2. Integrating land use and infrastructure planning

STRATEGIC OBJECTIVE **Continuously improve the integration of land use and infrastructure planning**

SNAPSHOT

- Long-term land use plans are a critical foundation for infrastructure planning. Improved, integrated land use and infrastructure planning, and the availability of more extensive and better quality data and information, are vital to collaboration between business, government and the non-profit sector in delivering infrastructure to support jobs and housing growth.
- While NSW Government agencies have made significant progress towards better integration of land use and infrastructure planning in recent years, more can be done to ensure the Government's land use objectives are met, that current strategic land use planning initiatives are linked more effectively with infrastructure planning and that jobs and housing growth are supported by the right infrastructure at the right time, in the right place and at the right price.
- Building on the land use planning work being led by the Greater Sydney Commission and the Department of Planning and Environment, there is a need for more robust and focused integration of service and infrastructure planning in priority locations, including Growth Areas and Planned Precincts.
- Action is also needed to strengthen the NSW Government's strategic planning processes, including undertaking further work to identify and protect major infrastructure corridors and better coordinating and supporting the housing supply pipeline to assist the Government and private infrastructure providers with medium-term infrastructure planning that aligns with Region Plans and the 2018 SIS.

RESPONSE	**Summary of key recommendations**
Link integrated strategic land use and infrastructure planning	• Prepare a place-based strategic business case for the pilot growth infrastructure compact in the Greater Parramatta to the Olympic Peninsula area by mid-2018. • Subject to the outcomes of the pilot growth infrastructure compact, prepare place-based strategic business cases for future updates to District Plans and Regional Plans. • NSW Government agencies to integrate Growth Areas, Planned Precincts and growth infrastructure compacts (subject to the outcomes of the pilot growth infrastructure compact) into asset management plans and capital infrastructure plans from 2019-20. • Develop planning rules to integrate telecommunications infrastructure into new developments by the end of 2018.
Support efficient development through shared-use corridors	• Department of Planning and Environment to develop a plan for a 'Collaborate Before You Build' model for co-use of utility assets, including consideration of public and private collaboration, project approval requirements and governance options.
Identify and protect corridors	• Provide funding for the second round of the Corridor Identification and Reservation Fund.
Strengthen government planning processes	• Establish a digitally-based housing and employment supply pipeline by 2020 that includes a 20-year qualitative outlook and analysis of zoning and development application information.

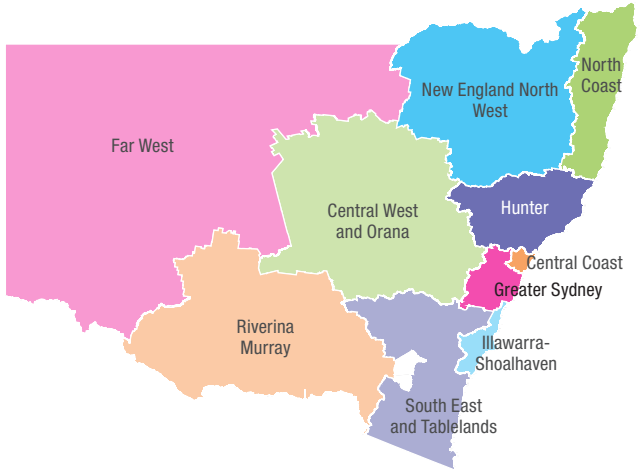
2.1 Recent progress

NSW Government agencies have made significant progress towards better integration of land use and infrastructure planning in recent years.

As noted in Chapter 1, the 2018 SIS and *Future Transport 2056* have been prepared at the same time as the 10 Regional Plans across NSW (Figure 3), allowing both strategies to benefit from a clear view on land use priorities (refer to Chapter 8).

Infrastructure NSW considers that there would be value in refreshing and updating all these documents at least every five years as part of an integrated planning process.

Figure 3 – NSW Regional Plans



Source: NSW Department of Planning and Environment 2017

2.2 Challenges and opportunities

The NSW Government has set a new vision for growing Greater Sydney based on a metropolitan area of three cities: the established Eastern Harbour City, the developing Central River City and emerging Western Parkland City in and around the new Western Sydney Airport. The Government has also set a new vision for a 'hub and spoke' model for a growing regional NSW to ensure equitable access of services to the community. These geographic land use directions for Greater Sydney and regional NSW will generate their own unique challenges and each must be planned to maximise liveability, productivity and sustainability.

The State's growing population and tightening fiscal position make it imperative that we get the most from our current infrastructure stock and that investment in new infrastructure is targeted effectively to meet and shape demand. Aligning decisions about the provision and use of infrastructure with the three cities vision and the 10 Regional Plans is critical to maximising the effectiveness, efficiency and endurance of both new and existing infrastructure.

