business cases and formally endorsed through Project governance.

1.2.5 Travel time targets

Travel time targets will be developed as part of the HSR Strategy to guide decision-making and provide a balance between competing objectives. These will be developed for the corridor and specific sections and incorporated into the Program and Project objectives for endorsement through formal governance processes. In the California High-Speed Rail (CHSR) case study, travel times were legislated. However, this is approach not proposed for the Program as it is rigid and will add substantial time to progress through parliament. Similar outcomes can be achieved by escalating travel time targets developed from the HSR Strategy into project objectives and/or key performance indicators.

The working assumption from the 2013 Study is around 3 hours between Sydney and Brisbane[3] and Sydney and Melbourne[4], respectively. However, this requires further interrogation as the CONOPS is developed targeting speeds above 250km/h.

There could be a significant trade-off between reducing proximity of city stations to the CBD to reduce costs and complexity and increasing access times for capital city stations. However, this can be overcome by locating stations close to the complementary transport systems, enabling convenient interchange. Further, proximity to the CBD will be important for business travellers and tourists who commonly start or finish their journeys in the CBD.

To guide this decision-making, it is recommended that access time targets to the CBD are developed. The current travel working assumption is that it is around 15 to 20 minutes from a high-speed rail station to a CBD by public transport.

1.2.6 Commercial principles

Commercial principles will be developed as part of the CONOPS and delivery strategy in the HSR Strategy to support the Program objective of embracing innovation to deliver value for money. Key considerations will include:

- Responsibility for ownership, operation and maintenance including track, rollingstock and systems.
- Local versus overseas manufacturing
- Alternative funding and financing structures. This includes alternative roles (for the Australian Government, States, ACT, international governments and the private sector) under variations to these ownership and funding and financing structures.

This could include the development of commercial case studies.

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[3] The 2013 Study estimated 2 hours 37 minutes.
[4] The 2013 Study estimated 2 hours 44 minutes.

1.2.7 Technology review and flexibility

East Coast high-speed rail is a significant Program and technologies will inevitably change over the life of the Program. As such, it is critical that the CONOPS includes an assessment of alternative high-speed rail technologies currently available and that the Program scope retains sufficient flexibility to incorporate future technologies when they emerge. To form a baseline for the Program, it is proposed that alternative high-speed rail technologies from overseas are considered as part of market sounding as outlined in the Strategic Industry Engagement Plan.

1.2.8 Local versus overseas manufacturing

There can be significant community benefits from local manufacturing, particularly following the decline of traditional industries such as manufacturing. This can provide additional training, skills and job security which are of particular importance to regional or other socially disadvantaged communities. However, local manufacturing can also increase costs e.g. for construction of manufacturing facilities or higher wages for Australian workers compared to overseas alternatives. As such, these trade-offs require careful consideration as part of developing the CONOPS.

1.2.9 Options assessment

A key early activity in developing the HSR Strategy will be an options assessment to develop a CONOPS. This will require defining the approach for a multi-criteria analysis (MCA), which is the framework that will be used to short-list options based on the objectives. A critical part of this approach is the internal prioritisation or weighting of objectives to resolve trade-offs between competing objectives, given that it is likely only possible to partially satisfy all objectives simultaneously. Consistent with the Infrastructure Australia MCA guidelines, this will include defining:

- Counterfactual (Base Case[5]) against which all options will be compared. This includes committed and funded future investments and ongoing activities to maintain minimum service levels on existing transport networks.

- Criteria directly aligned with the objectives, scoring thresholds sufficient to cover the expected outcomes range, and measures to inform scoring against the criteria. MCA can accommodate a range of quantitative measures (e.g. costs, patronage, travel time and additional housing) and qualitative measures (e.g. input from subject matter experts on constructability and risk).

- Weightings applied to the scores against each criterion may be informed by evidence such as community surveys, benchmarks from economic appraisal or views of the HSRA board or other governance groups.

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[5] A Base Case for the purposes of alternative and deferral options assessment represents the counterfactual against which all options are incrementally evaluated. It is generally not "do nothing" but rather "do minimum". This includes committed and funded future investments and ongoing operating and maintenance expenditure to maintain minimum service levels/standards.

1.3   Lessons learnt from case studies

The development of an East Coast high-speed rail system will embrace continual improvement through leveraging Australian and overseas case studies and learning from previous stages in the Program. As part of this Plan, five case studies have been undertaken, covering projects from Australia and overseas. The case studies include High-Speed 1 (HS1), High-Speed 2 (HS2), CHSR, Inland Rail (ILR) and Sydney Metro Northwest (SMNW). These projects have been selected for their exemplary nature or challenges. Lessons learnt from the case studies are summarised in

Table 3. The case studies' rationale and findings are presented in more detail in the body of this Plan (Chapter 4) and included in a separate High-Speed Rail Case Studies report as an attachment.

Table 3: Summary of lessons learnt from Australian and international case studies

Case Study Theme	Lessons Learnt
Customer proposition and project objectives	• Early establishment of tangible and measurable vision and objectives aligned with government strategies.
Corridor selection and design activities	• Early establishment of guiding principles for corridor selection and consideration of a competitive station submission process s47B(a) s47B(a) . • Manage scope comprehensively, including futureproofing to meet evolving needs and technologies.
Stakeholder and community engagement	• Early immersion into local communities and councils combined with accurate information to obtain a social license.
Operating models and systems	• Consider the future operating model in early planning, including a CONOPS with future timetables and ultimate infrastructure requirements such as the capacity of terminus stations. • Consider using a shadow operator to obtain specialist feedback on the scoping design and operating model (referred to as industry challenge).
Interfaces (government and non-government)	• Assess the staging, packaging and delivery model considering interface risks, including temporal, related projects, and technical and contractual matters. • Develop terms of reference for memorandums of understanding (MoU) and IGAs as a priority, including frameworks for land acquisition, approvals and land use planning.
Commercial and land use outcomes	• Early land use planning, including opportunities for land banking to preserve the corridor and master planning of station precincts to support land use outcomes.
Delivery, staging and packaging	• Stage the Program delivery considering industry challenges and market-sounding outcomes. • Encourage cutting-edge innovations in delivery and operations considering likely evolutions in rail technology. • Embrace a culture of continuous improvement, including lessons learnt from previous stages.

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1.4   Strategic directions and initiatives

The Strategic Plan includes developing a work plan, resourcing strategy, and governance framework and is supported by four complementary strategic documents (stakeholder engagement and communications, risk, industry engagement, and probity).

Key recommendations from these workstreams and lessons learnt from the case studies have been synthesised to develop strategic directions and supporting initiatives to inform the development of the HSR Strategy and S2N Business Case by December 2024. These are separated into Priority and Future Directions and Initiatives as follows:

- **Priority Directions and Initiatives** are those recommended to commence as immediate priorities due to their strategic importance or long lead-time activities that present a timing risk.

- **Future Directions and Initiatives** are other important recommendations but are less on the critical path, for example, where they have already significantly progressed as part of the Strategic Plan or are linked to the timing of future milestones.

There are several innovative concepts proposed as hallmarks of the Program to promote community and industry buy-in and embrace cultural aspirations around continual learning and improvement or ongoing risk management, including the following:

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Immersive stakeholder and industry engagement

Early and ongoing engagement with the community and industry combined with accurate information will create community and industry buy-in (also known as 'social and industry license'). This will primarily apply to the S2N Business Case and future stages. However, in parallel, there will also be engagement on the East Coast corridor's vision, objectives, CONOPS, and procurement packaging.

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Table 4 below summarises priority strategic directions and initiatives proposed for immediate action. This uses the following acronyms to categorise strategic directions and initiatives by theme. These also correspond to section headings in Chapter 5:

- **Detailed work plan (WP)** – Converting strategic roadmaps to detailed program schedules.
- **Governance (G)** – Establishing governance arrangements, including developing intergovernmental agreements and drafting terms of reference for governance groups.
- **HSR Strategy and S2N Business Case (SN)** – Priority activities for commencing the HSR Rail Strategy and S2N Business Case, including creating a team, appointing key positions, endorsing the vision and objectives, transport demand model set-up and calibration, developing travel time targets, defining the options assessment criteria, and developing CONOPS.

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- **Risk and Probity (RP)** – Accelerating endorsement of the strategic probity plan to guide and support current activities. This function may also be transitioned to provide independent advice directly to HSRA on establishing the HSR Strategy and S2N Business Case.

Table 4: Summary of priority strategic directions and initiatives

Work Plan (WP) – Section 5.1
Detailed Work Plan (WP1): Develop and approve a detailed program and roadmap for all priority directions and initiatives
WP1.1: Convert strategic roadmaps into detailed program schedules (P6 equivalent), including identifying interdependencies between all activities.
Governance (G) – Section 0
s47B(a)
G2: Establish formal governance structures, including drafting terms of reference
G2.1: Develop and agree on organisational structure and critical decision-making bodies, including the HSR Strategy as a working group within the S2N Business Case governance.
HSR Strategy and S2N Business Case (SN) – Section 5.3
SN1: Create HSR Strategy and S2N Business Case Project teams and appoint key positions
SN1.1: Define and endorse Project team structure and separate the HSR Strategy and S2N Business Case teams, balancing the need for independence and focus, integration, and specialisation and technical expertise.
SN1.2: Develop and endorse resource estimates and onboarding plan, considering a mix of HSRA resources to ensure consistency and external service providers to provide on-demand expertise and enable rapid mobilisation.
SN2: Develop an overarching framework to guide the development of the HSR Strategy and S2N Business Case
SN2.1: Develop and endorse vision and objectives.
SN2.2: Develop and endorse travel time targets and option assessment criteria.
SN2.3: Develop and endorse key technical assumptions and CONOPS.
Customer experience (CE) – Section 5.4
CE1: Understand customer expectations concerning customer persona definition
CE1.1: Update Phase 2 customer survey to account for contextual changes in the travel market and update travel demand modelling, including beginning demand modelling set-up and calibration.
Risk and probity (RP) – Section 5.5
RP1: Develop and endorse a risk and probity plan
RP1.1: Develop probity protocols for HSRA interactions with market participants, including specific rules and processes concerning information sharing, gifts, and public events[6].

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[6] Industry engagement has also been identified as a long lead-time event (e.g. for EOIs, confidentiality etc.) taking around 12 months.

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Table 5 summarises other strategic directions and initiatives for the HSR Strategy, S2N Business Case and future stages/segments. This uses the following acronyms to categorise strategic directions and initiatives by theme. These also correspond to section headings in Chapter 6, and there are some common themes with the priority directions and initiatives above. These include:

- **Governance (G)** – Embedding a culture of collaboration and continuous improvement within HSRA.
- **Program versus Project Objectives (PO)** – Defining Project-specific objectives that are aligned with the overall Program objectives to reflect the nuances of specific Projects.
- **Stakeholder and Industry Engagement (SE)** – Developing innovative community and industry engagement approaches to help gather ideas, information, and test concepts early in the process.
- **Corridor Definition and Concept of Operations (CO)** – Defining the CONOPS for an interoperable East Coast corridor, including the route alignment, rollingstock, stations, services, commercial principles, fares and staging.
- **Economics, Finance and Commercial Opportunities (EF)** – Developing detailed economic and financial appraisals to demonstrate value for money, informed by robust lifecycle cost estimates and updated transport demand modelling.

Table 5: Summary of future strategic directions and initiatives

Governance (G) – Section 6.1
G3: Embed a culture of collaboration and continuous improvement within HSRA
G3.1: Explore innovative collaboration methods and working arrangements to foster innovation and positive ways of working.
G3.2: Foster continuous improvement by tracking key metrics related to the Program and its vision and objectives.
Program versus project objectives (PO) – Section 6.2
PO1: Projects should formulate specific objectives aligned with the Program Objectives and tailor them to the unique needs of the local community.
PO1.1: HSRA and TfNSW should collaborate to develop Project-level objectives for the S2N Business Case and use these as a template to create insights, best practices, and lessons learnt.
Stakeholder and industry engagement (SE) – Section 6.3
SE1: Develop innovative community and industry engagement approaches to help gather ideas and information and test concepts early in the process

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Corridor definition and concept of operations (CO) – Section 6.4

CO1: Define the concept of operations for an interoperable East Coast corridor, including the route alignment, rollingstock, stations, services, commercial principles, fares and staging

CO1.1: Define a corridor 'swoosh' that provides sufficient certainty for planning and corridor preservation but retains the flexibility to incorporate future innovations.

CO1.2: Design high-speed rail using dedicated tracks to maximise travel times and reliability.

CO1.3: Consider cost reduction opportunities from reduced tunnelling, including the increased use of viaducts as an alternative.

s47D, s47E(d)

CO1.5: Develop an ultimate service plan for East Coast high-speed rail that includes a mix of express and regional services and informs the maximum capacity required for terminus stations.

CO1.5: Develop commercial principles about ownership of track, maintenance and operation of high-speed rail services. Carefully consider commercial and private financing opportunities to offset costs.

Economics, finance, and commercial opportunities (EF) – Section 0

s47D, s47E(d)

1.4.1 Governance

The development and delivery of the East Coast high-speed rail Program will involve significant resources and funding and require effective and clear governance to ensure success. The HSR Strategy and S2N Business Case are two major tasks with overlapping interdependencies, which must be carefully managed from 2024 onward. To ensure this is effectively governed and carefully managed, the proposed governance structure includes the following features:

- A HSR Strategy team and S2N Business Case team that reports to the HSRA Board via the HSRA Leadership Team.
- An unambiguous direct line of accountability and decision-making from the strategy and business case teams to the Australian Government Minister for Infrastructure, Transport, Regional Development and Local Government.
- The HSRA Board retains governance oversight for the development of the high-speed rail network along the East Coast of Australia and provides advice directly to the Minister.

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- A culture of collaboration and dialogue is built into governance terms of reference and structure and embedded in day-to-day ways of working.

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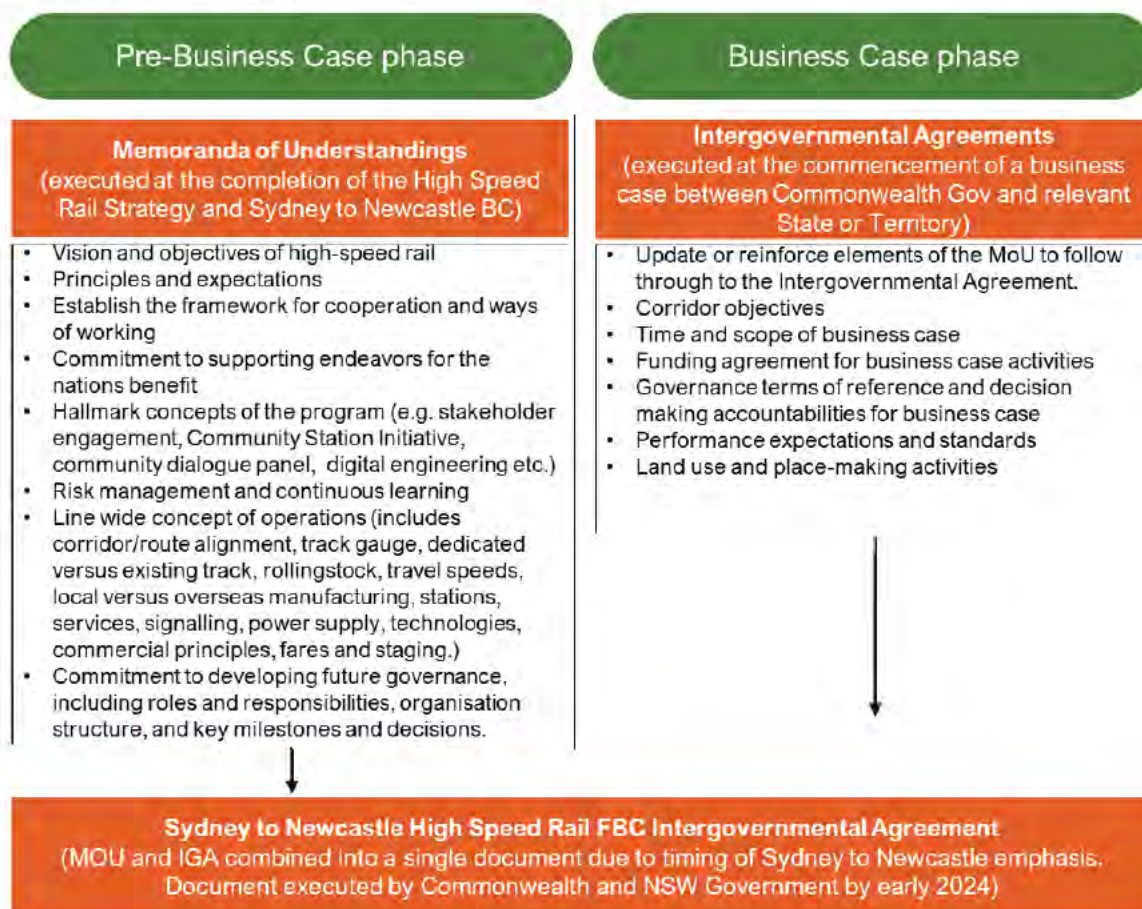Key elements of the governance for the S2N Business Case include:

- The Australian Government will make the final decisions regarding the Project. If this changes, the above arrangement may need to be adjusted.
- All high-speed rail decisions will be made by the HSRA Leadership and presented to the HSRA Board and the Minister.

s47B(a)

- Peer reviewers and industry challenge initiatives will be included in the process.
- The IGACC will continue to work on the whole-of-line CONOPS and assumptions being developed and tested as part of this S2N Business Case.
- The NSW Government will have oversight over the Project via existing NSW Government processes.

The governance structure in Figure 5 is specific to the S2N segment of the East Coast high-speed rail network. Critical governance elements would be captured in MoU and IGAs. Under normal circumstances, the MoU for the High-Speed Rail Program would be executed once the East Coast high-speed rail principles are established and endorsed and before commencing the S2N Business Case. However, the opportunity to develop the S2N Business Case relies on developing a bilateral intergovernmental agreement between the Australian Government and NSW which is critical to starting in early 2024. Following this, the MoU between the Australian Government, States, and ACT will be developed. These will then be combined into a single S2N High-Speed Rail IGA.

Figure 5: MoU and IGA content

Pre-Business Case phase	Business Case phase
Memoranda of Understandings (executed at the completion of the High Speed Rail Strategy and Sydney to Newcastle BC)	**Intergovernmental Agreements** (executed at the commencement of a business case between Commonwealth Gov and relevant State or Territory)
• Vision and objectives of high-speed rail • Principles and expectations • Establish the framework for cooperation and ways of working • Commitment to supporting endeavors for the nations benefit • Hallmark concepts of the program (e.g. stakeholder engagement, Community Station Initiative, community dialogue panel, digital engineering etc.) • Risk management and continuous learning • Line wide concept of operations (includes corridor/route alignment, track gauge, dedicated versus existing track, rollingstock, travel speeds, local versus overseas manufacturing, stations, services, signalling, power supply, technologies, commercial principles, fares and staging.) • Commitment to developing future governance, including roles and responsibilities, organisation structure, and key milestones and decisions.	• Update or reinforce elements of the MoU to follow through to the Intergovernmental Agreement. • Corridor objectives • Time and scope of business case • Funding agreement for business case activities • Governance terms of reference and decision making accountabilities for business case • Performance expectations and standards • Land use and place-making activities

Sydney to Newcastle High Speed Rail FBC Intergovernmental Agreement
(MOU and IGA combined into a single document due to timing of Sydney to Newcastle emphasis. Document executed by Commonwealth and NSW Government by early 2024)

Note: FBC refers to a Final Business Case in NSW, equivalent to a Detailed Business Case in other States.

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1.4.2 Work plan activities and timing

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The work plan also considers the opportunities available to expedite the S2N Business Case to December 2024, as requested by HSRA. These opportunities have been identified during the development of this plan. They are aligned with the Corporate Plan timeline for the Network Pathway to Delivery Report in 2024-25 and the Sydney to Newcastle business case in 2025-26 while also meeting the Infrastructure Australia and State requirements for business case assurance guidelines.

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Key tasks and activities include:

- Finalising the Program-level vision, objectives and customer value proposition for the East Coast corridor, which will inform the Project objectives for the S2N Business Case.

- Options assessment to establish the concept of operations, including corridor, rollingstock speeds and travel time targets, systems, services, commercial principles, fares and staging.