2.3 Response

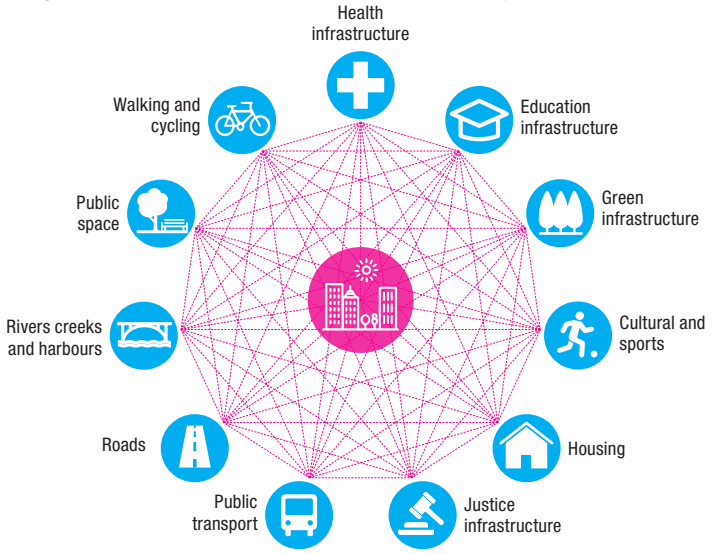
2.3.1 Linking strategic land use and infrastructure planning

Elements of infrastructure planning

An attractive environment, supported by urban infrastructure is fundamental to NSW's continued economic success. As illustrated in Figure 4, the relationships between urban infrastructure are critical and integral to productive, liveable and sustainable places.

The 2018 SIS has used land use and economic development directions as a basis for long-term planning, providing a foundation for future city and regional planning (refer to Chapter 8). The emerging availability of big data provides a more sophisticated evidence base for spatially-informed infrastructure investment decisions.

Figure 4 – Urban infrastructure relationships



Source: Infrastructure NSW 2017

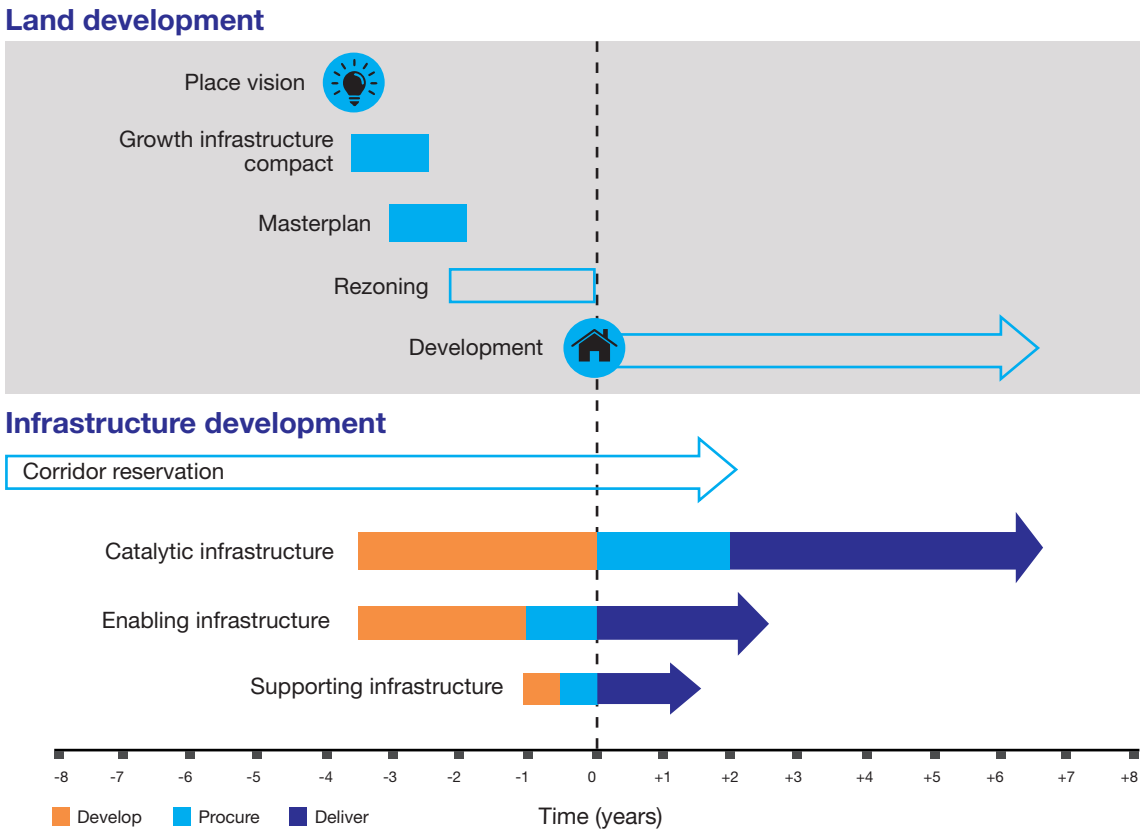
Infrastructure and the associated costs should be factored in to decisions about whether and where to release or rezone land. This will ensure that the Government understands the full cost of rezoning decisions. It may also result in a more integrated response to population growth if opportunities for the co-location of different services can be identified. Indicative infrastructure and land development lead times are outlined in Figure 5, which demonstrates the advantages of beginning infrastructure planning well ahead of rezoning.