- Benefit analysis for the East Coast corridor based on rail operations modelling and research, applying cost-benefit analysis principles where possible and developing other key performance indicators.

- Targeted stakeholder engagement on the vision, objectives, CONOPS, and industry market sounding to inform a high-level delivery strategy for the East Coast high-speed rail.

- Planning and environmental approvals pathway to inform future corridor preservation activities.

s47D, s47E(d)

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- s47C

The high-level work plan includes lead times for procurement and overlap between Program and Project activities in the first half of 2024. s47C

Work plan caveats and assumptions

HSR Strategy

The HSR Strategy will develop an abbreviated and more strategic version of the Network Pathway to Deliver Report. Some activities will be equivalent to an Infrastructure Australia Stage 2 submission or an Infrastructure NSW Gate 1 Strategic Business Case. However, to meet the target of December 2024 for the S2N Business Case, some previously considered Network Pathway to Delivery activities have been rescoped and fast-tracked.

The lead agency for the HSR Strategy is assumed to be the HSRA, with the lead decision-making agency for the S2N Business Case still to be determined through the IGA in early 2024. This decision will be informed by considerations such as the relative funding contributions from the Australian and NSW governments.

The HSR Strategy will propose Program outcomes and CONOPS for the S2N Business Case to test and finalise.

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S2N Business Case

The S2N Business Case will be a final or detailed business case equivalent to an Infrastructure Australia Stage 3 submission s47B(a)

s47B(a)

Investment-ready elements of the S2N Business Case

The S2N Business Case will propose investment-ready elements for government consideration, which will not include the entire Sydney to Newcastle high-speed rail scope. Elements of the S2N Business Case that are envisaged to be investment-ready by the end of the business case process include:

- Core Station locations.
- 'No-regret' rail alignments.
- Over-station and integrated station designs.
- Rolling stock, stabling, and maintenance yard(s).
- Delivery strategy (with flexibility for Intermediate Stations).
- Funding and finance opportunities and value sharing mechanisms.

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Exclusions from the S2N Business Case

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Further, the S2N Business Case will only consider true high-speed rail options. Separate alternative and deferral options assessment and documentation will be undertaken and attached to the S2N Business Case for assurance assessment purposes.

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1.4.3 HSRA resourcing

s47D, s47E(d)

HSRA employees

To ensure consistency in activities between the Program and Projects and to further enhance the capabilities of the Australian, State, and ACT Governments, it is recommended to consider existing employees or recruit new ones for key positions within integrated teams. It should be noted that recruitment can take a relatively long time, especially for HSRA, which is currently starting with a low number of staff.

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Interim appointments

Long-lead time activities must start while resources are recruited or procured to complete the S2N Business Case by December 2024. To mitigate delays to the program, there are opportunities to appoint project development professionals or private sector contractors with relevant experience to commence this work while the selection process for government candidates or outsourced work packages is underway.

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Capacity building through shadowing and mentoring

When a position is filled by senior project development professionals or outsourced work packages, it is recommended that government resources whose capability or interests in this area are allowed to shadow these positions to build government capability. This should also include mentoring through identifying development areas of focus for government resources at the commencement of the engagement, as well as a handover workshop and collateral on lessons learnt during the engagement (in collaboration with document records and management resources).

1.4.4 HSR Strategy structure and resourcing

Figure 7 below presents the team organisation chart for the HSR Strategy. Key features recommended for inclusion are:

- HSR Strategy Director who oversees the Project and reports directly to the HSRA Board and Leadership (including the CEO).
- Five workstreams aligned with the capabilities required to deliver the identified activities, each overseen by a dedicated workstream lead. These include Strategy and Planning, Demand and Economics, Delivery and Industry Engagement, Technical, and Strategy Production.
- 12 roles within the Project team, including Strategy Director, four strategy and planning roles, two delivery and industry engagement roles, four technical roles and one records management role.

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Independence of the HSR Strategy Team

The HSR Strategy Team could be considered as an additional workstream in the S2N Business Case. However, keeping the team separate has its advantages, as it allows this team to concentrate on the overarching Program strategy and provide input and advice on parallel S2N business case activities. Although separate, it is essential that both the strategy and business case teams are adequately integrated to prevent silos and ensure consistency of the S2N Business Case with the overall vision, objectives, and customer value proposition for the East Coast high-speed rail corridor.

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s47D, s47E(d)

1.4.5 S2N Business Case structure and resourcing

HSRA is discussing and developing the S2N Business Case approach, structure, and resourcing with the NSW Government. In support of these discussions and independent of the visibility of these discussions, the Plan provides a view of the S2N Business Case structure and resourcing.

Figure 9 below provides a team organisational chart for the S2N Business Case, which suggests the inclusion of the following key features:

- **The S2N Business Case Director and Manager are responsible for providing strategic oversight for the Project and reporting to the HSRA Board and Leadership, including the CEO.** The S2N Business Case Director role is primarily focused on providing overall quality assurance. In contrast, the S2N Business Case Manager role is responsible for project management, ensuring coordination between the workstreams and on-time completion of the program by December 2024.

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s47D, s47E(d)

Flexibility in the mix of resources for the S2N Business Case

According to the traditional resource estimation approach, approximately 50 full-time employees (FTEs) will be needed for the Project, with an option of securing additional employees or secondees from other government agencies in advance. This approach also allows for more flexibility in the program, giving ample time for quality assurance and other review activities.

However, a different mix of resources may be required starting in early 2024. In particular, TfNSW will have a more significant role in assessing and producing the S2N Business Case. This may include a greater reliance on outsourced packages to reduce the Project team size or depending on interim appointments from the private sector or outsourced work packages with proven skills and capability in developing business cases. The final mix of resources will be determined after discussions with TfNSW, and the internal and external markets for resources will be evaluated.

s47D, s47E(d)

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Based on benchmarked costs from similar business cases, it is estimated that the development costs for the S2N Business Case could be around $60 million[7]. A bottom-up estimate for total 2024 calendar year costs (including the HSR Strategy and S2N Business Case) places this total estimate at around $65 million.

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Note: *Based on forecasts prior to project pause.

Figure 10 below shows positions recommended for priority recruitment, which may include 20 employees, secondees, and senior project development professionals. These are identified based on priority activities recommended to commence in early 2024. They include:

- **February 2024** – S2N Business Case Director, Strategy and Planning Manager, Demand and Economics Manager, Technical Director, Program Manager, Transport Modelling Manager, Industry Engagement Lead and Digital Engineering.

- **March 2024** – S2N Business Case Manager, Customer Experience Manager, Strategic Assessment Manager, Planning Approvals Manager, Interface Manager and Stakeholder Engagement Manager.

These roles could be HSRA employees, secondees from other government departments or senior project development professionals. Opportunities to accelerate recruitment or procurement should be investigated. There are opportunities for an individual to be recruited for multiple part-time positions, and it is also possible to make interim appointments to enable fast mobilisation and subsequently go to market for these positions later where required.

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[7] This level of investment is necessary to ensure a high degree of confidence and robustness in the final business case. However, if given sufficient time, this amount could justifiably exceed $70 to $80 million and still provide value for money in terms of development activities. s47B(a)
However, S2N activities in 2025 could benefit from this funding to maintain momentum through assurance and approvals if any funds are unspent.

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s47D, s47E(d)

Outsourced work packages need to provide a balance between minimising the complexity of interfaces and maximising opportunities for specialisation and competition. s47D, s47E(d)

s47D, s47E(d)

s47D, s47E(d)

1.4.6 Culture and ways of working

An important aspect of effective governance involves a strong cultural foundation of collaboration, ways of working, innovation, and transparency.

The Australian Government (also known as the Commonwealth, or Cth) has a crucial role in ensuring a clear vision is provided and coordination and integration of national infrastructure and services. Gaps or inconsistencies in benefits and transportation across business case scopes and state borders can have serious impacts on people's mobility and could also have knock-on effects on businesses and the economy.

It is critical to ensure that roles, responsibilities, expectations, and ways of working are clear across teams, workstreams and individuals. The HSRA will consider efficient ways to support governance arrangements for key stakeholders across the HSR Strategy team, S2N Business Case team, and future business case teams. Additionally, to support effective and clear governance, the HSRA will consider:

1. Holding regular planning sessions between the Australian Government and the relevant business case team (S2N Business Case Team in the first instance), which provide an opportunity to reconfirm and align activities with the overall vision and clarify differences in expectations and responsibilities.

2. Combined Australian, State, and ACT Governments as part of integrated Project teams at a working level while keeping clear decision-making lines per the governance figures.

3. Create a culture of continuous improvement and learning from past experiences:

    a) Leveraging the latest in facilitation and idea-generation methodologies.

    b) Identify individuals with strong collaborative skills and a reputation for openness, honesty, and transparency.

    c) Shifting back to in-person meetings and workshops to build personal rapport and trust.

4. Foster a risk management culture where decisions are made, and activities are managed in an informed risk environment.

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1.4.7 Strategic stakeholder and community engagement

One of the hallmarks of the Program is early and ongoing immersion in the community to create social license and avoid a loss of momentum that could delay the program or jeopardise further funding commitments.

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Additional details on the strategic stakeholder and community engagement plan are included in the body of the report (Section 6.3), and complementary strategic documents are included as attachments to this plan.

1.4.8 Strategic industry engagement

Another of the hallmarks of the Program is early and ongoing market research and industry feedback to create industry license, which should be linked to key milestones in the program schedule. The strategic industry engagement roadmap is presented below in

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East Coast high-speed rail is a significant Program and technologies will inevitably change over the life of the Program. As such, it is critical that the CONOPS includes an assessment of alternative high-speed rail technologies currently available and that the Program scope retains sufficient flexibility to incorporate future technologies when they emerge. To form a baseline for the Program, it is proposed that alternative high-

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speed rail technologies are considered as part of market sounding as outlined in the Strategic Stakeholder Engagement Plan.

s47D, s47E(d)

Figure 17 below shows industry briefing and market sounding in the S2N Business Case, while Figure 18 shows provides a breakdown of industry challenge activities.

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s47D, s47E(d)

Additional details on the strategic industry engagement plan are included in the body of the report (Section 6.1) and in a separate report included as an attachment to this plan.

1.4.9 Strategic risk management

One of the hallmarks of the Program is a risk management culture. A strategic risk management plan and risk register have been developed to comply with international standards and are informed by the existing HSRA enterprise risk assessment. A risk workshop with the HSRA on 22nd November 2023 reviewed risk categories and initial risk ratings.

The risk assessment considered the following 15 categories:

1. Strategic context
2. Integration and interface
3. Leadership and governance requirements
4. Benefits and demand
5. Engineering and technical
6. Milestones and progress
7. Funding and financing
8. Asset management
9. Stakeholder and community engagement
10. Planning and regulatory
11. External influence
12. Commercial
13. Resourcing and procurement
14. Workplace health and safety,
15. Probity.

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Emerging findings from the risk assessment include:

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Additional details on the strategic risk management plan are included in the body of the report (Section 6.3) and in a separate report attached to this plan.

1.4.10   Strategic probity plan

Independent probity advice is critical for a program of this scale to ensure:

- Accountability and transparency.
- Fairness and impartiality in carrying out the process.
- Management of actual, potential and perceived conflict of interest.
- Maintenance of confidentiality and security of documentation and information.
- Value for money through encouraging and promoting competition and considering risks, not simply process.

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s47D, s47E(d)

The HSRA proposes prioritising completing the strategic probity plan to obtain independent advice on establishing the HSR Strategy and S2N Business Case. This is because several activities that require long lead times are recommended to commence in early 2024.

1.5   Conclusion and next steps

The Plan for an East Coast high-speed rail sets out the work plan, resourcing and governance frameworks for a HSR Strategy and S2N Business Case by December 2024. The HSR Strategy will define the entire East Coast's vision, objectives, and interoperability principles and form a key input into the S2N Business Case, which will seek an investment decision for this section.

There are several innovative concepts proposed as hallmarks of the Program to promote community and industry buy-in and embrace cultural aspirations around continual learning and improvement or ongoing risk management,s47C

s47C

Several risks have been identified for completing the HSR Strategy and S2N Business Case. These include lead times for procurement and overlap between Program and Project activities in the first half of 2024. As a result, certain fundamental and long-lead-time activities must commence in early 2024s47B(a)

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To meet the timeframes for the S2N Business Case by December 2024, several priority strategy directions and initiatives have been developed. s47C

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Other future strategic directions and initiatives that are important but less on the critical path include:

- Embedding a culture of collaboration and continuous improvement within HSRA.

- Developing innovative community and industry engagement approaches to help gather ideas, information, and test concepts early in the process.

- Defining the concept of operations for an interoperable East Coast corridor, including the route alignment, rollingstock, stations, services, commercial principles, fares and staging.

- Developing detailed economic and financial appraisals to demonstrate value for money, informed by robust lifecycle cost estimates and updated transport demand modelling.

As the Program evolves, the HSR Strategy will be periodically reviewed and updated to ensure the vision, objectives, interoperability principles, and staging are still valid based on the latest information and technologies. This update should occur at least every five years but more frequently if known changes affect the Program (e.g. significant change in the Program's vision, objectives, CONOPS, or direction).

There will also be a requirement to develop business cases for future stages in the Program. s47B(a)

There will also be the same long lead-time activities as the S2N Business Case, so it is recommended that planning for these future business cases commences at least three months prior to when they are intended to commence.

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2 Introduction

2.1 About HSRA

The High-Speed Rail Authority (HSRA) was established in 2022 to undertake evaluations and research and gather information about high-speed rail and has been tasked with creating a strategic plan by 2024-25 and Sydney to Newcastle Final Business Case by 2025-26. These need to address significant changes in the strategic context since the 2013 High-Speed Rail Study Phase 2 Report (2013 Study).

> **Strategic objective**
>
> 'Develop a high-speed rail network between cities and key regional centres through policy development and planning, national coordination and strategic advice to enhance Australia's long-term rail investment.' - Outcome 1 of the HSRA Portfolio Budget Statements (PBS)

It is noted that HSRA has identified an opportunity to prioritise the Sydney to Newcastle (S2N) Business Case compared to timeframes in the Corporate Plan and has requested that this business case to target substantial completion by December 2024 be reflected in this Strategic Plan. This is contingency on an Australian-New South Wales (NSW) Government Intergovernmental Agreement (IGA) being entered into from February 2024 at the latest. This has implications for the number and level of detail for Network Pathway to Delivery activities that can be completed in parallel as part of a High Speed Rail Strategy (the HSR Strategy, also Stage 1 of the Network Pathway to Delivery Report).

2.1.1 HSRA establishment and functions

The HSRA is the Australian Government's principal advisory on all matters related to a high-speed rail system on the Australian East Coast. Section 8 of the *High-Speed Rail Authority Act 2022* outlines the following functions of HSRA:

- Lead and coordinate policy development and planning.

- Consult, liaise, and negotiate with States, ACT Government, and other relevant parties.

- Provide advice and recommendations to the Minister and other relevant parties (including on environmental matters and interconnectedness).

- Undertake evaluations and research and gather information about the high-speed rail network, the high-speed rail corridor, a faster rail network, and additional rail corridors for a faster rail network.[8]

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[8] The Act also states that the Commonwealth may obtains a State's consent, in accordance with paragraph 51(xxxiv) of the Constitution, to the construction or extension of a railway in the State for the high-speed rail network or a faster rail network--to construct or extend the railway in the State for that network.

2.1.2 Strategic plan tasks

To progress the development of a high-speed rail system, the Australian Government has tasked HSRA to create a strategic plan that includes:[9]

- An update of the 2013 HSR Study Phase 2 Report (2013 Study) to ensure an investment-ready business case, including financing options for delivery, can be considered.

- A strategy to progress any state or local government agreements necessary to realise the construction.

- A strategy to progress state and federal environmental approvals, including a stocktake of the existing frameworks and options for addressing any challenges associated with location-specific issues.

- Options for route alignment, securing corridors, and how to stage delivery of the Program.

- Planning and corridor work for the Sydney to Newcastle section of the high-speed rail network, backed by a $500 million commitment from the Australian Government. [10]

HSRA has been structured as a federal government agency governed by a board. While it comprises three sections: HSR Engagement and Policy, HSR Network Planning and Design, and Corporate and Secretariat, this Strategic Plan will detail how these functions will evolve and grow in the next 3 years, with a particular focus on the next 12 months consistent with the timeframe to complete the S2N Business Case by December 2024.

The HSRA Corporate Plan has been adopted and will guide the internal operations of the HSRA for the period 2023-24 to 2025-27:

- **Set a Strategic Plan** (the Plan) by the end of 2023.

- **Develop an Organisational Strategy** by the end of 2023.

- **Develop Supporting Strategies** and frameworks in 2024 – Communications and stakeholder engagement, risk management, Australian Government, State or ACT environmental and planning approvals.

- **Pathway to Delivery Report (Phase 3)** by June 2025 – Review and update of 2013 High-Speed Rail Study (Phase 2).

- **S2N Business Case** by June 2026 – To be presented to the government for investment consideration.

The timeframes for completing the HSR Strategy and S2N Business Case are aligned with the HSRA Corporate Plan, with key elements delivered earlier than required.

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[9] Commonwealth Government, *"High-Speed Rail Authority Statement of Expectations"*, July 2023, Page 2.
[10] Commonwealth Government, "High-Speed Rail Authority – 1.1   Strategic direction statement", Portfolio Budget Statement 2023-24, Page 259.

2.1.3 Other Changes in the Strategic Context

There are also several changes since the 2013 High-Speed Rail Study Phase 2 Report, driving the need to re-assess previous analyses:

- **New investments:** Brisbane Airport's second runway (2021) and Western Sydney Airport (in progress, expected completion in 2026). These impact the counterfactual (Base Case) against which high-speed rail options will be assessed.

- **Updated information:** population forecasts, including the Australian Bureau of Statistics Census 2021 and Australian Treasury's Intergenerational Report.

- **Changes to government priorities:** the Australian Government's net zero carbon emission commitments by 2050 and the National Housing Accord 2022.

- **Planning and design requirements:** construction on flood plains, bushfires, climate event resilience.

- **Progress in parallel rail planning:** the NSW Fast Rail Program, Geelong Fast Rail, and Logan to Gold Coast Faster Rail.

- **Evolutions in technology and construction methods:** Artificial Intelligence (AI) to optimise design and maintenance, carbon capture and storage, and increasing use of viaducts as an alternative to tunnelling.

- **Changes in the feasibility or complexity of locating stations** because of extensive tunnelling (e.g. multiple Sydney Metro lines in the Sydney CBD) or above station development (e.g. proposal for Brisbane Live Arena above Roma Street Station).

2.1.4 Updates to the 2013 High-Speed Rail Study Phase 2 Report

Table 7 below presents a more detailed analysis of the approach, assumptions for key elements in the 2013 Study, and subsequent changes driving requirements to reconsider. This covers the vision, objectives, costs, demand, economics, corridor, stations, rolling stock, systems, service, fares, and staging.

Table 7: Key updates to the 2013 High-Speed Rail Study Phase 2 Report

Area	Approach and/or assumptions	Changes requiring reconsideration	Priority
Vision and objectives	• 2013 Phase 2 Report used an engineering-led approach to inform decision-making, focusing on technical feasibility (i.e. costs, environmental impacts, constructability, patronage).	• Elevation of housing, net zero, local skills and manufacturing, and social equity in government strategies, plans and priorities. • Decision-making (corridor, stations, rollingstock, systems, services, fares and staging) should consider all objectives, not just technical feasibility.	High
Costs	• Capital costs of $114 billion ($2012) • Impacted by 144 kilometres (8 per cent) tunnelling, accounting for 29 per cent of costs).	• Significant cost escalation and current funding-constrained environment. • Cost estimates did not include property acquisition. • Opportunities to reduce costs by reinterrogating the location of stations in capital cities (which drives the requirement for tunnelling) and increased use of viaducts (acknowledging visual amenity and surface impacts).	High
Demand	• Market-share approach ('logit mode choice model') considering existing air, rail and other modes. • Informed by customer survey on willingness to pay for high-speed rail services ('stated preference').	• Customer preferences will likely change given the increased remote working and regional re-location following the COVID-19 pandemic. • Updated information, including actual/forecast trips on other modes, the Australian Bureau of Statistics 2021 Census and population forecasts in the Australian Government's Intergenerational Report. • New approaches to transport demand modelling, including integrating mobile telephone GPS data. • The study found a sharp decrease in travel demand the longer the journey time compared to air travel.	High
Economics	• Focus on conventional transport benefits such as travel time savings, accounting for nearly all the estimated benefits. • Estimated negative environmental benefits due to Sydney Airport's forecast to reach capacity.	• The counterfactual against which high-speed rail was compared ('Base Case') did not assume investments in airport capacity, such as Western Sydney Airport and Brisbane's second runway. • New approaches to quantify land use and social benefits, which were not quantified in the 2013 Study. This will require alternative land use scenarios to be included in transport demand modelling. • Economic appraisal and business cases have moved beyond the benefit-cost ratio as the sole threshold measure. This reflects significant advances in data analytics and geospatial mapping approaches that enable decision-makers to consider additional quantitative evidence.	Medium
Corridor	• 1,748 kilometres of dedicated route between Brisbane-Sydney-Canberra-Melbourne. • Engineering-led approach focusing on environmental constraints.	• The 2013 corridor will form the baseline. However, there are opportunities to be more flexible (which will encourage innovation) and include additional considerations related to the vision and objectives. As such, you may want to reflect this with less definition (e.g. a broad 'swoosh' rather than a definitive route alignment drawing)	Medium

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Area	Approach and/or assumptions	Changes requiring reconsideration	Priority
		• Corridor and station selection are inherently linked because the route alignment needs to connect the stations. As such, changes to stations will also need to be reflected in changes to the route alignment.	
Stations	• The preferred alignment includes four capital city stations, four city-peripheral stations, and stations at s47B(a) s47B(a)	• The location of stations in capital cities is a major factor in the cost of building tunnels and affects the alignment of the route. To reduce costs, it is possible to place stations outside the central business district (CBD) where there are dependable transport interchanges. s47B(a) • There have been changes in the preferred station locations between the 2013 Study and the 2019 Fast Rail Sydney to Newcastle Strategic Business Case. Tuggerah is now preferred over Ourimbah, and Epping is preferred over Hornsby due to the opportunity for interchange with Sydney Metro. The Suburban Rail Loop in Melbourne has also proposed a station at Broadmeadows instead of Campbellfield. s47B(a)	High
Rollingstock	• Maximum operating speed of 200 km/h within urban areas and 350 km/h elsewhere (around 2hrs 37mins from Brisbane to Sydney, 2hrs 44mins Sydney to Melbourne and 39 minutes from Sydney to Newcastle). Services would initially be operated by eight-car sets with the potential to increase train size to 12 or 16 cars as patronage demand requires.	• Train speeds are a vital driver of customer benefit, and customers will also be attracted to high-speed rail due to features contributing to comfort and convenience. There is a legislative requirement for high-speed rail on the East Coast to achieve speeds of at least 250 kilometres per hour. • The kinetic envelope of rollingstock will impact tunnels, and train lengths will impact platform lengths at stations, which is a key driver of costs (particularly in capital cities). • Opportunity to develop travel time targets to guide decision-making, particularly the balance between transport and land use outcomes, which rollingstock speeds and the number of stops will impact.	High
Systems	• The network infrastructure would be a double-track standard-gauge electrified line. • Signalling requirements not specified.	• Key system elements such as tracks and signalling need to be interoperable across the network and agreed early between all the states and territories. • Using existing tracks with mixed rollingstock types can reduce costs, but there are significant trade-offs regarding top speeds and reliability.	High

Area	Approach and/or assumptions	Changes requiring reconsideration	Priority
		• There will be technological advancements that need to be considered, particularly given the long-term nature of this Program. As such, it is also critical to retain flexibility to accommodate these new technologies when they become available.	
Services	• Mixture of inter-city express services and regional services stopping at intermediate stations. • Three types of service: non-stop between Sydney and Melbourne, express also stopping at Canberra and about three other stations, and stopping services for other stations. There is a total of 36 services per day in each direction.	• The east-cost high-speed rail network needs to accommodate the requirements of both capital city and regional customers. This will likely involve a mix of express and all-stop or limited-stop services. Without provision for passing loops, this will significantly limit the capacity or reliability of services.	Medium
Fares	• Designed to offset the operating costs of high-speed rail.	• There is a trade off between higher fares to offset high-speed rail costs and lower, subsidised fares to increase patronage and achieve other social equity objectives (which could include differentiated fares such as concessions). • s47B(a) This is not necessarily a critical decision that needs to be locked down now to progress with planning. However, assumptions and alternative scenarios would be an input to transport demand modelling.	Low
Staging	s47B(a) • Prioritisation based on relative costs and patronage.	• HSRA Corporate Plan includes the development of a S2N Business Case by 2025-26. The Central Coast and Newcastle have been identified as two of the six most important cities in the Sydney Greater Metropolitan Area and are planned to accommodate significant additional housing as part of the Six Cities Region Plan. High-speed rail would act as a catalyst for housing and commercial development around stations. • Central Coast is already a significant commuter hub for Sydney, which results in congestion on the M1 Motorway and crowding on intercity rail services. Car travel takes around 1 hour 25 minutes compared to about 1 hour 44 minutes by train. High-speed rail will attract mode share from cars and free up the existing rail network to accommodate additional freight (forecast to reach capacity by 2041) and local/regional passenger services. • Public transport travel times from Newcastle to the Sydney CBD are currently prohibitive, taking around 2 hours and 20 minutes by car and 2 hours and 55 minutes by intercity train. High-speed rail	Low

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Area	Approach and/or assumptions	Changes requiring reconsideration	Priority
		will significantly reduce travel times (to 39 minutes in the 2013 Study), making Newcastle a significant commuter hub for the Sydney CBD.	
		• The central location of Sydney to Newcastle within the East Coast high-speed rail network provides flexibility for future extensions. It is a relatively small section (around 160 kilometres) but is topographically challenging and will provide important lessons learnt for constructing future sections. It can also be relatively easily extended to Canberra, consistent with the optimal staging in the 2013 Study.	
		• Planning on the S2N section is already relatively advanced based on the NSW Fast Rail Program, which has included geotechnical investigations and relatively detailed cost estimates.	
		• There is already a $500 million commitment from the Australian Government to progress planning and corridor reservation.	

2.2 About this plan

HSRA has ambitious targets in the next four years. It must generate the robust evidence needed for the government to responsibly invest in any investment at the scale, complexity, and impact an East Coast high-speed rail. generates.

HSRA needs to go beyond just planning and feasibility studies and engage with the states along the East Coast and the ACT to agree on planning pathways. It is essential to tactically preserve critical corridors to ensure that the construction of the high-speed rail system is done in harmony with planned development along its corridor and in the regions without conflicting with other land uses.

To make this Program a reality, a skilled workforce will be required. The workforce should include technical and delivery professionals, planning and policy experts, and teams dedicated to cross-agency and cross-jurisdictional collaboration and partnership. A wide breadth of skills is necessary, from transport and land use planning to legal, risk management, and communications.

This Strategic Plan aims to integrate the two critical organisational needs by providing a practical roadmap that can guide the day-to-day activities for HSRA through 2026-27. The goal is to develop a HSR Strategy by 2024-25 and a S2N Business Case by 2025-26. However, an opportunity has been identified by HSRA to prioritise the delivery of the S2N Business Case to target substantial completion December 2024, which is reflected in this Strategic Plan. s47B(a)

Specifically, this Plan:

- Defines the strategic narrative for an East Coast high-speed rail. network.

- Identifies activities required for HSRA to progress the HSR Strategy successfully.

- Defines high-speed rail Program structure to deliver its mandate, identifying essential functions, roles, and governance requirements, including reporting frameworks and communication lines.

- Develop an estimation of the type and quantity of resourcing to enable program development activities and indicative budgets for future stages.

- Identifies and assesses key delivery risks and outlines how HSRA can respond.

s47B(a)

s47D, s47E(d)

The Strategic Plan for HSRA is informed by case studies conducted on five major rail projects from Australia (Sydney Metro Northwest (SMNW) and ILR) and overseas (UK HS1 and High Speed 2 (HS2), and US California High-Speed Rail (CHSR). These case studies aim to identify challenges and successes that can be used as lessons learnt for HSRA. The development of the Strategic Plan will address these lessons learnt.

2.3   Key strategic plan concepts

The Plan sets out the vision, customer value proposition, objectives and principles for developing an East Coast high-speed rail. system. These concepts are interrelated and will provide the 'bookends' to govern future decision-making around HSR system elements such as route alignment, station locations, rollingstock, rail systems, service types and fare setting. They will be further strengthened in future stages by being incorporated into intergovernmental agreements between the states and ACT and endorsed through formal governance processes in the HSR Strategy in 2024-25.

Vision

The vision is a high-level, future-focused statement of the overarching purpose and outcomes expected from HSR. It essentially summarises the objective themes in a few sentences.

Objectives

The objectives are specific milestones that will guide the delivery of a high-speed rail system on Australia's East Coast. These objectives serve two separate but crucial functions. Firstly, they will guide the Australian, State, and ACT Governments on the type of high-speed rail systems that must be developed. Secondly, they act as specific and measurable signposts to guide, coordinate, and prioritise all HSRA activities.

For instance, if urban and regional development is a priority, then the high-speed rail system needs to consider the local context and how it would fit into urban and regional areas to create economic and social opportunities for its people. This contrasts with a high-speed rail system meant to replace airplanes and transport as many people as possible between two population centres.

As detailed in Section 2.1, The objectives that will guide high-speed rail are:

- Better connectivity and genuine alternatives.
- Environmental sustainability and resilience.
- Urban and regional development.
- Productivity and job creation.
- Access to public services and social opportunities.
- Embracing innovation to deliver value for money.

Program versus project objectives

When looking at the objectives for a high-speed rail corridor, there are two perspectives to consider: those for the entire corridor and those for specific areas and segments it will serve. The Program's objectives are broad and apply to the 1,700-kilometre corridor. However, it is appropriate (and even desirable) to develop specific objectives for future Projects that consider a particular area's unique needs, challenges, and goals.

While the Program has overall goals for urban and regional development, such as improving access to important export markets, individual Projects may have more specific objectives focused on particular challenges faced by the community. For example, a Project may aim to improve connectivity to housing options, which may be less important in other regions.

Customer value proposition

The customer value proposition is a statement that outlines the user's experience with the HSR product. It includes the overall look and feel of the product. The Program's urban and regional development objectives may target specific community needs such as housing and economic growth. The vision is aligned with the perspective of the users of the HSR service and those in the station precincts who would also benefit. The more detailed concept of operations (CONOPs) will be outlined in the HSR Strategy in 2024. The CONOPS includes the corridor/route alignment, track gauge, dedicated versus existing track, rollingstock, travel speeds,

local versus overseas manufacturing, stations, services, signalling, power supply, technologies, commercial principles (including ownership and operation), fares and staging.

Principles

The principles operationalise the objectives for specific decisions, describing *how* high-speed rail will be delivered. They will cover culture and ways of working between the Australian Government, States and ACT, hallmark features of the plan and decision-making around the corridor, stations, rollingstock, systems, services and fares.

Strategic directions and initiatives

The strategic plan comprises strategic directions and initiatives, each essential.

Strategic directions are broad themes that provide guidance for the Australian Government, States, and ACT to ensure a united, integrated, and consistent approach to HSR. They do not prescribe but act as a guide to avoid division, inconsistency, or conflict between the parties involved. They will require the coordinated effort of many different teams and stakeholders working in unison.

Initiatives are specific activities that the Australian Government, States, and ACT are encouraged to undertake. They reflect more discrete pieces of work that need to be conducted, more often by dedicated teams who will lead and coordinate key activities.

Strategic directions and initiatives are underpinned by lessons learnt from case studies, research (including Phase 1, Phase 2, and the Sydney to Newcastle Fast Rail business case), and professionals' collective experience and expertise in transport, high-speed rail, and land use. They have been mapped out with indicative timelines, accounting for prerequisites, interdependencies, risks, and mitigation strategies.

2.4 Vision

<u>Vision</u>

Connecting the East Coast with high-speed rail capable of travelling more than 250 km/hr will revolutionise mobility, sustainability and quality of life for generations of Australians.

An East Coast high-speed rail system will revolutionise Australian mobility and population settlement by connecting our cities and regions with fast and reliable services that contribute to Australia's net zero emission targets. It will promote improved quality of life, provide opportunities for local skills and manufacturing, and provide better access to public services.

The vision statement is HSRA's Southern Cross, guiding navigation through the next three years of program development, including the HSR Strategy in 2024-25 and the S2N Business Case in 2025-26. The vision below has been developed in collaboration with the HSRA team and Board. It reflects the service need for HSR in Australia, informed by Australian, State, and ACT Government strategies, and the ultimate benefits for the Australian public.

The 'visionary', 'long-term', and 'revolutionary' aspects of this statement reflect the scale of this investment over a more than 40-year program and the catalytic impact of high-speed rail, which can influence where people live and work.

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2.1 Customer value proposition

The HSR customer value proposition has been developed in collaboration with the HSRA team and Board to align with the vision and objectives. This is a foundational aspect of delivering HSR on the Australian East Coast and has been elevated from an objective to a fundamental way of working.

> **Customer value proposition**
>
> **High-speed rail will carefully balance inter-city and regional customer needs to maximise community value.**
>
> High-speed rail will provide a range of city-to-city and regional services that integrate with complementary transport systems. Stations and trains will be designed with the comfort, convenience, and safety of customers in mind, equipped with amenities needed to work or relax while accommodating luggage. They will also be integrated into high-amenity precincts in station catchments and support affordable housing and complementary commercial and community facilities.

The main objective of an East Coast high-speed rail is to provide a convenient travel experience for city-to-city customers travelling between capital cities and those travelling to other regional locations or capital cities.

High-speed rail's quality of service is a crucial factor influencing customers' travel choices. Travellers expect high-speed rail to be comfortable, convenient and well-coordinated with other services. They are willing to pay more or spend extra time travelling for better amenities. When designing stations and rolling stock, it is vital to consider the distinct requirements of business and leisure travellers. For example, business travellers may need private spaces for confidential discussions, while all customers require comfortable seats, the ability to use laptops and robust cellular and Wi-Fi reception. These features can significantly enhance the customer experience and satisfaction with HSR.

Also, travellers prefer to avoid or minimise transfers, especially when they have luggage, as transfers involve extra effort and uncertainty. HSR stations close to central business districts (CBDs) have an advantage because they reduce the need for transfers and simplify the travel experience. CBD locations are well connected to other transport services, making it easy for customers to reach their final destinations.

However, building high-speed rail stations in CBDs is expensive and complicated, requiring extensive tunnelling and land acquisition. Some CBD locations proposed in the 2013 Study may not be feasible anymore due to changes in the urban environment (e.g. Sydney CBD has several Sydney Metro lines crossing it, Roma St Station in Brisbane now has a new arena being built above it).

An alternative strategy is locating high-speed rail stations further away from CBDs with existing transport connections that facilitate transfers. This option can reduce the costs and complexity of HSR while minimising the inconvenience to customers. For example, high-speed rail stations could be near airports or significant interchanges with frequent and reliable services to CBDs and other destinations.

Given these complexities, every decision made in the planning process should prioritise the customer experience, and these interactions will need to be carefully examined as the high-speed rail system evolves.

2.2 Objectives

The objectives below expand on the vision and provide HSRA with clear signposts to guide the journey. These have been developed to reflect the following opportunities provided by an East Coast high-speed rail aligned with the following themes.

Figure 19: Objective themes

- Better connectivity and genuine alternatives
- Environmental sustainability and resilience
- Urban and regional development
- Productivity and job creation
- Access to public services and social opportunities
- Constructability and value for money

2.2.1 Better connectivity and genuine alternatives

HSR will attract passengers (including from alternative modes and generating new trips) as it provides a better door-to-door journey in terms of travel times and customer amenities at stations and on trains. This includes speeds over 250km/hr, access, interchange, comfort, shelter, safety, food and beverage offerings, convenient retail, Wi-Fi and cellular coverage. Achieving the transport objectives is an enabler of all other social, environmental, and economic objectives dependent on high-speed rail being attractive to customers, households, and businesses.

The high-speed rail system will need to be designed with the customer in mind, and the Program must put the customer at the centre of everything it does. This needs to meet and exceed their need before, during, and after their journey. It must be priced competitively and affordable for the Australian public and tourists. Otherwise, people will simply choose something else.

2.2.2 Environmental sustainability and resilience

An effective and impactful HSR system provides the opportunity to carry passengers with lower carbon emissions than the current alternatives and provides an additional transport option during natural disasters. It will need to provide the transport system with redundancy in natural disasters or public health emergencies. Australian communities and businesses should not rely solely on a handful of transport modes and instead should have equivalent alternatives when one part of the system goes down. The Program to develop high-speed rail should also embrace sustainable design principles that minimise the construction footprint.

As discussed in more detail in Section 3.2, high-speed rail can create a step-change reduction in carbon emissions as part of a suite of transport sustainability initiatives. There are currently limits to how efficient and clean internal combustion engines can become, and hybrid and battery technologies need to be faster to roll out and will remain prohibitively expensive for many in the short term. Electrification and jet fuel alternatives are still in early development and may not be feasible for all types of journeys.

2.2.3 Urban and regional development

High-speed rail should create opportunities to capitalise on its ability to build capacity in the public transport system, not just in terms of seats but time. An effective HSR system with speeds above 250km/hr shrinks the

'distance' between our communities and opens new development opportunities and market access, not just at the station but within the wider catchment.

It is critical that this growth is being diverted away from locations with higher costs or consequences of accommodating growth. Development costs tend to be lower where there are lower land costs and spare capacity in population-supporting infrastructure such as utilities, schools and hospitals. It is also crucial that place-making is considered through the HSR scope so that station precincts are attractive places to live and work.

2.2.4 Productivity and job creation

High-speed rail provides a multi-faceted economic opportunity to carry freight onboard, increase productive time/reduce disruptions for business travellers, expand the workforce catchment for businesses, and create secure rail manufacturing and maintenance jobs in regional areas through this substantial 40-plus-year program.

The Program must look at innovative and creative ways the communities can embed high-speed rail in their everyday work. It will need to 'shrink' the distances to markets and provide businesses with competitive alternatives to get their products and services to market. The Program must work with businesses to identify and solidify these opportunities at every point along the corridor.

2.2.5 Access to public services and social opportunities

High-speed rail can offer a convenient and efficient transportation option for regional passengers, allowing them to access essential services such as healthcare and higher education without spending lengthy periods away from family and friends. Moreover, it can help people avoid moving away from their support networks for work.

Developing an East Coast high-speed rail. Should prioritise the accessibility needs of disabled and mobility-challenged passengers. Additionally, the fare strategy should consider comparing prices with other transportation options and whether it's better to recover the cost of operations from fares (which could increase pricing and reduce patronage) or to subsidise fares to achieve broader social outcomes and increase trade. Offering different fares, including concession fares, can balance these competing objectives.

2.2.6 Embracing innovation to deliver value for money

An investment in the scale of an East Coast high-speed rail is significant. The 2013 Study estimated a total capital cost of $114 billion in 2012 terms.[11] Since then, there has been price escalation due to international supply shocks impacting fuel prices, etc., which would have increased this to $163.4 billion.[12] The construction complexity also increased due to new investments (e.g. Sydney Metro tunnels in CBD, Brisbane Live above Roma St Station, etc.), and additional property acquisition costs need to be accounted for.

As such, the Program must look at options to defray costs, including staging to deliver smaller sections that provide early benefits (a key finding from the Inland Rail case study), delivering challenging sections first to learn lessons for the rest of the network, creating a 'central spine' that can easily be expanded in the future, opportunities to leverage urban and regional development opportunities for third-party contributions to offset costs, and innovating private financing options.

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[11] AECOM et al., *"High-Speed Rail Study Phase 2 Report"*, 2013, Page vii.
[12] Australian Bureau of Statistics, *"Producer Price Indexes, Australia: Series 6427917, Table 17"*, September 2023.