Planning for growth

The Greater Sydney Commission (GSC) has designed the growth infrastructure compact (GIC) to assess the local and regional infrastructure needed to support long-term housing and jobs growth on an area-by-area basis.

The GSC is leading a pilot GIC for the Greater Parramatta to the Olympic Peninsula (GPOP) area, to be completed by the end of 2018. If successful, the pilot will evaluate where the GIC can be applied in other areas of Greater Sydney.

Figure 5 – Timing of infrastructure and development



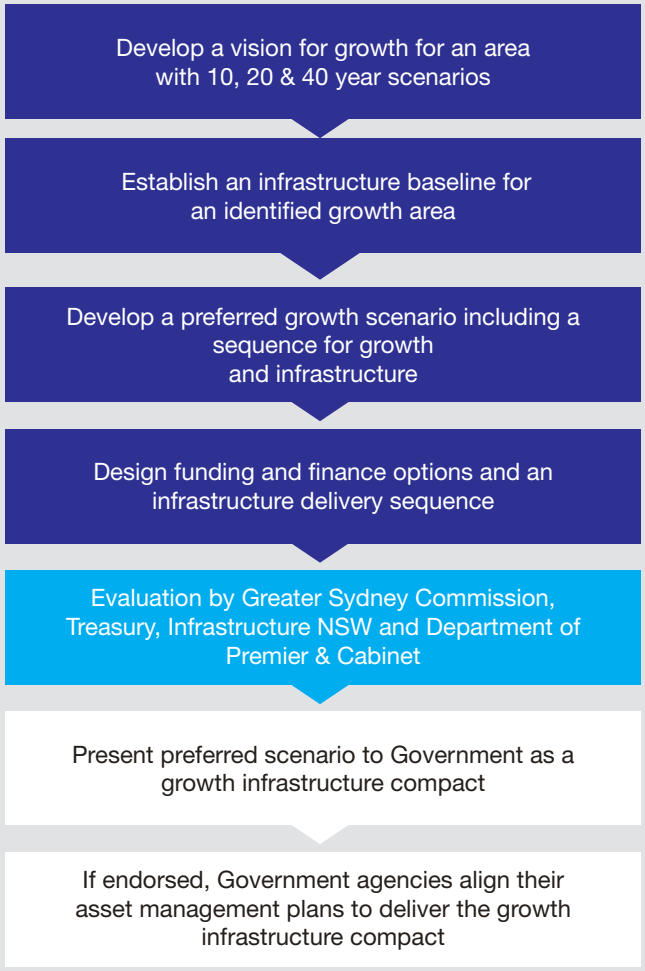
Source: Infrastructure NSW 2017

Growth infrastructure compact

The growth infrastructure compact (GIC) assesses the type, level and timing of infrastructure required for an area, considering different scenarios for housing and employment growth. GICs will be used to identify new growth areas by first understanding infrastructure capacity. Led by the GSC in collaboration with State and local government agencies, the GIC can provide structure planning to identify future updates to District Plans. Refer to Figure 6.

The GIC model seeks to make a step change in the collaborative processes necessary to manage growth in Greater Sydney. The model recognises that many partners – such as industry, local government and the community – need to work together to develop a land use framework supported by funded infrastructure, which then enables the private and not-for-profit sectors to deliver new housing and retail, commercial and industrial developments.

Figure 6 – Greater Sydney Commission's growth infrastructure compact



Source: Greater Sydney Commission and NSW Department of Planning and Environment 2017

Growth areas and planned precincts

Growth Areas are greenfield locations for new communities. Planned Precincts are generally located around existing transport corridors or strategic centres. These areas and precincts are coordinated by State and local government to deliver jobs, transport and homes.