Table 8: Program objectives

Theme	Objective Description	Outcomes Sought
Better Connectivity & Genuine Alternatives	A high-speed rail system capable of travelling more than 250km/hr that connects Australia's East Coast offers superior convenience and quality and represents a genuine alternative to conventional air, road, and rail transport.	Placing high-speed rail stations strategically near population and commercial centres will allow passengers to enjoy shorter access times, fewer transfers, and timely, reliable travel, with minimal disruptions from delays. An excellent customer experience at stations and on trains travelling over 250km/hr makes high-speed rail a genuine alternative to other transport modes for convenient and enjoyable travel.
Environ. Sustainability & Resilience	A high-speed rail system that provides the foundation for an ambitious step change in environmental and sustainability outcomes, contributing to Australia's net zero targets and supporting a cleaner, greener future as part of a complementary suite of transport initiatives.	High-speed rail will provide a clean, green transport alternative to meet net-zero emission commitments alongside other complementary transport initiatives such as electrification and alternative fuels. It will reduce carbon emissions and lower the overall carbon footprint from transport, supported by sustainable construction techniques and innovative technology. Enhancing the rail network's capacity also increases reliability and resilience during natural disasters, serving as an alternative evacuation route and logistical support, thus minimising delays, injuries, and fatalities associated with such events.
Urban & Regional Development	A high-speed rail system that facilitates sustainable, long-term population growth by unlocking land use and place-making opportunities not possible with conventional transport solutions, attracting investment in housing around stations and within the wider catchment, relieving pressure on our capital cities to accommodate growth.	Integrated land use planning and place-making around high-speed rail stations that leverage existing population-supporting infrastructure and capitalise on reduced regional land costs will provide new and attractive places to live. This will support increased housing affordability and diversity, alleviate urban congestion by accommodating growth and elevate living standards. The resultant infrastructure savings to support population growth can then be redirected to other essential or strategic priorities.
Productivity & Job Creation	A high-speed rail system that provides all the necessary amenities for business travellers and workers while also catering for high-value or time-sensitive freight.. This system is designed to meet the needs of tourists regarding luggage and information. It aims to connect workers to businesses better and support a sustainable domestic rail manufacturing industry.	Business travellers will benefit from high amenity facilities with reduced disruptions. Tourists will be able to easily travel with and store their luggage, be provided with clear information and have access to attractive food, beverage and retail options. High-speed rail will provide a superior freight service for high-value or time-sensitive freight and free up capacity for freight or regular passenger services on existing rail networks. High-speed connections between commuting and business hubs will enhance businesses' reach, attract new talent, and improve information sharing. Construction and maintenance will also create opportunities for training and secure employment, particularly in regional communities.
Improved Access to Public Services & Social Opportunities	A high-speed rail system that is designed for all passengers, including those with disabilities or mobility challenges, and improves equitable access to essential services. It also helps people better connect with friends, family and other social networks.	An accessible high-speed rail network with differentiated fares (including concessions) and better connections to public services and social networks will improve social outcomes and quality of life, especially for regional or disadvantaged communities. It also reduces the need for people to move away from their family and social networks to access jobs, education and healthcare or makes it easier for them to reconnect when they do.
Embracing Innovation to Deliver Value for Money	A high-speed rail system that is incrementally staged and delivered in an efficient, effective and pragmatic way that proactively manages risks, takes on board lessons learnt from overseas and previous stages, leverages best-practice tools and techniques, including digital engineering, takes on board public and industry views to build social license and carefully considers commercial and private financing opportunities.	Incremental delivery and industry engagement will provide opportunities to reduce or offset costs by defining smaller projects, encouraging competition between contractors, leveraging private sector innovations and identifying commercial opportunities (such as strategic land holdings, private sector contributions, commercial development or private financing). Transparency in planning that embraces lessons learnt from overseas and leverages the latest innovations, including digital engineering, will also instil public and industry confidence, create a shared stake in the long-term success of high-speed rail, and build social and industry licenses that could otherwise undermine or delay the program.

2.3 Other considerations

2.3.1 Program versus project objectives

Project objectives will need to be developed for the S2N Business Case and future stages. These will be directly aligned with the Program objectives to achieve the overarching vision, objectives, and interoperability but will include more Project-specific details (e.g. specific urban and regional development opportunities in that section). Like the Program objectives, these will be included in future intergovernmental agreements between the Australian Government and the States or ACT developed for specific business cases and formally endorsed through Project governance.

2.3.1 Travel time targets

Travel time targets will be developed as part of the HSR Strategy to guide decision-making and provide a balance between competing objectives. These will be developed for the corridor and specific sections and incorporated into the Program and Project objectives for endorsement through formal governance processes. These should not be legislated like the CHSR case study, as this approach is too rigid and will add substantial time to progress through parliament.

The working assumption from the 2013 Study is around 3 hours between Sydney and Brisbane[13] and Sydney and Melbourne[14], respectively. However, this requires further interrogation as the CONOPS is developed targeting speeds above 250km/h.

There will be a significant trade-off for capital city stations between reducing proximity to the CBD to reduce costs and complexity and increasing access times to the CBD. However, this can be overcome by locating them close to the complementary transport systems, enabling convenient interchange. Proximity to the CBD will be essential for business travellers and tourists as the origins or destinations of their journeys will be in the CBD.

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2.3.2 Commercial principles

Commercial principles will be developed as part of the concept of operations (CONOPS) in the HSR Strategy to support embracing innovation to deliver value for money. Key considerations will include:

- Responsibility for ownership, operation and maintenance including track, rollingstock and systems.

- Local versus overseas manufacturing.

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This could include the development of commercial case studies.

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[13] 2013 Study estimated 2 hours 37 minutes.
[14] 2013 Study estimated 2 hours 44 minutes.

2.3.3 Options assessment

A key early activity in developing the HSR Strategy will be an options assessment to develop a CONOPS. This will require defining the approach for a multi-criteria analysis (MCA), which is the framework that will be used to short-list options based on the objectives. A critical part of this approach is prioritising or weighting objectives to enable trade-offs between competing objectives, given that it is only possible to fully satisfy some objectives simultaneously. Consistent with the Infrastructure Australia MCA guidelines, this will include defining:

- Counterfactual (Base Case[15]) against which all options will be compared. This includes committed and funded future investments and ongoing activities to maintain minimum service levels on existing transport networks.

- Criteria directly aligned with the objectives, scoring thresholds sufficient to cover the expected outcomes range, and measures to inform scoring against the criteria. MCA can accommodate a range of quantitative measures (e.g. costs, patronage, travel time and additional housing) and qualitative measures (e.g. input from subject matter experts on constructability and risk).

- Weightings applied to the scores against each criterion may be informed by evidence such as community surveys, benchmarks from economic appraisal or views of the HSRA board or other governance groups.

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[15] A Base Case is the counterfactual against which all options will be incrementally measured. It is not normally "do nothing" but rather is "do minimum" including committed and funded investments and ongoing operating and maintenance to maintain minimum service levels/standards.

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3 The case for high-speed rail

3.1 Better connectivity and genuine alternatives

3.1.1 Roads and highways

The road and highway network provide core connections to our cities and regions. But they have their limitations. As roads expand and offer more capacity, they encourage more drivers to use them, contributing to further congestion.

Urban and regional development are also impacted by the widespread use of cars, which significantly contributes to noise, air, and water pollution. Compared to other transport modes, cars are associated with higher accident rates and have the potential to separate communities with large, multi-lane roads. Such negative environmental effects can decrease the desirability of congested urban areas for residents and businesses.

The fast and efficient delivery of consumer goods heavily relies on the road network, making the shipping process vulnerable to traffic congestion, road conditions, and maintenance closures. Free-flow speeds have steadily declined in our capital cities as road supply struggles to meet demand as shown in Figure 20 below. This reliance restricts courier and express post services, binding them to the inherent constraints and unpredictability of the roadways.

Figure 20: Average Road free-flow speeds, capital cities 2014-2018[16]
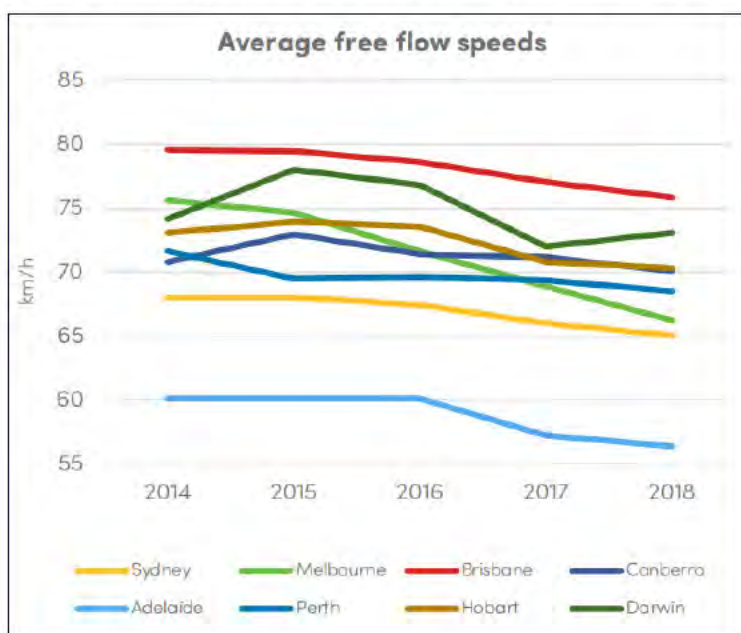
Source: Journey Analytics for the Australian Automotive Association (2018)

The promise of next business day delivery is not uniformly applicable, being geographically restricted, excluding some regions from timely service. Services don't always provide the same delivery guarantees. Customers need to be aware of their local Post Office schedules and street posting box times, which can differ across locations, impacting the dispatch of goods.

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[16] Journey Analytics, *"Road Congestion in Australia"*, for the Australian Automotive Association, 2018.

3.1.2 Coaches and regional rail

While coaches and regional rail provide alternatives to air travel and cars, they have limitations. Like cars, they are limited in terms of speed and manoeuvrability. Coaches often need help navigating traffic and are restricted regarding possible routes. In many cases, trips can take far longer than driving. Trains often have multiple stops along the route contributing to increased travel times.

Disadvantaged travellers with fewer commuting choices (e.g. those who do not drive, on lower incomes, students or older people) face disproportionally long journeys when they rely solely on conventional coach and rail services. This disparity increases in more regional locations with longer trips. For example:

- A train trip from S2N currently takes around 2 hours 44 minutes, which is longer than coach or car alternatives of 2 hr 20 minutes. However, these road-based trips can take up to 3 hours during congestion and coach tickets can cost around $40.

- A train trip from Sydney to Canberra current takes around 4 hours 44 minutes and can cost from $40 to $60. This compares to 3 hours 30 minutes for coaches, costing around $50 to $60, and around 3 hours 10 minutes for cars. However, road-based trips can increase to more than 3 hours 40 minutes during congestion.

By comparison, the 2013 High Speed Rail Study estimated travel times of 39 minutes from S2N and 64 mins from Sydney to Canberra, offering significant advantages over current public transport options for regional trips.

Table 9: Estimated travel time from via coach and public transport (Sydney, Newcastle and Canberra)

Origin / Destination	Mode	Est. travel time
Sydney (Central Station) to Newcastle (Interchange)	Coach	2hr 20min[17]
	Rail (Intercity)	2hr 44min[18]
	Car	2hr 20min[19] (2hr – 3hr)
Sydney (Central Station) to Canberra (Civic[20], Kingston Station)	Coach	3hr 30min[21]
	Rail (XPLORER)	4hr 44min[22]
	Car	3hr, 10mins[23] (2hr 50min – 3hr 40min)

Note: Includes in-vehicle time only. Excludes access time to the coach terminal or train station and egress times from these locations to the traveller's destination.

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[17] Greyhound Australia, "Timetables", available at: https://www.greyhound.com.au/buses/sydney-to-newcastle, accessed 18th December 2023.
[18] Google Maps, 2023. Based on average weekday trip departing Central Station at 7:00am for Newcastle Interchange.
[19] Google Maps, 2023. Based on average weekday trip departing Central Station at 7:00am for Newcastle Interchange.
[20] Coach and car trips are from Central Station in Sydney to Civic Coach Stop (Corner London Circuit and West Way).
[21] Greyhound Australia, "Timetables", available at: https://www.greyhound.com.au/buses/sydney-to-canberra, accessed 18th December 2023.
[22] NSW TrainLink, "Bookings", available at: https://bookings.nswtrainlink.info/, accessed 18th December 2023.
[23] Google Maps, 2023. Based on average weekday trip departing Central Station at 6:00am for Civic Coach Stop (corner of London Circuit and West Row).

3.1.3 Air travel

Air travel is often considered the fastest way to travel, but it can be more complex. It involves many interconnected parts, such as airports, airline operations, passengers, cargo, weather, regulations, and security. All these components must work together to ensure smooth operations. If there is a delay in one flight, it can cause disruptions across multiple airports and airlines.

For domestic flights, passengers must arrive early for check-ins and security screenings, typically an hour before departure. This is not just an inconvenience; it can significantly add to the door-to-door travel time. During peak hours, it can be unpredictable and frustrating.

Consider a trip to Sydney Airport: a 40-minute car journey from Parramatta can grow to nearly an hour in peak traffic. Those opting for public transport face an hour-long ride with transfers, a daunting prospect when bringing luggage. In more isolated parts of Sydney's north, travel times are stark – up to an hour and 25 minutes by road or bus, including a transfer.

Abrupt weather changes can affect the availability and reliability of flights, requiring adjustments, coordination, planning, management, and communication to ensure the system remains on track. This is becoming even more apparent as the effects of climate change are becoming known. This can impact travellers in capital cities and regions that might rely on major airports for connections, aircraft maintenance, or flight crews.

In 2021-2022, flight cancellations on East Coast routes in 2021-22 ranged from 13% to 15%, which added significant waiting for the next available flight. Some studies suggest that high-speed rail has cancellation and delay rates of only 2%-3%[24].

Table 10: Average flight cancellations, all airlines[25]

Route	% Flight Cancellations
Sydney-Melbourne	14.9
Canberra-Sydney*	12.5
Brisbane-Melbourne	13.1
Sydney-Brisbane	13.0

Note: There is also recent evidence of one airline cancelling up to 14.8% of monthly flights on the Canberra to Sydney route[26].

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[24] Watson, Inara et al., *"Investigation of the operation reliability of high-speed railway and possible measures of improvement"*, Conference Paper, School of the Built Environment and Architecture, London South Bank University, July 2021.

[25] BITRE, *"Statistical report: domestic airlines on time performance, 2021-22"*, 2022.

[26] Financial Review, "Qantas cancellations on Canberra-Sydney route hit record altitude", available at: https://www.afr.com/companies/transport/qantas-cancellations-on-canberra-sydney-route-hit-record-altitude-20230925-p5e7bd. Accessed 18th December 2023.

Better connectivity and genuine alternatives

An HSR network is a compelling alternative to air and road travel options for key locations and regions on Australia's East Coast. A well-designed and maintained rail network can provide more reliable travel than flying and be a less personally intensive journey than driving. An optimal alignment and targeted speed can provide faster trips between key destinations, such as Canberra and Melbourne, Canberra and Sydney, and Sydney to Brisbane.

High-speed rail can reduce the stress associated with driving. Instead of navigating congestion, road safety, and personal driving fatigue, those who would otherwise be behind the wheel can engage in leisure and productivity activities and enjoy the view and regional landscape on the way to their destination.

Moreover, with the proper fare pricing, a high-speed rail network can offer more financially viable transport for the same trip. While this is especially true for those who don't own cars, high-speed rail also shows promise of competing with airfares for important trips.

3.2   Environmental sustainability and resilience

Australian consumers and businesses will face several tough choices over the coming decades. The global net zero transformation is expected to drive changes in the structure of Australia's economy – changes that present both challenges and create growth opportunities.

The Australian Government is formulating a Net Zero 2050 plan. This plan, announced in the 2022 Annual Climate Statement, aims to reduce greenhouse gas emissions and facilitate the transition to a low-carbon economy. The government has set legislated targets to achieve Net Zero by 2050 and to reduce emissions to 43% below 2005 levels by 2030.

The Net Zero plan is expected to provide long-term policy certainty, stimulate investment, and drive innovation in low emissions and renewable technologies, thereby maximising the benefits of the global transition to Net Zero.[27]

Transport initiatives in the Australian Government's Powering Australia Plan are focused on fuel efficiency standards for cars and trucks and growing sales of electric vehicles. [28] But this only addresses around 60% of all transport emissions related to cars[29]. The Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEW) notes that Australia still lags behind other countries in electric vehicle sales, representing less than 4% of new car sales in Australia[30].

Despite progress in clean combustion technologies, the efficiency of conventional vehicles remains inherently limited without adopting electric hybrid or battery-powered alternatives. The slow uptake of electric cars is

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[27] Commonwealth Government, *"Net Zero"*, https://www.dcceew.gov.au/climate-change/emissions-reduction/net-zero#:~:text=In%202022%2C%20we%20legislated%20Australia's,of%2043%25%20below%202005%20levels.

[28] Department of Climate Change, Energy, the Environment and Water, "Powering Australia – Transport", available at: https://www.energy.gov.au/government-priorities/australias-energy-strategies-and-frameworks/powering-australia#toc-anchor-transport, accessed 27th October 2023.

[29] Department of Climate Change, Energy, the Environment and Water, "Reducing transport emissions", available at: https://www.dcceew.gov.au/energy/transport#:~:text=In%202022%20our%20transport%20sector,source%20of%20emissions%20by%202030, accessed 27th October 2023.

[30] Department of Climate Change, Energy, the Environment and Water, "Reducing transport emissions", available at: https://www.dcceew.gov.au/sites/default/files/documents/australias-emissions-projections-2022.pdf, accessed 27th October 2023.

partly attributed to their higher costs in developing markets, placing them beyond the reach of lower-income households.

Achieving carbon emission reductions through high-speed rail requires significant changes in fuels and technologies that are still in development, which air, coach, and car travel cannot match. Many studies have found that with current fuels and technologies, high-speed rail emits 5 to 7 times less carbon per passenger kilometre than air, coach or car travel. [31] [32]

Sustainable carbon emissions from a suite of complementary transport initiatives

High-speed rail can create a step-change reduction in carbon emissions as part of a suite of transport sustainability initiatives. There are currently limits to how efficient and clean internal combustion engines can become, and hybrid and battery technologies need to be faster to roll out and will remain prohibitively expensive for many in the short term. Electrification and jet fuel alternatives are still in early development and may not be feasible for all types of journeys.

3.3   Urban and regional development

Australia's East Coast states and territories house 20.9 million people[33], or 79% of the total Australian population of 26.5 million. Australia is a coastal nation, with 89% living within 50 kilometres of the coast[34], resulting in an estimated 18.6 million residents on the East Coast of Australia[35] (or 70% of the Australian population).

The Australian Government's Intergenerational Report (IGR 2023) projects that Australia's population will grow from 26.5 million in 2023-23 to 40.5 million in 2062-63 (40 years). This is equivalent to a 14.0 million (53%) increase over this period, or 1.1% growth per year[36].

Urban centres are increasingly becoming hubs for knowledge-intensive sectors. This clustering effect has led to a concentration of high-value jobs far from the suburban fringes. The result is a daily influx of commuters into these centres, putting a strain on road networks.

Overseas migration is expected to continue to support population growth,[37] with approximately 85% of new international migrants settling in Australia's two largest capital cities. Sydney, Melbourne, and coastal cities will continue to be major attractors for domestic migrants, particularly 30–64-year-olds and individuals with university education[38].

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[31] Ben Behrens, *"Reviewing the evidence on carbon emissions from rail and air travel"*, Current Issues – Note 24, GLA Economics, March 2010.

[32] Jack Strauss, Hongchang Li, Jinli Cui, *"High-speed Rail's impact on airline demand and air carbon emissions in China"*, Transport Policy, Volume 109, 2021, Pages 85-97.

[33] Australian Bureau of Statistics, *"National, state and territory population"*, March 2023.

[34] Department of Climate Change, Energy, the Environment and Water, "Australian State of the environment 2021", available at: https://soe.dcceew.gov.au/coasts/pressures/population, accessed 25th October 2023.

[35] Calculated based on applying the state population totals to the proportion living within 50 kilometres of the coast.

[36] Commonwealth Government (2023) "Intergenerational Report 2023 – Australia's future to 2063", available at: https://treasury.gov.au/sites/default/files/2023-08/p2023-435150.pdf, accessed 25th October 2023.

[37] Commonwealth Government (2023) "Intergenerational Report 2023 – Australia's future to 2063", available at: https://treasury.gov.au/sites/default/files/2023-08/p2023-435150.pdf, accessed 25th October 2023.

[38] AHURI (2022) "The drivers of migration and settlement patterns in regional cities", available at: https://www.ahuri.edu.au/sites/default/files/documents/2022-03/PES-375-The%20drivers%20of%20migration%20and%20settlement%20in%20regional%20cities.pdf, accessed 25th October 2023.

If current trends continue, the Australian Infrastructure Audit predicts that by 2031, congestion may inflict a $40 billion loss on the economy due to decreased productivity and reduced quality of life. Around $33 billion of these costs will occur on the East Coast[39]. Public transportation becomes more critical as cities grow, particularly those projected to reach populations around 7 million, such as Melbourne and Sydney.

A population increase greater than 50% over the next 40 years will continue to drive demand for housing. For example, the NSW Greater Cities Commission's Greater Sydney Region Plan[40] forecasts the need for an additional 725,000 dwellings over the next 40 years, and the National Housing Accord target is for an additional 1.2 million homes for Australians by 2029[41].

Urban and regional development opportunities

High-speed rail achieving speeds above 250km/h can help shape positive urban and regional development outcomes by shrinking the distance between population and employment centres. The frequency of high-speed services makes regional and urban committing no more difficult or prohibitive than catching the train or metro to move about a city.

3.4   Productivity and job creation

High-speed rail is a visionary program that can transform Australia's economic and social landscape and is a potential solution to the challenges facing the Australian economy and society.

The decline of the manufacturing sector, the largest source of job losses in the last 15 years, has left many workers needing more skills and opportunities in regional areas.[42] The mining industry has grown rapidly in the same period but has yet to be able to absorb these workers or provide sustainable productivity improvements. Relying on mining also exposes Australia to the volatility of global commodity prices and environmental risks.

High-speed rail can create jobs and boost productivity in several ways. It can stimulate the local manufacturing industry by providing a long-term demand for rollingstock construction and maintenance. It can generate employment and commercial activity around the stations and their surrounding precincts, supporting new self-sustaining suburbs or cities. It can expand access to the workforce and enhance the agglomeration economies for the CBDs, where high-value and skilled knowledge jobs are concentrated.

It can reduce the disruption and stress for business travellers by offering a fast, reliable and comfortable mode of transport that does not require security checks or restrictions during take-off and landing. It can also carry light freight, especially high-value goods that must be delivered quickly and reliably, freeing up freight paths on existing rail networks.

It can address the distribution problem that plagues the nation, where people in urban centres must move further away to afford housing, while people in regional areas have fewer opportunities and lower incomes. It

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[39] Infrastructure Australia (2019) "Australian Infrastructure Audit 2019", p272.

[40] Greater Sydney Commission (2018) "Greater Sydney Region Plan – A Metropolis of Three Cities", available at: https://greatercities.au/sites/default/files/2023-07/Greater%20Sydney%20Region%20Plan%20-%20A%20Metropolis%20of%20Three%20Cities_March2018.pdf, accessed 25th October 2023.

[41] National Housing Accord, "National Housing Accord 2022 Key Initiatives", available at: https://www.nationalhousingaccord.au/, accessed 25th October 2023.

[42] Climate Control News (31 May 2023) "Australian manufacturing still in sharp decline", available at: https://www.climatecontrolnews.com.au/news/latest/australian-manufacturing-still-in-sharp-decline, accessed 10th November 2023.

can also foster a culture of innovation and skills development essential for competing in the global market. High-speed rail is not just a transport project but a nation-building project.

3.5   Improved access to public services and social opportunities

Nearly half of the population in Australia's five largest cities resides in outer suburban areas. Many of these areas need more public transport options, restricting residents' access to employment, educational facilities, and other vital services, impacting their overall quality of life and potential for prosperity.

The Australian Government has acknowledged that population ageing significantly shapes the country's future. As more and more Australians grow older, fewer working-age individuals will support them, creating long-term economic and fiscal challenges. Additionally, there will be a growing demand for quality care and support services for older people.[43]

Access to healthcare is generally poorer for Australians living in rural, remote, and very remote communities compared to those living in regional centres and metropolitan areas. To receive medical attention or specialised treatment, people living in rural areas may need to travel long distances or even relocate.

The number of full-time equivalents (FTE) per 100,000 indicates the number of health professionals working clinical hours relative to the population. From 2016 to 2021, Metropolitan areas had the highest clinical FTE rate for many health professionals, including specialists (all doctors other than GPs who require a referral from another doctor), occupational therapists, dentists, pharmacists, physiotherapists, and psychologists.[44]

Moreover, the presence of health services does not ensure access to them. Indigenous Australians, for instance, may need transportation barriers to reach health centres, which may be outside their immediate vicinity. Additionally, the types of services offered by GPs may only sometimes meet the complex needs of many Indigenous clients, compelling them to travel greater distances to find suitable healthcare options.

The distance from urban centres affects the educational outcomes of students in rural and remote areas. They are more likely to have low attendance rates, low university aspirations and high attrition rates if they enrol in higher education. They also have lower school engagement and well-being levels, as measured by indicators such as belonging, self-confidence, purpose and perseverance.

For many of these students, vocational education and training is a valuable pathway to employment and further learning, but very remote students have low participation rates in this sector. Moreover, the educational challenges in remote areas have a significant impact on Indigenous Australians, who make up one-quarter of the population in these communities.[45]

Accessing services like education and healthcare is becoming increasingly difficult for some segments of the population due to the challenges of transportation. Public transport options may be infrequent, unreliable, and comparatively expensive, making it difficult for older people and people with disabilities to access these services. Additionally, car ownership costs can be steep, including the initial purchase price, potential financing, and ongoing expenses such as fuel, tires, and maintenance, which can total an estimated $260 per

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[43] Commonwealth Government (2023) "Intergenerational Report 2023 – Australia's future to 2063", available at: https://treasury.gov.au/sites/default/files/2023-08/p2023-435150.pdf, accessed 25th October 2023.

[44] Australian Institute of Health and Welfare, *"Health workforce"*, 11 September 2023, retrieved from https://www.aihw.gov.au/reports/rural-remote-australians/rural-and-remote-health#Profile

[45] Victoria University, "Young people in rural and remote communities frequently missing out", November 2015, retrieved from: https://www.vu.edu.au/mitchell-institute/educational-opportunity/young-people-in-rural-and-remote-communities-frequently-missing-out

week[46]. For those with limited incomes, the costs of vehicle ownership, parking, tolls, and navigating a city can be prohibitive.

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[46] NRMA annual vehicle survey, cited in Drive, available at: https://www.drive.com.au/news/average-running-cost-of-australian-vehicles/, accessed 13th December 2023.

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> **Improved access to public services and social opportunities**
>
> High-speed rail can help bridge the gap in social inclusion and access to public services by reducing travel times from regional areas from half or a full day down to a matter of hours. It can link people in regional centres to services that would otherwise require them to relocate to receive the same quality of services as those in urban areas.

3.6   Embracing innovation to deliver value for money

The Program is an extensive investment initially estimated to cost $114 billion ($2012) in the 2013 Study. Since then, there has been price escalation from then due to international supply shocks impacting fuel prices, etc., which would have increased this to around $163.4 billion.[47] New investments, such as the Sydney Metro tunnels in CBD and Brisbane Live above Roma St Station, have further complicated the Program, making construction more challenging.

Missteps and cost blowouts can undermine trust in high-speed rail, especially given its high cost. This is about being fiscally responsible and demonstrating a commitment to ethical stewardship of public resources. By adhering to the highest standards and utilising public resources efficiently, the community can be assured that the Program is acting in its interests and receiving the greatest benefits possible.

High-speed rail needs to explore various options to reduce costs, generate new sources of revenue, and find innovative solutions. One approach could be to divide the Program into smaller segments that provide early benefits. The central areas of the alignment could be broken down into segments, creating a 'spine' that would give the Program more flexibility. Some of these segments may be the most technically challenging, but they could provide valuable lessons that could be applied to the rest of the Program, thus avoiding future risks.

Moreover, high-speed rail should seek opportunities to leverage urban and regional development to obtain third-party contributions that can offset costs. Investing in public transport can make residential areas more attractive to potential homebuyers and renters, increasing foot traffic and making these locations more appealing to businesses. Additionally, there may be commercial opportunities within the stations themselves or onboard the trains, which have traditionally been delivered by the government but could be better delivered by the private sector. This would encourage competition and innovation, leading to more innovative offerings.

3.7   Infrastructure Australia, Infrastructure Priority List

Since 2016, preserving a corridor for East Coast high-speed rail. has been consistently included on Australia's National Infrastructure Priority List. This categorisation by Infrastructure Australia marks High-Speed Rail as a project of national significance during the first stage of its assessment framework.

Infrastructure Australia's 2018 Future Cities report states that Australia's population is expected to grow by 11.8 million over the next 30 years. This means that a new city, roughly the size of Canberra, will need to be added each year to accommodate the population growth. As a result, there will be an increased demand for high-capacity transportation services that the existing rail, road, and aviation services are unlikely to meet.[48]

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[47] Australian Bureau of Statistics, *"Producer Price Indexes, Australia: Series 6427917, Table 17"*, September 2023.
[48] Infrastructure Australia, *"Future Cities Planning for our growing population"*, February 2018.

Safeguarding land for a future high-speed rail corridor would significantly enhance the potential for its development, addressing the anticipated needs for inter-city and regional travel. Furthermore, securing land for corridor protection is a low-risk strategy for governments, as it allows flexibility for plans without being locked into a specific course of action.

Infrastructure Australia advocates for the High-Speed Rail Authority to work with state and territory governments to seize opportunities to preserve these corridors and foster rail infrastructure development. This will enhance national transportation and promote social, economic, and demographic benefits.

4 Case studies and lessons learnt

Five case studies from Australia and overseas have been prepared that provide lessons learnt for an East Coast high-speed rail. These include HS1, HS2, CHSR , ILR and SMNW.

Some of these have been selected as exemplar projects, while others have been selected given their challenges, which will provide key lessons for HSRA in developing high-speed rail. These have been adopted as part of the strategic directions and initiatives in Section 5. The case studies are also included in a more detailed stand-alone document as an attachment to this Strategic Plan.

4.1 High-Speed 1, United Kingdom

HS1 is a 109-kilometre railway line connecting St Pancras International in London to the Channel Tunnel. It serves as a vital link connecting international high-speed routes between London and Paris, London and Brussels, London and Amsterdam, as well as the domestic route from London to Kent.[49]

HS1 has been selected as an exemplar project, which:

- Established a clear vision and objectives up front and guiding principles for corridor selection (i.e. existing transport corridors and underutilised land with tunnelling as a last resort).
- Included a competitive process for final station locations based on submissions from local councils informed by clear selection criteria. This has been adopted as an innovation for HSRA.
- Resulted in substantial urban development above St Pancras Station and the surrounding Kings Cross area, which were previously underutilised.
- Retained some flexibility in the final alignment to enable innovation from the private sector during procurement.
- Embraced an early, immersive approach to stakeholder engagement, particularly for corridor selection.

Planning for the future operating model is crucial to ensure the infrastructure can support the intended services. This example highlights that the waiting times at the end stations are the main limiting factor on the overall capacity of the line.

4.1 High-Speed 2, United Kingdom

HS2 is a planned 330-mile (530-kilometre) high-speed rail system connecting London, Birmingham, Manchester, and Leeds with nine stations across three phases. It was first approved in January 2012, and a business case was completed in April 2020. Train sets for two stages were procured in December 2021.

Costs have increased significantly over time, which has resulted in the removal of two phases and value engineering of other scope items. In August 2019, the UK Department for Transport ordered an independent review of the project (the Oakervee Review). Phase 1 construction commenced in August 2021. In March 2023, the Euston Station design was halted to manage inflationary pressures, and the southern terminus was moved out of London. In July 2023, the CEO resigned.

HS2 has been selected as a project that faced several challenges, including:

- The skills mix at the board and executive levels were insufficient for a program of this scale, and the complexity and governance arrangements did not evolve.
- Systems integration capabilities were not strong from the commencement.

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[49] High-Speed 1, available at: https://highspeed1.co.uk/, accessed 21st November 2023.

- Processes in cost estimation, management, and control were not sufficiently robust.

- Objectives around increasing the capacity and reliability of the network were not tangible and measurable and did not provide clear guidance for critical processes, including corridor selection.

- Top operating speeds of 225 miles per hour (360 kilometres per hour) are significantly reduced by the shared use of existing tracks to reduce costs.

- Value engineering to reduce the connection between the HS1 and HS2 systems at St Pancras is inconsistent with the project's original intent.

4.2   California High-Speed Rail, United States

The CHSR is a planned 750-mile (1,210-kilometre) connection that will link San Francisco and Sacramento in the north to Anaheim and San Diego in the south, passing through Los Angeles. The project will be implemented in phases, beginning with the 170-mile (270-kilometre) Central Valley portion between Merced and Bakersfield.

CHSR has been selected as an exemplar project which:

- Recruited the right leaders up front to attract an experienced and capable team to the project.

- Set clear, tangible, measurable objectives at the strategic planning stage to guide critical processes, including corridor selection.

- Established inclusive and informative stakeholder engagement early to give stakeholders confidence.

- Staged the delivery of a substantial program sensibly, commencing with a central spine providing flexibility for future extensions.

However, CHSR also faced some significant challenges which provide lessons learnt for HSRA, including:

- Project definition documents were not established early, enabling subsequent negotiations, which resulted in scope creep.

- A strong and experienced land acquisition team was not established early to deliver a robust land acquisition plan, resulting in subsequent scheduling delays and construction contract claims.

- The top operating speed of 220 miles per hour (350 kilometres per hour) is limited to 125 miles per hour (200 kilometres per hour) for the Los Angeles to Anaheim section due to mixed-use running with other train operators and train sets.

4.3   Inland Rail, Australia

ILR is a freight rail line that is currently being constructed to connect Melbourne (Beveridge) and Brisbane (Kagaru) via regional Vic, NSW (Albury, Illabo, Stockinbingal, Parkes, Narrabri, and North Star), and Qld (Gowrie, Helidon, and Calvert). This rail line, spanning over 1,600 km, is Australia's largest freight rail project. Implementing 1,800-meter double-stacked trains will be possible with ILR and it will reduce rail freight travel times by approximately one-third, making it a competitive mode of transportation with road.[50]

Due to significant issues being experienced in the delivery of ILR, in 2022, the Australian Government commissioned an Independent Review of ILR to be led by Dr Kerry Schott AO. The findings and recommendations of the Independent Review were published in January 2023, and the Australian Government's response to those findings and recommendations was published in April 2023.

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[50] Inland Rail, "What is Inland Rail", available at:

Although the customer value proposition and corridor selection process were exemplar, ILR has been selected as a program that faced several challenges, including:

- The skills mix at the Board and senior executive levels was appropriate for the complexity of planning and delivering required and did not adapt as the program moved planning through delivery and into operations.

- ILR was not treated as a standalone project that ring-fenced work on costs and risks from business-as-usual activities.

- The governance framework did not enable quick decision-making or a direct line of communication for escalation to the Minister.

- Corridor definition did not clearly articulate the terminus locations.

- Stakeholder engagement did not include clear steps for engagement at the community level early in the project, including during the corridor selection process. An appropriate level of information did not support it.

- Liaison with the States about the terms of reference for the IGAs did not commence early in project development, resulting in scope creep in subsequent negotiations. Intergovernmental agreements did not plan the respective approaches to land acquisition and approvals (including environmental impact statements).

- Delivery strategy did not provide opportunities for successive opening of stand-alone sections to realise early returns.

4.4   Sydney Metro Northwest, Australia

SMNW is a metropolitan rail project completed in May 2019. It connects the Rouse Hill and Chatswood suburbs via Castle Hill and Epping. The project involved building a new line between Tallawong and Epping and converting the Epping to Chatswood railway line, previously operated under suburban Sydney Trains services. The project was delivered under budget.

The Sydney Metro City & Southwest is under construction, which aims to extend the existing line from Chatswood to Bankstown. This stage involves constructing a new line from Chatswood to Sydenham and converting a section of the Bankstown railway line from Sydenham to Bankstown, previously operated as the suburban T3 Bankstown Line under Sydney Trains.

SMNW has been selected as an exemplar project, which included:

- Early corridor acquisition is done by using concept planning approvals before urban development is released.

- Secured a large, strategic site for major civil construction activities, including tunnel segment storage and viaduct construction. Residual land was subsequently used for transit-oriented development around stations.

- Early master planning of station precincts to support achieving place and land use outcomes.

- Cost management included a robust risk quantification process.

- Successful stakeholder and community engagement based on early and frequent attention, including local community members in decision-making, transparency about negative impacts, communication in plain English, involvement of experts when speaking to residents, and appointment of dedicated acquisition managers.

4.5 Key lessons learnt for HSRA

Table 11 below presents key lessons learnt by case study, which have been grouped by project and then aggregated into common themes. These include:

- **Client organisation** – Appoint strategic leaders with diverse expertise and adapt governance over time consistent with increasing scale and complexity. Treat the project as a stand-alone initiative separate from business-as-usual HSRA activities.

- **Customer proposition and project objectives** – Early establishment of tangible and measurable vision and goals aligned with government strategies.

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- **Stakeholder and community engagement** – Early immersion into local communities and councils combined with accurate information to obtain a social license.

- **Operating models and systems** – Consider the future operating model in early planning, including a CONOPS with future timetables and ultimate infrastructure requirements, particularly the capacity of terminus stations. Consider using a shadow operator to obtain independent feedback on the scoping design and operating model (known as 'Industry challenge').

- **Interfaces (government and non-government)** – Assess the staging, packaging and delivery model considering interface risks, including temporal, related projects, technical and contractual. Develop terms of reference for IGAs as a priority, including frameworks for land acquisition, approvals, and land use planning.

- **Commercial and land use outcomes** – Early land use planning, including opportunities for land banking to preserve the corridor and master planning of station precincts to support land use outcomes.

- **Delivery, staging and packaging** – Stage the delivery of the program considering industry challenges and market-sounding outcomes. Encourage cutting-edge innovations in delivery and operations considering likely evolutions in rail technology. Embrace a culture of continuous improvement, including lessons learnt from previous stages.

- **Industry engagement** – Apply well-structured and focused industry engagement, including market sounding and industry challenges to create advocates (known as 'industry license').

4.6 HSRA's guiding principles

The guiding principles operationalise the objectives for specific decisions, describing *how* high-speed rail will be delivered. They have been informed by case studies, lessons learnt, and professional experience and expertise. They will cover culture and ways of working between the Australian Government, States and ACT, hallmark features of the plan and decision-making around the corridor, stations, rollingstock, systems, services and fares.

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Success or failure will hinge on people and culture. It's paramount that information sharing, collaboration, and communication are the norm, and risk management and continuous learning and improvement are fronts of mind. These values must be integrated not only into formal intergovernmental agreements but also into everyday working methods.

Collaboration

s47B(a)

Innovation

Innovation is essential for the success of the high-speed rail Program. It will allow us to create faster, safer, and more efficient trains to meet future demands. Innovation will also help us overcome environmental sustainability challenges, ensure cost-effectiveness, and foster social acceptance. To innovate effectively, the Program must collaborate with various stakeholders, such as researchers, engineers, customers, regulators, and suppliers.

The Program must share its ideas, feedback, and best practices and leverage diverse perspectives and expertise. It must also foster a culture of experimentation, learning, and adaptation and embrace digital transformation opportunities. There is a risk of missing out on the benefits of innovation for our society, economy, and environment. It must commit to innovation as a strategic priority and a core value for the high-speed rail Program.

Honesty and respect

Honesty is a crucial value for the success of the high-speed rail Program. It enables team members to communicate clearly, share feedback, and resolve issues efficiently. Without honesty, the Program may face delays, errors, or conflicts that could compromise its quality and safety. The Program must always be honest with ourselves, colleagues, clients, and stakeholders.

Being truthful and cooperative will establish trust and confidence within HSRA and its partners. This is how high-speed rail achieves the vision of creating a rapid, efficient, and sustainable transportation system for the future.

OFFICIAL: SENSITIVE

Transparency

The high-speed rail Program is complex and ambitious and requires transparency from all stakeholders. Transparency means sharing relevant information, providing feedback, and communicating clearly and honestly. Being transparent can help build trust, collaboration, and accountability among team members, contractors, the government, and the public. If the Program is not transparent, it risks losing credibility, wasting resources, facing legal or political issues, and jeopardising the Program's success. It will embed transparency in all actions and decisions throughout the Program to ensure its success.