Led by the Department of Planning and Environment, Growth Areas and Planned Precincts involve master planning to assess housing and employment forecasts, and the type, level and timing of infrastructure required, which in turn leads to establishing a Special Infrastructure Contribution. This supports rezoning and the funding and delivery of key enabling infrastructure.

The GIC process should culminate in the production of a place-based strategic business case, which addresses each location's needs in terms of development feasibility, service and infrastructure costs. The place-based strategic business case can then inform investment decisions where significant State capital investment is required. This will allow an upfront assessment of the best approaches to using existing assets and services, the optimal combination of new infrastructure investments to support future housing and jobs growth, and the most cost-effective sequencing and delivery of infrastructure investment at each location.

The place-based strategic business case can also provide agencies with the guidance and investment parameters they need to coordinate their investment priorities geographically.

Infrastructure NSW considers there is merit in preparing place-based strategic business cases to inform future updates to Regional Plans and District Plans.

Recommendation 1

Infrastructure NSW recommends that the Greater Sydney Commission lead the preparation of a place-based strategic business case for the pilot growth infrastructure compact in the Greater Parramatta to the Olympic Peninsula area by the end of 2018.

Recommendation 2

Infrastructure NSW recommends that, subject to the outcomes of the pilot growth infrastructure compact, the Department of Planning and Environment prepare place-based strategic business cases to inform future updates to Regional Plans and District Plans.

Recommendation 3

Infrastructure NSW recommends that NSW Government agencies integrate the infrastructure priorities necessary to support Growth Areas, Planned Precincts and growth infrastructure compacts (subject to the outcomes of the pilot growth infrastructure compact) into asset management plans and capital infrastructure plans.

2.3.2 Planning infrastructure using 'Movement and Place'

The economic success of our towns and cities depends in part on them being attractive, safe places for people to live, work and raise families. It is important to ensure that considerations of public amenity and good urban design are not sacrificed in addressing major challenges such as road congestion.

Transport for NSW has developed a 'Movement and Place' framework to give decision-makers a better understanding of the trade-offs associated with investing in new transport infrastructure within an established urban context and how to best allocate available road space (Figure 7). The framework establishes strategic planning principles for prioritising the movement of people and goods when developing places for housing and jobs.

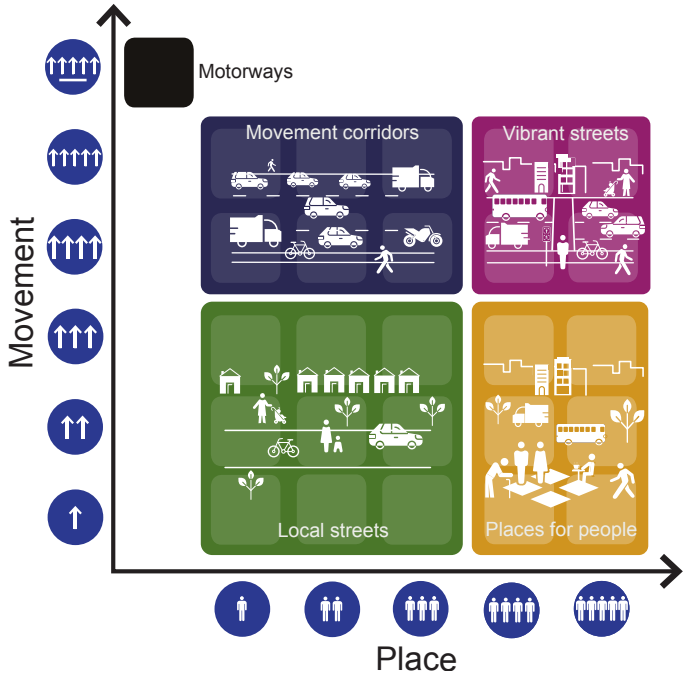
By identifying the role and function of a place and its spaces (such as streets and corridors), the framework aims to use the transport system to complement and enhance the function, rather than merely dictate the form, of the place.

The framework can apply to planning new communities and improving existing areas and to health, education and justice precincts. A practitioners' toolkit is needed to help planners implement the framework.