5 Priority directions and initiatives

The Strategic Plan for East Coast high-speed rail has been created to meet the expectations stated in the Minister's Letter and the HSRA Corporate Plan. Additionally, it considers the possibility of expediting the S2N Business Case to December 2024, as requested by HSRA. These opportunities have been identified during the Plan's development, and they align with the Corporate Plan schedule for the Network Pathway to Delivery Report in 2024-25 and the S2N Business case in 2025-26, albeit with earlier delivery of the S2N Business Case.

The proposed work plan includes the following assumptions, caveats, and limitations:

- The HSR Strategy will be developed to create the core components of the Network Pathway to Deliver Report. This HSR strategy will be completed before the Network Pathway to Deliver Report to speed up the progress of certain critical activities. These activities are comparable to a Stage 2 submission of Infrastructure Australia or a Gate 1 Strategic Business Case of Infrastructure NSW.

s47B(a)

- The S2N Business Case is similar to a final or detailed business case required for an Infrastructure Australia Stage 3 submission and an Infrastructure NSW Gate 2 assurance review. The States and ACT have extensive experience in transport planning and project delivery so they could lead future business cases. However, the Australian Government should maintain key Project governance, planning, and delivery roles to ensure interoperability and alignment with the overall vision and objectives.

These reports typically take 12-18 months, given the long lead times for transport demand modelling, design, planning and environmental approvals. However, a 6-month program for the HSR Strategy and a 12-month program for the S2N Business Case is feasible in parallel under the stated assumptions for each activity. Although, this still represents a significant risk to meeting the program schedule and milestone slippage.

5.1 High-level workplan

5.1.1 Workplan overview

Prior to the development of this Plan, it was expected that the HSR Strategy would take 18 months to be completed assuming it included all Network Pathway to Delivery Report activities. s47B(a)

This avoids redundancy and properly balances demonstrating progress and adequate planning.

Several priority strategy directions and initiatives have been developed to meet the timeframes for the S2N Business Case by December 2024. These directions and initiatives are proposed to be completed within 12 months and are expected to impact the Program significantly, particularly the HSR Strategy. s47C

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Detailed Work Plan (WP1): Develop and approve a detailed program and roadmap for all priority directions and initiatives

WP1.1: Convert strategic roadmaps into detailed program schedules, including identifying interdependencies between all activities.

To meet this target, priority strategic direction and activities include:

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2. **Project team establishment:** Create Project teams and appoint key positions, including defining and endorsing Project team structures and developing and endorsing resource estimates and onboarding plans:

    a. HSR Strategy and S2N Business Case teams should be separate to maintain independence and focus but integrated to avoid silos.

    b. Key HSR Strategy resources should be retained throughout the S2N Business Case to maintain consistency with the overarching vision and objectives for the East Coast corridor and complete long lead-time activities (i.e. cost benchmarking and alternative and deferral options report).

s47D, s47E(d)

3. **Interoperability framework:** Develop a framework for the HSR Strategy with direction concerning vision, objectives, options assessment, and travel time targets.

4. **Customer experience:** Update critical customer survey data and travel demand modelling to consider changes in the Australian travel market and other contextual factors since the 2013 Study.

5. **Risk and probity:** Develop a risk and probity plan that provides clear guidelines and protocols for navigating public and market interactions.

Additionally, some 'no regrets' activities, such as engaging with stakeholders, securing planning and environmental approvals, and setting up and calibrating the demand model, could begin in early 2024 internally within HSRA as 'homework' in anticipation of formal sign-off of crucial governance documents.

In particular, three critical areas that need attention in the medium term from the end of 2024 onward:

1. **Stakeholders:** There is potential for early announcements on progress, such as vision and objective setting.

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2. **Planning and environmental assessment:** No significant progress has been made on corridor reservation planning.

   a. A review of planning documents, tentative site and corridor selection criteria, and indicative site investigations can be initiated sooner.

3. **Demand model set-up and calibration:** Infrastructure Australia requirements only permit modelling up to three years old.

Models need to be updated and recalibrated with the most recent information, such as changes to the Base Case, the structural impacts of COVID-19 and expected completion of Western Sydney Airport by 2026.

5.1.2 Caveats and assumptions

The overarching program for 2024 outlined in Figure 21, along with the high-level work plan in Figure 22, have been designed to deliver the S2N Business Case to December 2024 s47B(a) This timeline also aligns with the Corporate Plan's timing for the Network Pathway to Delivery Report in 2024-25 and the Sydney to Newcastle business case in 2025-26 while meeting Infrastructure Australia and State requirements in business case assurance guidelines. The work plan was developed considering critical assumptions, constraints, and caveats, including:

- The HSR Strategy will develop the core elements of the Network Pathway to Delivery Report. Most activities will be equivalent to an Infrastructure Australia Stage 2 submission or an Infrastructure NSW Gate 1 Strategic Business Case. However, to meet the target of December 2024 for the S2N Business Case, some Network Pathway to Delivery activities will be fast-tracked.

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- The S2N Business Case will be a final or detailed business case equivalent to an Infrastructure Australia Stage 3 submission. The States and ACT possess a deep transport planning capacity and significant project delivery experience, which positions them to lead future business cases. However, the Australian Government should retain key Project governance, planning, and delivery roles to ensure interoperability and alignment with the overarching vision and objectives.

- Typically, it takes 12-18 months to prepare reports for transportation demand modelling, design, planning, and environmental approvals. However, it is possible to simultaneously complete a 6-month program for the HSR Strategy and a 12-month program for the S2N Business Case, assuming all requirements are met for each activity. Although, this still represents a significant risk to meeting the program schedule and milestone slippage.

Prioritisation of the S2N Business Case reflects that this Project provides a 'no regrets' first stage that can stand alone if needed and be relatively easily extended to Canberra rather than much longer extensions to Brisbane or Melbourne. Other strategic considerations supporting the prioritisation of S2N as the first stage include:

- The Central Coast and Newcastle are two of the six most important cities in the Sydney Greater Metropolitan Area. As part of the NSW Government's 2022 Six Cities Region Plan and associated City Plans currently in development, these cities are expected to accommodate a significant increase in

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housing. The development of high-speed rail around stations would catalyse the growth of housing and commercial properties.

- The Central Coast is a major commuting hub for Sydney, leading to heavy traffic on the M1 Motorway and overcrowded intercity rail services. Commuting by car takes around 1 hour and 25 minutes while taking the train takes approximately 1 hour and 44 minutes. High-speed rail is expected to encourage more people to switch from cars to trains, easing road congestion and freeing up the existing rail network to accommodate additional freight and local/regional passenger services.

- Currently, it takes nearly 2.5 hours to travel from Newcastle to the Sydney CBD by car or train. However, the 2013 Study suggests that implementing high-speed rail could reduce travel times to just 39 minutes, making Newcastle a major commuter hub for Sydney.

- The central location of S2N within the East Coast high-speed rail network provides flexibility for future extensions. It is a relatively small section (around 160 kilometres) but is topographically challenging and will provide important lessons learnt for constructing the future.

- S2N can also be extended to Canberra relatively easily, consistent with the optimal staging in the 2013 Study.

- Planning on the S2N section is already relatively advanced based on the NSW Fast Rail Program, which has included geotechnical investigations and relatively detailed cost estimates.

- There is already a $500 million commitment from the Australian Government to progress planning and corridor reservation.

5.1.3 Key activities and interdependencies

In parallel with the development of the S2N Business Case, it is also critical that interoperability of the entire corridor is considered, and core elements agreed upon. The HSR Strategy includes the core elements of the Network Pathway to Delivery Report, s47B(a) The Strategy will be updated to align with the latest government priorities and strategies. The outputs of the Strategy will be incorporated into the early chapters of the S2N Business Case.

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s47B(a)

Note that cost benchmarking and assessment of alternative and deferral options will also be ongoing.

s47C

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Reflecting the opportunity for to deliver a S2N Business Case by the end of 2024, and the overlapping Program and Project activities in 2024 to realise this opportunity, the Network Pathway to Delivery Report has been modified to a HSR Strategy that forms Stage 1 of the Network Pathway to Delivery Report. Some activities and analyses originally planned to be undertaken during the Network Pathway to Delivery Report have been shifted and rescoped to be undertaken during the S2N Business Case (e.g. more detailed route alignment and benefits analysis, cost estimates, industry engagement, s47B(a) Industry challenge and planning pathways).

5.2   Overarching governance

Implementing and maintaining effective overarching governance will aid in the significant challenges and decision-making for developing and delivering the East Coast high-speed rail Program.

s47C

Senior Multi-Agency Participation

Multi-agency participation led by senior leaders is crucial for the success of programs, particularly those with broad or complex goals. When senior leaders are involved, it brings authority and commitment that can streamline decision-making processes and enhance accountability.

A single transport agency cannot deliver the necessary changes to planning controls that affect land use, but land use agencies are not mandated to provide transport infrastructure. This is reinforced by the experience of Inland Rail, where multiple decision-making points caused delays and inefficiencies.

Direct lines of communication

Clear and direct communication between senior leaders is crucial in making timely decisions and aligning strategies. This approach minimises misunderstandings and delays caused by hierarchical information bottlenecks, allowing leaders to address challenges and adapt their strategies rapidly.

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Adaptive and flexible

Complex and high-profile programs, due to their dynamic and often unpredictable nature, typically encounter unforeseen challenges, changing stakeholder needs, and evolving market or environmental conditions. Adapting and flexibly adjusting strategies, resources, and approaches in response to these changes is essential for maintaining relevance and effectiveness. This agility is critical to sustaining momentum and achieving long-term success in high-stakes environments.

Technically minded

The combination of senior oversight and technically minded teams is fundamental to the success of projects. Senior management provides strategic direction, resource allocation, and high-level decision-making, ensuring that projects align with broader organisational goals. Technically minded teams bring specialised knowledge and skills, allowing innovative solutions, efficient problem-solving, and high-quality outcomes.

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5.2.1 Memoranda of Understanding and Intergovernmental agreements

G1: Develop an integrated IGA that establishes a clear framework for how the Australian Government, States, and the ACT will work together to deliver high-speed rail

Planning for a high-speed rail system that would span the East Coast of Australia is a significant undertaking. The corridor would link Brisbane, Sydney, Canberra, and Melbourne, covering more than 1,700 km. It will require input and agreement from the Australian, Qld, NSW, Vic and ACT Governments.

The scale of investment also demands staged delivery. This means that the decisions taken today would significantly impact the future operation of the network and the realisation of the vision and objectives for high-speed rail. Failing to do so may lead to disconnected state and territory networks that cannot operate together, resulting in an ineffective high-speed rail network that fails to capitalise on this once-in-a-generation opportunity.

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Creating an IGA framework comprising two parts arranged in order of priority is recommended to ensure effective collaboration.

1.   **MoU:** Outlining the understanding of the goals, responsibilities, and expectations of each party.

2.   **IGA:** More comprehensive agreements concerning specific Project stages.

Figure 23 below illustrates the different focus of the two documents, which are further explained in the sections below. s47B(a)

However, the opportunity to prioritise the S2N Business Case implies that developing an IGA between the Australian Government and NSW is critical to starting in early 2024. Following this, the MoU between the Australian Government, States, and ACT will be developed. These will then be combined into a single S2N High-Speed Rail IGA.

Figure 23: MoU and IGA content

Pre-Business Case phase	Business Case phase

Memoranda of Understandings
(executed at the completion of the High Speed Rail Strategy and Sydney to Newcastle BC)

- Vision and objectives of high-speed rail
- Principles and expectations
- Establish the framework for cooperation and ways of working
- Commitment to supporting endeavors for the nations benefit
- Hallmark concepts of the program (e.g. stakeholder engagement, Community Station Initiative, community dialogue panel, digital engineering etc.)
- Risk management and continuous learning
- Line wide concept of operations (includes corridor/route alignment, track gauge, dedicated versus existing track, rollingstock, travel speeds, local versus overseas manufacturing, stations, services, signalling, power supply, technologies, commercial principles, fares and staging.)
- Commitment to developing future governance, including roles and responsibilities, organisation structure, and key milestones and decisions.

Intergovernmental Agreements
(executed at the commencement of a business case between Commonwealth Gov and relevant State or Territory)

- Update or reinforce elements of the MoU to follow through to the Intergovernmental Agreement
- Corridor objectives
- Time and scope of business case
- Funding agreement for business case activities
- Governance terms of reference and decision making accountabilities for business case
- Performance expectations and standards
- Land use and place-making activities

Sydney to Newcastle High Speed Rail FBC Intergovernmental Agreement
(MOU and IGA combined into a single document due to timing of Sydney to Newcastle emphasis. Document executed by Commonwealth and NSW Government by early 2024)

Note: A Final Business Case (FBC) is equivalent to a detailed Business Case seeking an investment decision.

G1.1: Establish an IGA between the Australian Government and NSW for the S2N Business Case.

Instead of a single agreement for the entire high-speed rail system, separate Intergovernmental Agreements between the Australian, States, and ACT Government are proposed for each business case stage. These agreements can be tailored to the specific needs of each state and address the relevant local factors.

Unlike an MOU, Intergovernmental Agreements are more specific to the business case, require time to be negotiated (especially due to the funding components), and can be legally binding, like a contract. The proposed vision and goals of high-speed are recommended to be:

1. Linked to funding, scope and timeframes for business case activities.

2. Corridor objectives and how they link to the East Coast high-speed rail objectives.

3. Follow general principles (to make the negotiation process smoother).

4. Specify the conditions for providing funding, including compliance with:

   a. Updated line-wide principles.

   b. Land use and place-making activities.

   c. Performance standards.

   d. Governance terms of reference and decision-making accountabilities for the business case.

Furthermore, IGAs can outline the governance processes that will support the decision-making and oversight of the Project, such as working groups, steering committees, and decision papers. The agreements should also include endorsement of the vision and objectives (both line-wide and corridor-specific), fundamental principles and outcomes of options assessment, and terms of reference for working groups. Doing so will ensure that the Project is well-managed and that the Project outcomes are achieved as planned.

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For instance, the Sunshine Coast Mass Transit project aimed to enhance the region's public transport and urban development. The project was funded by both the Sunshine Coast Council and the Department of Transport and Main Roads. However, the two sponsors had different visions and expectations for the project, which meant differing criteria for assessing the project's success.

To resolve this conflict, a sponsor requirements document was created that linked the Council's funding to the completion of urban design studies, alternative land use forecasts, and other elements that would support the case for light rail. The document also referred to the vision and objectives that both sponsors had agreed upon at the beginning of the project, which included land use and place-making aspects. By doing this, the document ensured that the project would align with both sponsors' interests and goals and that the funding would be allocated accordingly.

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5.2.2 Governance and organisation structures

G2: Establish formal governance structures, including drafting terms of reference.

Governance arrangements define Program and Project stakeholders' roles, responsibilities, and decision-making processes. They also provide a framework for monitoring, controlling, and communicating progress, risks, and issues.

Establishing formal governance arrangements as a top priority is crucial, especially since many vital decisions will affect the HSR Strategy starting in early 2024. Proposed priority activities include:

1. Developing terms of reference for each group detailing their purpose, membership, and authority

2. Clarify HSRA's role in the Program and specify their involvement at the Program and Project level.

At the Program level, HSRA's role is to coordinate and give advice across various activities. In some cases, HSRA may be better positioned to handle tasks with common interdependencies, such as technical specifications. In particular, the HSR Strategy will set the stage for all subsequent work. As a result, the HSRA must maintain active ongoing involvements at both the HSR Strategy and business case levels, with matching funding and review points.

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G2.1: Develop and agree on organisational structure and critical decision-making bodies, including the HSR Strategy as a working group within the S2N Business Case governance.

Broadly, the governance arrangements are proposed to include the following key features: a culture of collaboration and dialogue built into governance terms of reference and structure and embedded in day-to-day working.

Ministerial and HSRA Board

Senior-level participation and support are crucial for the success and sustainability of the Program. The HSRA Board will oversee HSRA activities and provide the Minister with direct advice on high-speed rail. A direct reporting line to the Ministers will enable early escalation of critical issues and bypass consultation groups if required. The HSR Strategy and S2N Business Case teams will report to the Board via the HSRA Leadership Team.

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5.3   HSR Strategy and S2N Business Case

5.3.1 Governance and organisation structures

SN1: Create HSR Strategy and S2N Business Case Project teams and appoint key positions

SN1.1: Define and endorse Project team structure and separate the HSR Strategy and S2N Business Case teams, balancing the need for independence and focus, integration, and specialisation and technical expertise.

HSR Strategy

The proposed HSR Strategy governance structure would include an HSR Strategy Director as the senior leader overseeing the planning, execution, and delivery of the Strategy. They would be responsible for ensuring that the Strategy meets its objectives, budget, and timeline, as well as aligns with the strategic vision and goals of the organisation. Some of the general day-to-day tasks would include:

- Developing and maintaining Project plans, schedules, budgets, and risk registers.
- Monitoring and reporting on Project progress, performance, and quality.
- Resolving issues and managing changes that arise during the Project lifecycle.
- Providing guidance, support, and feedback to the Project team and other staff.
- Communicating effectively with internal and external stakeholders at all levels.
- Evaluated and closed out the Project and captured lessons learnt.

It would also be underpinned by integrated workstreams of technical specialists with different skills and expertise. Their role will be planning, executing, monitoring, and controlling the activities, deliverables, and outcomes for the Strategy. While the day-to-day tasks of an integrated team vary depending on the Strategy phase, critical studies include:

- Scope and requirements definition.
- Technical analysis and reporting.
- Risk and issue management.
- Communicating and collaborating with the Project stakeholders.
- Quality assurance and resolution.

Figure 25 below illustrates the proposed HSR governance structure. Key elements include:

- A direct line of accountability and decision-making from the strategy team to the HSRA Leadership Team, to the Board and to the Minister.
- Optionality for specialist peer reviewers to be engaged for select deep dive reviews on Strategy elements.

- Updating the IGACC on whole-of-line concepts of operations and assumptions that will be further developed and tested in the S2N Business Case, allowing States and the ACT that are located outside of NSW to have a seat at the table and be informed.

- Allows the high-speed rail activities to be linked into various existing Australian Government reporting and governance arrangements.

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The HSR Strategy team would consist of five workstreams, each with a workstream manager, except for the strategy production lead, who would receive input from all workstreams. The proposed workstreams are:

1. Strategy and planning.

2. Demand and economics.

3. Delivery and industry engagement.

4. Technical.

5. Strategy production.

HSRA employees would fill certain job positions with its employees, while others would be outsourced to contractors. The decision to outsource will depend on various factors, such as the need for independent or specialised skills, difficulty or uncertainty in recruitment, and urgency. Before seeking endorsement, the Project team will coordinate with relevant government agencies, HSRA employees, and contractors. Figure 26 illustrates the proposed HSRA Strategy team structure. Key elements include:

- HSR Strategy Director who oversees the Project and reports directly to the HSRA Board and Leadership (including the CEO).

- Five workstreams aligned with the capabilities required to deliver the identified activities, each overseen by a dedicated workstream lead. These include Strategy and Planning, Demand and Economics, Delivery and Industry Engagement, and Technical, and Strategy Production.

- 12 roles within the Project team, including Strategy Director, four strategy and planning roles, two delivery and industry engagement roles, four technical roles and one records management role.

s47D, s47E(d)

The HSR Strategy Team is an additional workstream that could be included in the S2N Business Case. However, it is advantageous to keep the team separate to concentrate on the corridor job and provide independent advice on parallel S2N Business Case activities. It is crucial to ensure that these teams are adequately integrated to avoid silos and ensure consistency of the S2N Business Case with the overall vision, objectives, and customer value proposition for the East Coast high-speed rail corridor.

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S2N Business Case governance and team structure

While the ownership of the S2N Business Case has not been formally decided, it is recommended that its governance structure includes the following key features:

- **The S2N Business Case Director and Manager are responsible for providing strategic oversight for the Project and reporting to the HSRA Board and Leadership, including the CEO.** The S2N Business Case Director role primarily focuses on overall quality assurance. In contrast, the S2N Business Case Manager role is responsible for project management, ensuring coordination between the workstreams and on-time completion of the program by December 2024.

- **Eight workstreams, each with its dedicated lead, aligned with the necessary capabilities to deliver the identified activities.** The only exception is for the strategy and planning manager, who is responsible for the synergies between the customer and product and options assessment workstreams. These eight workstreams include customer and product, options assessment, demand, land use and economics, funding, finance and industry, environmental sustainability and planning, design and place-making, program management, and business case production.