Recommendation 4

Infrastructure NSW recommends that the NSW Government Architect develop a 'Movement and Place' practitioner's toolkit by the end of 2018 to support both *Better Placed – An Integrated Design Policy for NSW* and the *Movement and Place Framework.*

Figure 7 – 'Movement and Place' framework



Motorways

*Motorways are **strategically significant** roads that move people and goods rapidly over **long** distances.*

Movement corridors

*Movement corridors provide safe, reliable and efficient **movement of people and goods** between regions and strategic centres.*

Vibrant streets

*Vibrant streets have a high demand for movement as well as place with a need to **balance different demands** within available road space.*

Local streets

*Local streets are **part of the fabric of the suburban neighbourhoods** where we live our lives and facilitate local community access.*

Places for people

*Places for People are streets with high demand for activities and lower levels of vehicle movement. They create places people enjoy, attract visitors, and are **places communities value.***

Source: Transport for NSW 2017

Revitalising Newcastle

The NSW Government is investing more than $650 million in the Revitalising Newcastle program to transform the city centre by strengthening connections between the city and waterfront, creating job opportunities, providing new housing and delivering attractive public spaces connected to better transport.

The investment reflects the transition of the former heavy rail 'movement corridor' to an urban environment with a high 'place' value. For example, at the Entertainment Precinct by Queens Wharf, the former rail corridor is transitioning towards a 'vibrant street'.

The Revitalising Newcastle program involves:

- the completed Newcastle Interchange, a new multi-modal transport interchange at Wickham in the city's west
- wire-free light rail between Newcastle Interchange and Pacific Park, just 200 metres from Newcastle Beach, reinvigorating Hunter and Scott streets
- revitalised land to provide education and affordable housing, mixed use development, job opportunities, tourist attractions and public open space including the Market Street Lawn.

2.3.3 Using data analytic tools to enhance integrated planning

Traditional planning has been based on ABS Census data, which is limited in scope and timeframe, and is collected only every five years.

Infrastructure planning can be greatly improved through 'data analytics', using a wide range of public and private data sets that relate to specific aspects of the movement of people and business interactions within a location, such as Opal Card, travel survey, Sydney Water connections, school enrolments, property transactions and telecommunications data.

This 'Big Data' can be used to augment Census data, enabling deeper insights and a better understanding of likely trends in population and the use of services. It allows infrastructure providers to make better use of existing assets, optimise services by linking them to the needs of a particular place and tailor infrastructure solutions to match demand.

Data analytics can support the practical application of the 'Movement and Place' framework at the local level and will be an important input to the pilot GPOP GIC. Applying this type of analytics requires a robust data set, drawing on both public and private information. Chapter 6 provides recommendations that will enable data-led infrastructure planning.

Location-based insights in south-east Sydney – Proof of Concept

Infrastructure NSW partnered with the Data Analytics Centre (see Chapter 6) to develop a proof-of-concept based on machine learning and simulating a synthetic population.

Multiple data sources were used to describe and predict what happens when and where in the area between Green Square, Kingsford Smith Airport, Maroubra and Bondi. The results showed that open data, machine learning and predictive analytical techniques are highly suitable for integrated decision-making because they:

- provide insights into a customer's interaction in a place, not just a sector-by-sector view
- allow for a whole-of-government approach to 'what if'-style scenarios
- improve collaboration and co-ordination between agencies in infrastructure planning.

The results allow the simulation of social behaviour (such as transport demand) in response to infrastructure changes. The results showed how small area modelling can be used to consider walkability to primary schools or respond to demand from a catchment. This is particularly useful when an area is undergoing rapid change in a way that could change the population.

This analysis has the potential to complement traditional forms of modelling by providing additional insights to support infrastructure planning.

Recommendation 5

Infrastructure NSW recommends that the Greater Sydney Commission establish a trial program to use predictive analytic tools to support the Greater Parramatta to Olympic Park pilot growth infrastructure compact by the end of 2018.

2.3.4 Supporting efficient development through shared-use corridors

In the context of a growing, denser city, it is important that infrastructure itself is an efficient user of land.

Utility transmission, distribution and 'lead-in' assets, such as land reserves (corridors), towers, trenches, pits and pipes, can serve more than one function and be shared by transport, fuel, energy, water, telecommunications and public spaces for walking and cycling. Ensuring adequate space for supporting infrastructure is vital for growth, particularly in the Sydney CBD area, as sub-ground space is becoming more limited due to existing utilities, tunnels, basements and car parks.[5]

The planning of service infrastructure could be improved through greater coordination between developers and public and private utilities to maximise the co-location of infrastructure services. A 'Collaborate Before You Build' process is recommended for all new utilities provision, extending the 'Dial Before You Dig' system already in place for protecting existing services assets. A review of regulations and incentives will be needed to ensure this model provides fair access and the efficient delivery of integrated infrastructure services.

5 KPMG 2017, p. 51

Recommendation 6

Infrastructure NSW recommends that the Department of Planning and Environment develop a plan by the end of 2018 for a 'Collaborate Before You Build' model for co-use of utility assets.