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- Peer reviewers and industry challenge initiatives will be included in the process.
- The IGACC will continue to work on the whole-of-line CONOPS and assumptions being developed and tested as part of this S2N Business Case.
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The governance structure outlined above is specific to the S2N segment of the East Coast high-speed rail network. However, it can be applied to other parts by updating the business case team and state/territory governance process with relevant elements of the local jurisdiction.

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With the S2N corridor being selected as the priority area for High-Speed Rail development activities in 2024, a business case Project team will need to be structured. A S2N Business Case Director is proposed to lead the business case supported by a S2N Business Case Manager. The Project team is recommended to be composed of eight workstreams, including:

- Customer and product.
- Options assessment.
- Demand, land use, and economics.
- Funding, finance, and industry.
- Environment, sustainability, and planning.
- Design and place-making.
- Program management.
- Business case production.

Its respective manager would lead each of the proposed workstreams except for:

- Strategy and Planning Manager who leads both the Customer and Product and Options Assessment workstreams.
- Business case production headed by a coordinator who works with each workstream manager to coordinate inputs into the business case.

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Resource requirements and onboarding

The HSR Strategy Team could also be procured as part of the S2N Business Case and included directly within their team organisational chart as an additional workstream. However, there are benefits from having this team separate, allowing them to focus on the corridor task and provide independent advice on parallel S2N Business Case activities. However, these teams should be integrated so that silos do not form and there is a consistency of the S2N Business Case with the overarching vision, objectives and customer value proposition for the East Coast high-speed rail corridor.

SN1.2: Develop and endorse resource estimates and onboarding plan, considering a mix of HSRA resources to ensure consistency and external service providers to provide on-demand expertise and enable rapid mobilisation.

HSR Strategy

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However, it is highly recommended that the start date be accelerated if possible, including through the appointment of interim resources until recruitment and procurement can be completed. This is because the timing for procurement is a significant risk to completing the S2N Business Case by December 2024, and the HSR Strategy is a key input to defining interoperability principles for the corridor.
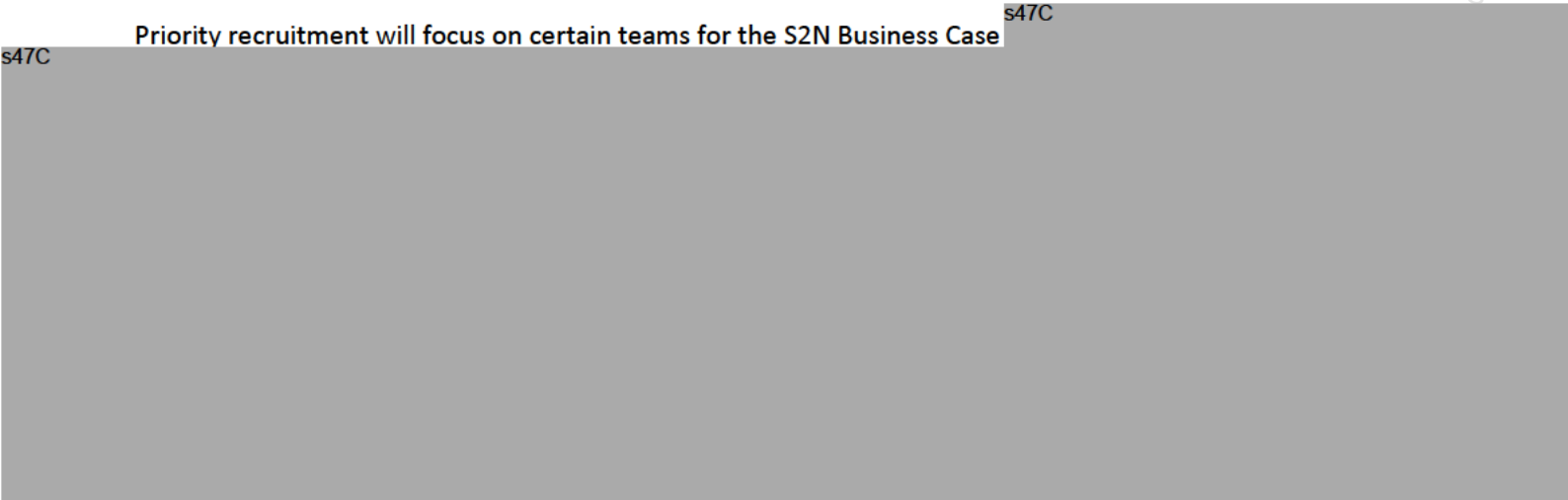
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S2N Business Case

Priority recruitment will focus on certain teams for the S2N Business Case

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They include:

- **February 2024** – S2N Business Case Director, Strategy and Planning Manager, Demand and Economics Manager, Technical Director, Program Manager, Transport Modelling Manager, Industry Engagement Lead and Digital Engineering.

- **March 2024** – S2N Business Case Manager, Customer Experience Manager, Strategic Assessment Manager, Planning Approvals Manager, Interface Manager and Stakeholder Engagement Manager.

Concerning specific positions, it is noted that:

1. **S2N Business Case Director and Manager:** these positions will provide strategic oversight in the planning and delivery of the HSR Strategy. The Director provides strategic oversight and is responsible for overall quality assurance, while the Manager is responsible for day-to-day project management and coordination between the different workstreams to free up the Director to focus on more strategic activities.

2. **Program and Cost Estimation Managers:** these positions will commence program support, risk management and cost estimation activities, which will be ongoing throughout the Project.

3. **Strategy and Planning, Customer Experience, Transport Planning, Interface, and Stakeholder Engagement Managers:** these positions will commence customer experience, transport planning and options assessment activities, which are critical to inform the scope of the Project.

4. **Demand and Economics, Transport Modelling, and Land Use Planning Managers:** these positions will commence demand model set-up and calibration activities, which have a long lead time and are critical inputs to the need for investment and economic appraisal.

5. **Technical, Design, Precinct, and Place Managers:** They will develop the design, which is a critical input to cost estimation, economic appraisal, and financial appraisal.

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Should early procurement be required for priority activities such as transport demand modelling or scoping design to develop the concept of operations, these could be split out and maintained for the Project's duration or retendered later as part of the larger package of works. Figure 31 illustrates the recommended work packages for outsourcing.

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s47D, s47E(d)

5.3.2 HSR Strategy and S2N Business Case Framework

SN2: Develop an overarching framework to guide the development of the HSR Strategy and S2N Business Case

An overarching framework provides a set of principles, goals, and strategies that serve as guidelines for a program. It helps to align the Project team, stakeholders, and sponsors on the vision, scope, and deliverables. One of the primary benefits of having an overarching framework is that it enables the Program to make decisions with clarity and confidence, thereby reducing the risk of duplication, overlap, error, or missteps.

Once a decision is made within the framework, it can be locked down, and the team can move on to the next task. Should a part of the framework need revision, a process is in place to ensure this is coordinated and communicated clearly to all stakeholders.

However, not all decisions are equally important or impactful. Some decisions may significantly affect the Project's success, budget, timeline, or quality. These decisions may require approval from the highest level of authority, such as the Project sponsor or steering committee—other choices, such as assumptions, methods, or tools, may be more technical or detailed.

SN2.1: Develop and endorse vision and objectives

Vision, objectives, and option assessment criteria will underpin every decision while developing the HSR Strategy, particularly travel time and options assessment activities.

Vision and objectives will underpin every decision made during the development of the HSR Strategy and S2N Business Case, given they will inform options assessment criteria for interoperability principles in the CONOPS.

The vision and objectives outlined in this document will provide a starting point. However, these need to be elevated to the Ministerial/government level as it will be the first point of contact with State Government and ACT Government stakeholders. These can be dealt with at a working group level and then taken through higher levels for endorsement. They can also be reflected in IGAs and MOUs.

It is crucial to understand that the objective setting process is separate from the options development/assessment processes. Objectives give direction to the Program about the features, functions, and specifications that need to be considered as part of an option. If objectives are routinely changed, it can appear that the final preferred option has been 'gamed' to ensure a specific outcome rather than on the Project's own merits.

In the short term, having a clear picture of the objectives is vital for the Program to decide where to allocate its resources and efforts. For instance, if urban development is included, the Program may require additional time and effort to assess the station's land use impacts. On the other hand, if it is excluded, the station location could be selected based on technical merits, and this effort could be redirected to other tasks in the Program.

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Evidence from HS2 and CHSR case studies found that subsequent value engineering and scope creep resulted from variations from the original intentions for the Program, particularly where objectives were unclear or not documented.

Some options will meet some or all the objectives better than others, but this is assessed much later in the process. As such, these must be agreed upon and locked down early in the process, ideally by early 2024.

SN2.2: Develop and endorse travel time targets and option assessment criteria.

Travel time targets and option assessment criteria are bookends for Project specifications, helping decision-makers identify infeasible options and allocate resources to other activities.

A framework generally consists of critical elements, such as defining criteria, measures, weightings, and scenarios. The business case workstream will lead this process and require input from subject matter experts from design, cost, and economics workstreams to rate the options.

The working groups can then define a long list of options that target the most significant number of objectives that can be achieved within a reasonable bound. This long list can then be reviewed against the criteria to derive a short list. Once the shortlist is created, a more detailed assessment will be conducted, including cost estimation, demand forecasting, and rapid economic appraisal.

The 2013 Study and the NSW Fast Rail Program business cases can provide valuable insights into travel time targets and their potential impact on technical and functional specifications. These documents have explored how door-to-door journey times affect consumer demand, station locations, rolling stock, and other factors. The information in these documents can be updated and refined with the latest technical input to improve their accuracy and relevance.

It is essential to consider the criteria when assessing options and assign weightings or rankings to each objective based on its importance. This critical technical assumption can significantly impact the option shortlisting and the entire process.

Therefore, it requires broader ownership, such as the HSRA Board or IGACC. In case of differing views, alternative scenarios can be tested to determine whether the same options process can be used for detailed assessment.

SN2.3: Develop and endorse key technical assumptions and CONOPS

Agreement on core technical details is often seen as a technical exercise but can significantly impact the assessment process and results. Stakeholders should understand key parameters (or the underlying narrative) to ensure consistency in approach and results. A significant risk for the Program would be differing assumptions/parameters that generate divergent results.

At a minimum, key technical assumptions and functional requirements should include the endorsement of the following:

- The CONCOPS should cover interoperability principles for the corridor, including the corridor/route alignment, track gauge, dedicated versus existing track, rollingstock, travel speeds, local versus overseas manufacturing, stations, services, signalling, power supply, technologies, commercial principles, fares and staging.

- Given that this forms the 'concept master plan' for an East Coast high-speed rail, it should be periodically reviewed and updated to ensure the vision, objectives, interoperability principles, and staging are still valid based on the latest information and technologies. This should occur at least every five years but more frequently if known changes affect the Program.

East Coast high-speed rail is a significant Program and technologies will inevitably change over the life of the Program. As such, it is critical that the CONOPS includes an assessment of alternative high-speed rail technologies currently available and that the Program scope retains sufficient flexibility to incorporate future technologies when they emerge. To form a baseline for the Program, it is proposed that alternative high-

speed rail technologies are considered as part of market sounding as outlined in the Strategic Stakeholder Engagement Plan.

There can also be significant community benefits from local manufacturing, particularly following the decline of traditional industries such as manufacturing. This can provide additional training, skills and job security which are of particular importance to regional or other socially disadvantaged communities. However, local manufacturing can also increase costs e.g. for construction of manufacturing facilities or higher wages for Australian workers compared to overseas alternatives. As such, these trade-offs require careful consideration as part of developing the CONOPS.

At a minimum, key technical assumptions and functional requirements should also include the endorsement of:

- **Base Case definition:** service need, demand modelling and economic appraisal.
- **Interoperability**: track gauge, rollingstock type, service principles, fare principles, etc. These should not be revisited or fundamentally altered in future FBCs, which may be led by state and territory governments.
- **Lifecycle cost estimation approach:** categorisation, calculation methods, line items, unit rates, and contingency.
- **Project definition approach:** technical design outputs, urban design, place-making, and sustainability elements.
- **Demand modelling assumptions, calibration and forecasts:** Base Case, Project Case (at least two options), alternative land use and scenario/sensitivity tests for economics and finance.
- **Economic appraisal methodology:** Base Case, CBA framework, benefit types, parameters and benefit-cost ratio.
- This would be based on actual cost (strategic) and probabilistic contingency based on the risk assessment (P50 is usually presented in CBA appraisal).
- **Financial appraisal methodology:** appraisal period, escalation rates and discount rate. This would be based on a probabilistic contingency based on the risk assessment (P90 is usually presented in a financial appraisal reflecting a 'worst financial case' situation).
- **Implementation plans:** timelines, work plans, resource requirements, risks and mitigation approach.

5.4   Customer experience

CE1: Understand customer expectations concerning customer persona definition

CE1.1: Update 2013 Study customer survey to account for contextual changes in the travel market and update travel demand modelling, including beginning demand modelling set-up and calibration

The development of high-speed rail involves a complex interplay between the design of corridors, stations, and rolling stock options. There are always trade-offs between customer travel time and urban and regional development outcomes. These factors combine to create an overall travel experience for the customer, which will determine whether they choose high-speed rail over other modes of transport.

For instance, increasing the number of stations can result in reduced travel times, but it can also affect reliability, mainly when there are mixed express and all- or limited-stop services. Nevertheless, increasing the number of stations can lead to greater urban and regional development opportunities, which usually revolve around stations. Housing centred around transport hubs provides an attractive option for individuals seeking convenience while travelling between home and work. It offers a new transport value proposition previously unavailable to them.

It is proposed to update customer surveys and travel demand modelling. This should include modelling set-up and calibration early in 2024 due to the long lead times required for data collection, cleaning, analysis,

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modelling, and rectification, as well as a potentially limited field of qualified individuals/firms with skills and resources to conduct this work.

There should also be an emphasis on travel time targets in the HSR Strategy in 2024 because this factor considerably impacts both costs and travellers' choice of high-speed rail over other modes of transport. These targets will be embedded in the objectives and endorsed through governance. The Program objectives will include corridor-wide targets, while Project objectives will include marks for that section.

Requirement for updated rail operational modelling for the HSR Strategy

It is critical that rail operational modelling is included in the scope of the Technical Advisor in the HSR Strategy to inform travel time targets and benefit analysis, given the 2013 Study is now 10 years old and the NSW Fast Rail Program business cases do not include transport demand modelling covering the entire East Coast corridor.

Requirement for updated strategic transport and land use modelling the S2N Business Case

Updated strategic transport demand modelling and land use forecasting will be required to support the S2N Business Case as this will form a key input to the service need and project justification, including the economic and financial appraisals. This is likely to require recalibration of NSW government models to reflect structural changes in customer preferences since COVID-19 and the latest NSW government land use forecasts. NSW government models are recommended to meet the timeframes for the S2N Business Case by December 2024.

Requirement to consider corridor-wide transport demand modelling approach

It is acknowledged that using NSW government transport demand models and land use forecasts for the S2N Business Case could introduce some inconsistency with future business cases or corridor-wide modelling. As such, it is recommended that consistency of corridor-wide demand modelling approaches is revisited with the States and ACT once S2N Business Case mobilisation is off the critical path. This may include developing a separate East Coast model or aligning assumptions within state-based models to the extent possible.

5.5   Risk and probity

RP1: Develop and endorse the risk and probity plans

Transparent and ethical delivery of public projects depends heavily on risk and probity. These two aspects ensure that the projects' objectives, outcomes, and benefits are delivered with accountability.

Risk management is vital in identifying, assessing, and mitigating potential threats and uncertainties that may impact the Program/Project's performance, quality, cost, and schedule. On the other hand, probability management sets high standards of integrity, honesty, and fairness in the Program/Project's governance, procurement, contracting, and delivery. Some key principles and probity best practices include:

- Aligning the Program/Project's risk and probity frameworks with the HSRA organisation's policies, strategies and objectives.

- Engaging relevant stakeholders and experts in the risk and integrity processes.

- Applying a proportionate and consistent approach to risk and integrity assessment and reporting.

- Implementing appropriate controls, measures and actions to address the identified risks and probity issues.

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- Monitor, review, and improve the risk and integrity performance of the Program/Project throughout its lifecycle.

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Establishing probity frameworks around industry challenges and market-sounding processes is particularly important. Conflicts of interest management is also crucial, especially around the movement of key personnel from the government to industry and vice versa. This will be a significant issue in a program like this, given the scale and complexity of the Australian market.

Moreover, developing bespoke probity frameworks for property acquisition processes is essential. There should also be a conflict-of-interest management around consultants working on associated projects to avoid potential unfair advantage.

RP1.1: Develop probity protocols for HSRA interactions with market participants, including specific rules and processes concerning information sharing, gifts, and public events

Section 8 of the HSRA Act sets out the functions of the Board. These include undertaking evaluations and research and gathering information. Gathering information could involve engaging with market participants; however, if/when doing so, it is important to adhere to key protocols and best practices.

It is important to note that board members may have non-HSRA roles that require them to interact with market participants. The above protocols do not restrict a board member's ability to engage in such activities. However, both the board member and the market participant must be clear about the board member's role during the interaction. They should be transparent about the 'hat' the board member wears during the interaction.

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6 Future directions and initiatives

6.1 Governance

6.1.1 Collaboration and culture

G3: Embed a culture of collaboration and continuous improvement within HSRA

G3.1: Explore innovative collaboration methods and working arrangements to foster innovation and positive ways of working

Collaboration among the States and ACT is crucial for the success of the high-speed rail Program.

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The States are responsible for providing transportation infrastructure and services within their borders, and they have direct knowledge and experience to manage critical aspects of the Program. The Australian Government is responsible for ensuring national coordination and integration of infrastructure and services. Any gaps or inconsistencies in transportation across state borders could negatively impact the benefits realised by high-speed rail. A 'business as usual' approach will not be sufficient, and innovative ways of working will be needed.

The HSRA should consider the most efficient methods for all stakeholders to participate in the HSR Strategy, S2N Business Case, and business cases for future sections. Stakeholders will need proactive facilitation of access to information and stakeholder engagement. Other ideas to explore could include:

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2. Create a culture of continuous improvement and learning from past experiences:
   a) Leveraging the latest in facilitation and idea-generation methodologies.
   b) Identifying individuals with strong collaborative skills and a reputation for openness, honesty, and transparency.
   c) Shifting back to in-person meetings and workshops to build personal rapport and trust.
3. Foster a risk management culture:
   a) This could involve establishing a PMO solely focused on risk, teaming a risk manager with a cost estimator, or implementing overarching risk management for HSRA.

Further, the high-speed rail should not 'reinvent the wheel'. The Program needs to learn from the Case Studies, insights from the 2013 Phase 2 report, and the NSW Fast Rail Program by implementing best practices and avoiding common mistakes.

6.1.2 Key performance indicators and benefits realisation

G3.2: Foster continuous improvement by tracking key metrics related to the Program and its vision and objectives

Key performance indicators (KPIs) are essential for a program because they help measure its progress, effectiveness and impact. KPIs are specific, measurable, achievable, relevant and time-bound objectives that align with the Program's goals and mission. Program managers can identify strengths, weaknesses, opportunities and challenges by tracking and analysing KPIs and making informed decisions to improve the Program's performance and outcomes. Potential key performance indicators for the Program could include:

Monitoring program progress against financial and non-financial milestones for:

- Timelines and slippage.
- Costs against budget.
- Quality and risk management status.

Monitoring options against vision and objectives for:

- Speeds and travel times.
- Stations locations against economic opportunities and housing targets.
- Concept of operations.

6.2   Program versus project objectives

PO1: Projects should formulate specific objectives aligned with the Program Objectives and tailor them to the unique needs of the local community.

PO1.1: HSRA and TfNSW should collaborate to develop Project-level objectives for the S2N Business Case and use these as a template to create insights, best practices, and lessons learnt

The first stage of the NSW Fast Rail program has been identified as the high-speed rail between Sydney and Newcastle. The Australian Government has already committed $500 million in funding for this Program, which has made significant progress in planning, including geotechnical investigations and detailed cost preparation, which can serve as a general baseline.

Central Coast and Newcastle regions are designated as one of the six cities in the Sydney Greater Metropolitan Area and are strategically important. This Project will help achieve housing objectives, expand the workforce in the Sydney CBD, and connect businesses in Sydney and Newcastle.

Project objectives should be developed to maximise the benefits of high-speed rail while considering the local area's specific needs. However, these objectives should always align with the high-speed rail Program's overall vision and objectives. The S2N Business Case and other projects should have their objectives derived from the Program objectives, which will provide additional details specific to each Project. For instance:

- Program objectives related to urban and regional development may include particular development opportunities in a section as part of the Project objectives.
- Program objectives will set travel time targets for the entire corridor, while Project objectives will set travel time targets for that particular section.

By aligning Project objectives with the overarching Program objectives, the Project can create a direct line of sight from national businesses to local businesses and the community. This approach will enable them to see themselves as part of the Project and select high-speed rail as their preferred mode of transportation.

6.3 Stakeholder and industry engagement

SE1: Develop innovative community and industry engagement approaches to help gather ideas and information and test concepts early in the process

The selection of corridors for transportation systems is closely related to the location of stations. It is important to ensure that stations are conveniently located and easily accessible, positively impacting the surrounding area. Having more stations can provide a range of service options and shorter travel times for some, but it can also increase costs. For other travellers, a mix of express and limited stops may reduce travel times without additional stations.

Stations can also provide a boost to the value of the land around them, enabling new residential development. However, this is only possible if the market and residents view the station positively. A station that provides poor services to only a few destinations may be less beneficial than existing transport options, resulting in reduced daily foot traffic and local area patronage, which can negatively affect land values and commercial opportunities.

While the HSR Strategy can address some of these issues, local studies must be developed with a focus on local content, planning controls, existing infrastructure, and market considerations.

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6.3.2 Industry challenge and peer review

SE1.3: Develop an industry challenge and peer review processes to gather input and test ideas in the marketplace

Early and continuous engagement with stakeholders is essential to gain public and industry support throughout the development process of any program. Regular updates on the Program's progress and milestones are necessary as long as sufficient information is available to share with the public. The Program's vision and objectives should be communicated to the public before other stakeholders. Additionally, intergovernmental agreements should be part of the stakeholder engagement approach.

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This approach is like the shadow operator concept but focuses on Project development by bringing constructors, designers, architects, cost estimation, and operators together in a consortium approach that brings delivery experience and tension to development activities. This approach has been used in business case development to challenge existing designs and identify scope and cost innovation opportunities. This can be undertaken at various points depending on the maturity of the design, with timing being a key factor in balancing having something that the industry can test while allowing enough time for input to design finalisation.

Drawing on experience from the NSW WestConnex project, key features would include:

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- Focused on improving project development outcomes by bringing constructors, designers, architects, cost estimation, and operators with delivery experience and healthy competition to development activities.

- Used through the HSR Strategy and S2N Business Case development to challenge existing designs and constructability and identify scope and cost innovation opportunities.

- Can be undertaken at various points pending maturity of the design, providing a balance between having something that the industry can test whilst allowing enough time to input to design finalisation.

- HSRA retains the intellectual property rights of materials developed.

- The industry challenge does not preclude participants from future procurement opportunities.

Key caveats and assumptions of the proposed industry challenge and peer review process include:

- Industry engagement is a long-term activity and requires the creation of expressions of interest, confidentiality agreements, and probity plans. It is recommended as a top-priority activity for successful project implementation.

- Market sounding is linked to the timing of the strategic delivery model, packaging assessments in the HSR Strategy, and more detailed commercial, funding, and finance analysis. It is important to conduct market sounding to inform the implementation assessment in the business case.

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6.4   Corridor definition and concept of operations

CO1: Define the CONOPS for an interoperable East Coast corridor, including the route alignment, rollingstock, stations, services, commercial principles, fares and staging

CO1.1: Define a corridor 'swoosh' that provides sufficient certainty for planning and corridor preservation but retains the flexibility to incorporate future innovations

Choosing the right corridor is a crucial decision in the Program. It will impact the feasibility of station locations, travel times, potential environmental impacts, designated land acquisition or reservices, and speeds. This process requires a combination of technical expertise and community involvement. Multiple studies will need to be conducted and updated throughout the process.

Defining the corridor provides more certainty, especially when preserving the corridor in the long term. However, flexibility allows taking advantage of strategic government and private sector landholdings.

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The definition of the corridor and station selection are interconnected because the stations need to be connected through the corridor. A straighter alignment would enable higher speeds and different technologies, but it is also likely to increase costs by encroaching on properties or geotechnically challenging areas. Thus, a straighter alignment may lead to faster travel times but comes with risks and challenges.

Corridor definition for the East Coast corridor will begin in the HSR Strategy in early 2024. This will build on the 2013 High-Speed Rail Study but will be represented as a 'swoosh' (i.e. an indicative graphical representation of the corridor without specific details concerning route or location). This is to provide enough certainty for planning and corridor preservation, including retention and acquisition of strategic landholdings.

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In parallel, the S2N Business Case will define the route alignment for this corridor in more detail to enable a Definition Design to inform an investment decision at the end of 2024. Furthermore, a range of technical issues will need to be considered in detail, apart from the community and industry engagement factors noted previously.

Rollingstock speeds and travel time target

When selecting rollingstock for an East Coast high-speed rail, the maximum speed, which must be more than 250km/h, is crucial. This decision plays a vital role in determining the travel time for customers. However, other factors, such as the use of existing/shared tracks, the location and number of stations, and the location and number of passing loops, also impact travel time. Therefore, it is necessary to set travel time targets that balance these trade-offs and ensure that one customer group or objective theme doesn't benefit at the expense of others.

The CHSR case study taught us that legislating travel time targets can be time-consuming and too rigid, offering no flexibility. Hence, it's critical to have some flexibility in the system. For instance, exceeding the target may yield significant additional benefits, such as urban and regional development.

However, doing so might limit the corridor to a single route through an urban area to fulfil the technical requirements concerning track geometry. These provisions can be included in intergovernmental agreements and governance, forming part of the key performance indicators and benefit realisation approach.

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Dedicated track v. existing track

CO1.2: Design high-speed rail using dedicated track to maximise travel times and reliability.

A dedicated track used only for high-speed rail has no significant impediments to its operation. On the other hand, using existing tracks involves sharing tracks with existing passenger and freight services to reduce costs. This substantially limits travel times and reliability, and it is unlikely to achieve travel time targets and is not recommended.

Surface versus viaduct versus tunnel

CO1.3: Consider cost reduction opportunities from reduced tunnelling, including the increased use of viaducts as an alternative.

Deciding whether to use a combination of tunnels and viaducts or just tunnels can significantly impact costs. Viaducts are a good choice in urban areas where acquiring land is difficult, and the existing tracks may not be suitable for high-speed rail or to maintain the reliability of services.

However, they can have a negative impact on the surroundings due to the placement of pylons and other infrastructure. On the other hand, tunnels have less impact on the surface but may be more expensive due to existing infrastructure or geotechnical considerations. It is recommended that cost estimation advice is sought in early 2024 to determine the cost benchmarks of surface, viaduct, and tunnel options for running the railway so that an informed decision about which option to choose is made.

CBD versus outer metro stations

CO1.4: Consider locating city stations outside the CBD where this will reduce costs and is well integrated with other complementary transport systems. Develop an access time target to inform this decision-making

Considering the trade off between proximity to the CBD and access times for capital city stations is important. While city stations located in the CBD can benefit business travellers and tourists with their end destination in the CBD, it can take time to direct services to stations within CBDs. This is because it requires careful consideration of factors like avoiding schools or highways, providing infrastructure, reducing noise and pollution, acquiring land, and minimising negative impacts on amenities.

On the other hand, locations outside the CBD may have fewer concerns, but they could only encourage travellers if convenient. However, stations in outer metro areas may be closer to where travellers live and start their trips. The impact on access times from locating city stations outside the CBD can be overcome by locating them close to complementary transport systems, enabling convenient interchange. s47B(a)

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Service plan and future timetable

CO1.5: Develop an ultimate service plan for East Coast high-speed rail that includes a mix of express and regional services and informs the ultimate capacity required for terminus stations

Express services between cities could benefit business travellers and inter-state tourists while offering opportunities to reduce air travel and contribute to sustainability goals. However, limited or all-stop regional services will provide additional opportunities for housing development, access to essential services, and local employment and training.

It's not necessarily a choice between one or the other. It's possible to run a mix of services on the same corridor. However, this may require additional track capacity or passing loops to ensure mixed services don't negatively impact their reliability. Defining the ultimate service plan is also critical to informing the ultimate capacity required at terminus stations, which was a significant constraint in the HS1 case study.

Commercial principles

CO1.6: Develop commercial principles about track, maintenance and operation of high-speed rail services. Carefully consider commercial and private financing opportunities to offset costs.

High-speed rail is a major investment, with estimated capital costs of $114 billion ($2012), according to the 2013 High-Speed Rail Study. It is crucial to understand who will be responsible for the rail system's ownership, operation, and maintenance, including its track, rolling stock, and systems. This will impact costs and revenue streams for various parties involved. It is also important to consider alternative funding and financing structures to offset these costs. This may involve alternative roles for the Australian Government, States, ACT, international governments, and the private sector, with variations to ownership, funding, and financing structures. It may also be beneficial to develop commercial case studies. s47B(a)

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CO1.7: Develop a fare strategy that considers offsetting the costs of operating high-speed rail services and allows for differentiated fares and concessions to achieve broader social objectives

The price of tickets for high-speed rail services can significantly affect the number of travellers and, therefore, the revenue generated. While increasing fares can help offset the costs of running high-speed rail services, it may also decrease overall patronage. However, if passengers are willing to pay more for faster travel times and better amenities, higher fares may have less of a negative impact on business travel. Alternatively, lower fares can increase the number of passengers and support social, urban and regional development objectives, but this often requires government support.

It's only sometimes possible to cover the full costs of high-speed rail services with ticket fares alone, as the initial costs of building the infrastructure are very high. Therefore, ticket fares are generally set to cover operating costs. In the 2013 Study, this was the approach taken.

Differentiated fare structures can also be introduced, with business class fares for passengers willing to pay more for shorter travel times, better amenities, and concessional fares for those who are less able to pay, such as pensioners and students.

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6.5   Economics, finance, and commercial opportunities

6.5.1 Economic and financial appraisal

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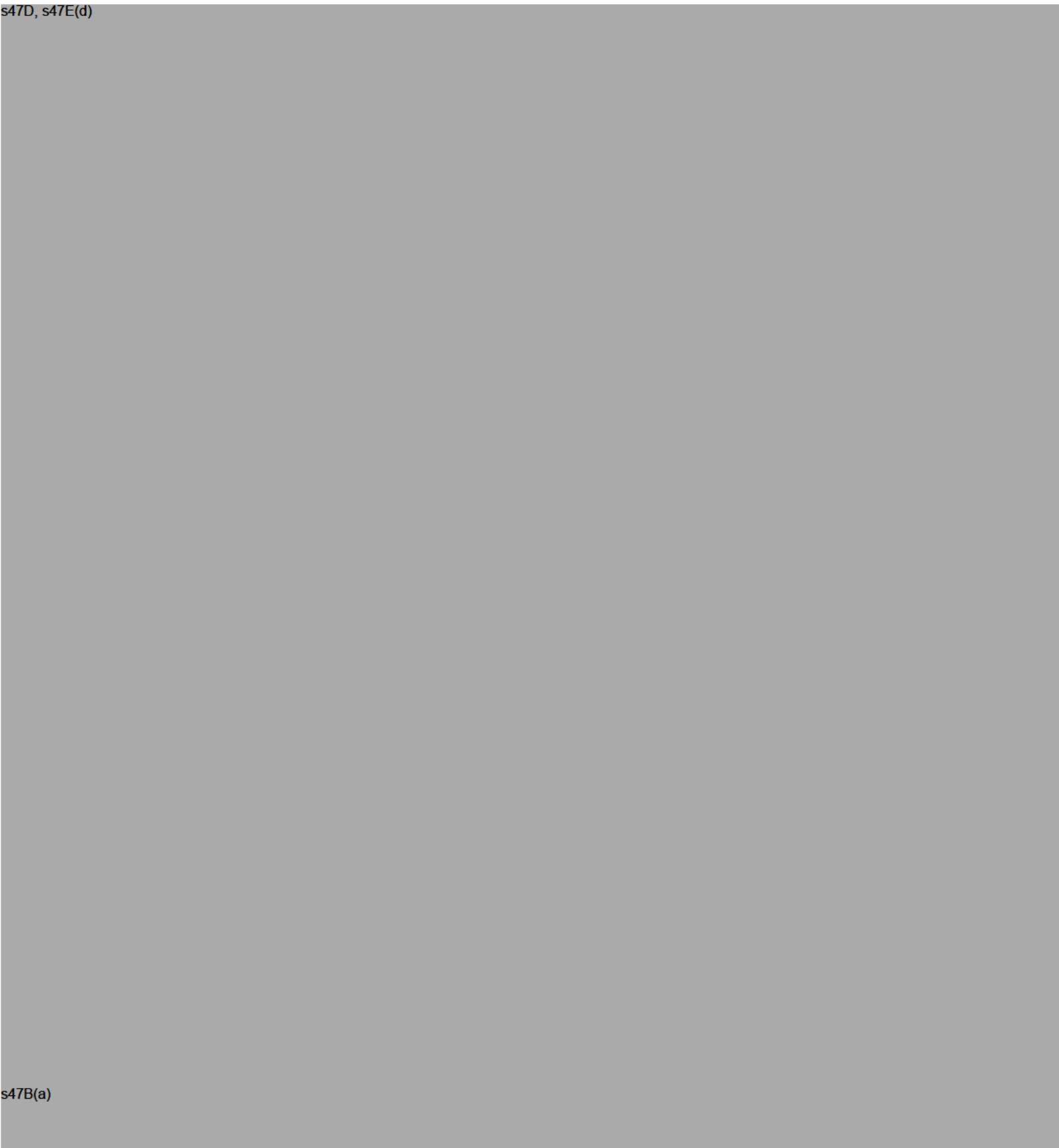
7 Conclusion and next steps

This strategic plan for an East Coast high-speed rail sets out the work plan, resourcing, and governance frameworks for a high-speed rail strategy and S2N business case by December 2024. The HSR Strategy will define the entire East Coast's vision, objectives and interoperability principles. It will form a key input into the S2N Business Case, seeking an investment decision for this section.

There are several innovative concepts proposed as hallmarks of the Program to promote community and industry buy-in and embrace cultural aspirations around continual learning and improvement or ongoing risk management, including:

- Collaborative culture embracing continual learning and improvement and risk management

- Immersive stakeholder and industry engagement.

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- Industry challenge and market sounding.

- Digital engineering.

- Early establishment of commercial and operating principles.

Several risks have been identified for completing the HSR Strategy and S2N Business Case. These include lead times for procurement and overlap between Program and Project activities in the first half of 2024. As a result, certain fundamental or long-lead-time activities must commence in early 2024, including:

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- Governance and working groups.

- Transport demand modelling.

- Options assessment, including CONOPS.

- Industry engagement.

- Services briefs.

To support meeting the timeframes for the S2N Business Case by December 2024, several priority strategy directions and initiatives have been developed, including:

- Detailed work program and roadmap for the HSR Strategy and S2N Business Case.

- Establishing governance arrangements, including developing intergovernmental agreements and drafting terms of reference for governance groups.

- Priority activities for commencing the HSR Strategy and S2N Business Case, including creating a team, appointing key positions, endorsing the vision and objectives, transport demand model set-up and calibration, developing travel time targets, defining the options assessment criteria, and developing the CONOPS.

- Prioritising endorsement of the strategic probity plan so that this function can transition to providing independent advice directly to HSRA on establishing the HSR Strategy and S2N Business Case.

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Table 14: Summary of priority strategic directions and initiatives

Work Plan (WP) – Section 5.1
Detailed Work Plan (WP1): Develop and approve a detailed program and roadmap for all priority directions and initiatives
WP1.1: Convert strategic roadmaps into detailed program schedules (P6 equivalent), including identifying interdependencies between all activities.

Governance (G) – Section 0

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G2: Establish formal governance structures, including drafting terms of reference
G2.1: Develop and agree on organisational structure and critical decision-making bodies, including the HSR Strategy as a working group within the S2N Business Case governance.

HSR Strategy and S2N Business Case (SN) – Section 5.3
SN1: Create HSR Strategy and S2N Business Case Project teams and appoint key positions
SN1.1: Define and endorse Project team structure and separate the HSR Strategy and S2N Business Case teams, balancing the need for independence and focus, integration, and specialisation and technical expertise.
SN1.2: Develop and endorse resource estimates and onboarding plan, considering a mix of HSRA resources to ensure consistency and external service providers to provide on-demand expertise and enable rapid mobilisation.
SN2: Develop an overarching framework to guide the development of the HSR Strategy and S2N Business Case
SN2.1: Develop and endorse vision and objectives.
SN2.2: Develop and endorse travel time targets and option assessment criteria.
SN2.3: Develop and endorse key technical assumptions and CONOPS.

Customer experience (CE) – Section 5.4
CE1: Understand customer expectations concerning customer persona definition
CE1.1: Update Phase 2 customer survey to account for contextual changes in the travel market and update travel demand modelling, including beginning demand modelling set-up and calibration.

Risk and probity (RP) – Section 5.5
RP1: Develop and endorse a risk and probity plan
RP1.1: Develop probity protocols for HSRA interactions with market participants, including specific rules and processes concerning information sharing, gifts, and public events[52].

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[52] Industry engagement has also been identified as a long lead-time event (e.g. for EOIs, confidentiality etc.) taking around 12 months.

Other future strategic directions and initiatives that are important but less on the critical path include:

- Embedding a culture of collaboration and continuous improvement within HSRA.
- Developing innovative community and industry engagement approaches to help gather ideas, information, and test concepts early in the process.
- Defining the concept of operations for an interoperable East Coast corridor, including the route alignment, rollingstock, stations, services, commercial principles, fares and staging.
- Developing detailed economic and financial appraisals to demonstrate value for money, informed by robust lifecycle cost estimates and updated transport demand modelling.

Table 15: Summary of future strategic directions and initiatives

Governance (G) – Section 6.1
G3: Embed a culture of collaboration and continuous improvement within HSRA
G3.1: Explore innovative collaboration methods and working arrangements to foster innovation and positive ways of working.
G3.2: Foster continuous improvement by tracking key metrics related to the Program and its vision and objectives.
Program versus project objectives (PO) – Section 6.2
PO1: Projects should formulate specific objectives aligned with the Program Objectives and tailor them to the unique needs of the local community.
PO1.1: HSRA and TfNSW should collaborate to develop Project-level objectives for the S2N Business Case and use these as a template to create insights, best practices, and lessons learnt.
Stakeholder and industry engagement (SE) – Section 6.3

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Corridor definition and concept of operations (CO) – Section 6.4

CO1: Define the concept of operations for an interoperable East Coast corridor, including the route alignment, rollingstock, stations, services, commercial principles, fares and staging

CO1.1: Define a corridor 'swoosh' that provides sufficient certainty for planning and corridor preservation but retains the flexibility to incorporate future innovations.

CO1.2: Design high-speed rail using dedicated tracks to maximise travel times and reliability.

CO1.3: Consider cost reduction opportunities from reduced tunnelling, including the increased use of viaducts as an alternative.

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CO1.5: Develop an ultimate service plan for East Coast high-speed rail that includes a mix of express and regional services and informs the maximum capacity required for terminus stations.

CO1.5: Develop commercial principles about ownership of track, maintenance and operation of high-speed rail services. Carefully consider commercial and private financing opportunities to offset costs.

Economics, finance, and commercial opportunities (EF) – Section 0

EF1: Develop detailed economic and financial appraisals to demonstrate value for money, informed by robust lifecycle cost estimates and updated transport demand modelling

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Strategic direction, activities, and initiatives have been mapped to the timeline illustrated in Figure 38 below.

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As the Program evolves, the HSR Strategy must be periodically reviewed and updated to ensure the vision, objectives, interoperability principles, and staging are still valid based on the latest information and technologies. This should occur at least every five years but more frequently if known changes affect the Program.

There will also be a requirement to develop business cases for future stages in the Program. This will include the development of additional IGAs between the Australian Government and individual States or the ACT and resolving inconsistencies between state-based transport demand models if a single modelling platform for the East Coast is not subsequently developed. There will also be the same long lead-time activities as the S2N Business Case, so it is recommended that planning for these future business cases commences at least three months before when they are intended to begin.