2.3.5 Integrating telecommunications infrastructure with development

In the last century, it was essential to provide electricity and water to homes. Today, digital connectivity is just as important as these utilities.

Demand for communications infrastructure for industries and in the home is forecast to grow fast[6] to meet demand from population and economic growth. In March 2015, the Commonwealth Government published *Telecommunications Infrastructure in new developments, A new approach to competition policy*, which aimed to give occupants of new developments access to modern telecommunications services.[7] Under the policy, developers are responsible for contracting the provision of telecommunications infrastructure to their developments.

The policy calls on planning departments in the States and Territories to consider changes to legislation to ensure that developers give appropriate consideration to telecommunications so that telecommunications infrastructure is planned and delivered to support the provision of services to homes and businesses.

Recommendation 7

Infrastructure NSW recommends that the Department of Planning and Environment introduce planning rules to integrate telecommunications infrastructure (such as nodes, towers and pit and pipe infrastructure) into new developments by the end of 2018.

2.3.6 Identifying and protecting corridors

Infrastructure corridors determine the shape, economic geography and productivity of a city or region. Planning and protecting the land for infrastructure corridors needed over the next 40 years will give effect to long-term land use and infrastructure strategies. By identifying and protecting these corridors early, the NSW Government can ensure future generations have options to support housing and jobs growth.

Infrastructure corridors can accommodate a range of services, including transport, fuel, energy, water and digital connectivity, as well as green infrastructure. When government agencies are planning for infrastructure corridors, they should coordinate their activities with public and private utilities to explore co-locating other infrastructure services.

Corridor protection in NSW

For many years, it has not been common practice in NSW to progress formal corridor protections. However, several recent major transport projects have been delivered in the absence of prior corridor protection and have opted instead for processes that secure the corridor concurrently with the environmental assessment process during the project's delivery phase. This has resulted in protracted environmental assessment processes, as issues related to route assessment, environmental considerations and strategic land use have had to be confronted after a commitment has been made to build the project.

This approach risks creating public perceptions that major infrastructure decisions are being made prior to community input. It can also drive up costs for government and lead to inefficient corridor alignments due to the encroachment of urban development, higher costs associated with compulsory acquisition and sub-optimal transport and land use integration.

In 2017, Infrastructure Australia found that protecting and acquiring corridors early could achieve significant cost savings. It is estimated that the additional cost to the Outer Sydney Orbital is at least $2.5 billion if the acquisition of the corridor is deferred until the project is constructed.[8] This corridor passes through regions that are attractive for development, such as areas around the future Western Sydney Airport and some Growth Areas.

The availability of future corridors is at risk unless action is taken to protect them. It is essential to identify these major transport corridors in strategic plans and planning instruments for Sydney's Western Parkland City.

Improving infrastructure corridor protection

Enhanced coordination across the NSW Government is required to support major infrastructure corridor planning.

There is currently no single source of information about planned network expansions that require corridor protection. In 2014, a corridor audit undertaken by

6 Ibid, p. viii
7 Department of Communications and the Arts 2015
8 Infrastructure Australia 2017, p. 26

Infrastructure NSW and the Department of Planning and Environment found there were 70 publicly identified major infrastructure corridors.

In 2015, the Department of Planning and Environment released the *Planning Guideline for Major Infrastructure Corridors* to assist infrastructure agencies with the corridor planning process. This guideline included a template for agencies to undertake a Strategic Environmental Assessment to identify and reserve the land needed to deliver major infrastructure. It also advised agencies to prepare a management plan that identifies appropriate development and interim uses of land that will not impact the future use of the corridor for infrastructure.

The 2014 SIS Update recommended the reservation of $100 million from the Rebuilding NSW initiative to identify and reserve corridors for strategic projects. So far, about $60 million of this money has been allocated, enabling planning work to proceed across nine corridors. Ongoing funding for corridor planning and protection will deliver significant future cost savings for government, as well as greater certainty for landowners and affected communities. These nine corridors are shown in Figure 8 and include nationally significant priority corridors identified by Infrastructure Australia.

Recommendation 8

Infrastructure NSW recommends that the NSW Government provide funding for a second round of the Corridor Identification and Reservation Fund.

Figure 8 – Nine transport infrastructure corridors awarded funding in 2016

Source: Infrastructure NSW 2017

2.3.7 Making better use of Crown land

The Crown land estate covers 42 per cent of the State, with 580,000 individual land parcels covering some 34 million hectares and with an overall value of $12 billion.

In 2012, the Government initiated a comprehensive review of Crown land management. A key objective of the review was to identify who is best placed to manage Crown land, and to identify and protect Crown land that is important to the State and local communities.

The review found that certain types of Crown land are of state significance and need to be retained by the Government, but decisions about land of local value and interest are best managed locally. It also found that divesting locally used Crown land to local councils would reduce administration time and costs between the local and state governments and make it easier for the local council to manage its overall local land assets.

The expected commencement of the *Crown Land Management Act 2016* in early 2018 will facilitate transfers of local land to local councils on a voluntary basis.

Crown land could also be used to support economic and community development. Infrastructure NSW recommends that, as part of the Government's Land Negotiation Program, a review be undertaken to explore how Crown lands could be better used to activate open space or employment objectives aligned to the Government's Regional Plans and Regional Economic Development strategies currently under development (refer to Chapter 8). This work could be supported by the establishment of Regional Joint Organisations across NSW.

Recommendation 9

Infrastructure NSW recommends that the NSW Government continues the implementation of the reforms to Crown land and that, as part of the Land Negotiation Program, a review is undertaken by mid-2018 of the potential for Crown land to assist in meeting open space or employment objectives outlined in Regional Plans.

2.3.8 Strengthening government decisions

Coordinating housing and employment supply to inform infrastructure planning

The Department of Planning and Environment's housing supply program is a rolling five-year pipeline of zoning capacity to support the demand for housing growth. The program draws on Growth Areas and Planned Precincts to assist the NSW Government and private infrastructure providers with medium-term infrastructure planning.

The housing supply pipeline would benefit from the release by the Department of Planning and Environment of upfront development information (rather than information regarding the completion of developments), and an analysis of zoning and development applications (such as the share of social housing) drawn from the NSW Government's e-Planning Portal. This information will be available once all paper-based applications move to e-Planning over the next three years.

Infrastructure NSW considers that the rolling five-year supply pipeline should contain a qualitative outlook over 20 years to align with NSW Government and business planning horizons. These time profiles will then align with future updates of the Government's asset planning, Regional Plans and the 2018 SIS.

There would be value in including employment land and zoning capacity in the housing supply pipeline so that public and private infrastructure providers can assess the total infrastructure investment required to meet jobs and housing growth.

The annual supply pipeline should be released at the same time each year, ahead of NSW Government Budget decisions, and made publicly available as a digital tool. The pipeline could then inform asset plans and agency Budget bids. This single authoritative source of data will give business and the NSW Government the ability to understand the interdependencies between infrastructure provision and housing and employment supply, and thereby collaborate more efficiently.

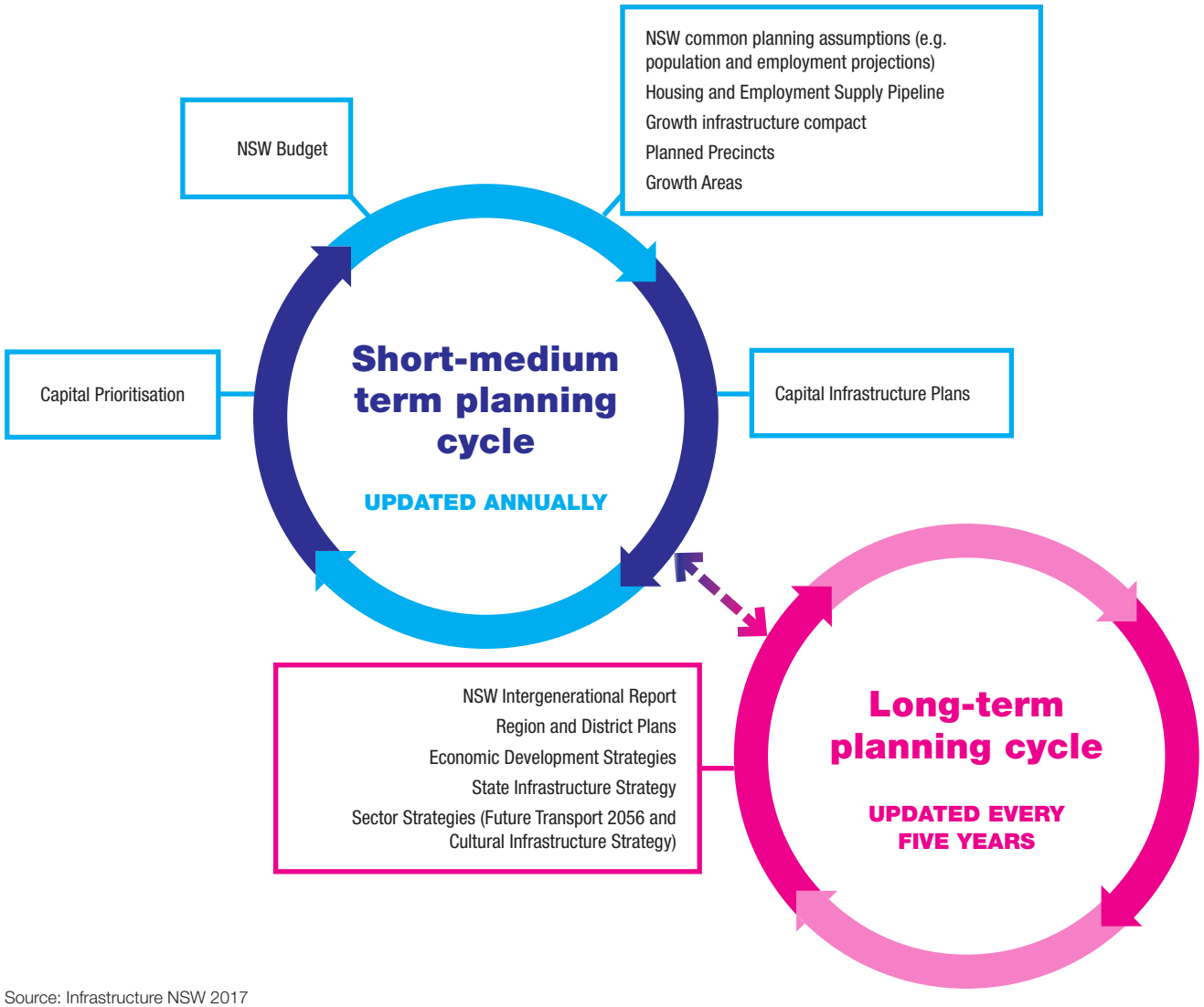
The NSW Government should explore whether a housing and employment supply pipeline is needed for other parts of the State, such as Newcastle or Wollongong.

Recommendation 10

Infrastructure NSW recommends that the Department of Planning and Environment establish by 2020 a housing and employment supply pipeline that:

- includes a five-year housing and employment supply forecast with a 20-year qualitative outlook
- is published in the third quarter of each year to support Government asset management plans and Budget bids
- includes analysis of zoning and development pipeline information
- is digitally based and implemented over three years.

Figure 9 – Indicative planning cycle



Source: Infrastructure NSW 2017

Aligning data publication

Infrastructure NSW considers that NSW Government agencies, through the annual Budget process, should prioritise their capital spending to align with the needs of GICs and Growth Area and Planned Precinct locations.

To ensure integrated land use and infrastructure planning processes are enduring, data and information need to be provided at a consistent point each year to link to established central government processes. The key information includes population, housing and employment projections, the housing and employment supply program, capital infrastructure plans and the capital prioritisation process (refer to Chapter 3). Indicative timing for key documents is depicted in Figure 9.

Recommendation 11

Infrastructure NSW recommends that NSW Government agencies work together on a common timeframe to publish population and employment projections, the housing and employment supply pipeline and agency infrastructure planning actions to coordinate the availability of key information to support Capital Infrastructure Plans and annual Budget decisions. This new common timeframe should commence in preparation for the 2019-20 Budget cycle.

2.3.9 Meeting housing and jobs growth

With NSW facing significant demand for a mix of new housing products to match different price points and provide access to diverse job opportunities, it is critical that appropriate delivery arrangements are in place to meet the priorities identified in Regional and District Plans. The recent split of the former Urban Growth NSW into Landcom (a State-owned corporation) and the Urban Growth NSW Development Corporation (UGDC) addresses this need.

Landcom – the NSW Government's land and property development corporation – is now well-placed to meet the Government's commitment to increase housing supply, choice and affordability through a pipeline of new development opportunities for Greater Sydney and regional NSW (including the Sydney Metro North West Urban Transformation Program).

While Landcom's focus will be largely on greenfield housing development, particularly in Sydney's west and regional NSW, UGDC will drive urban renewal in major, complex brownfield areas of the Eastern Harbour City and the Central River City. Its portfolio of major projects includes urban development in strategic corridors such as Parramatta North, Waterloo and, most critically, the Bays Precinct.

UGDC is well positioned to act as the NSW Government's source of expert advice on the delivery of commercially feasible, high quality urban development, balancing housing supply against considerations of urban design and place-making. It can also play a key role in ensuring that the land use outcomes of key transport projects are optimised.

Infrastructure NSW supports these initiatives.

This page left intentionally blank.