

infrastructure & development consulting

Draft Infrastructure Delivery Strategy

475 Badgerys Creek Road, Bradfield

WSA-MP01

June 2024

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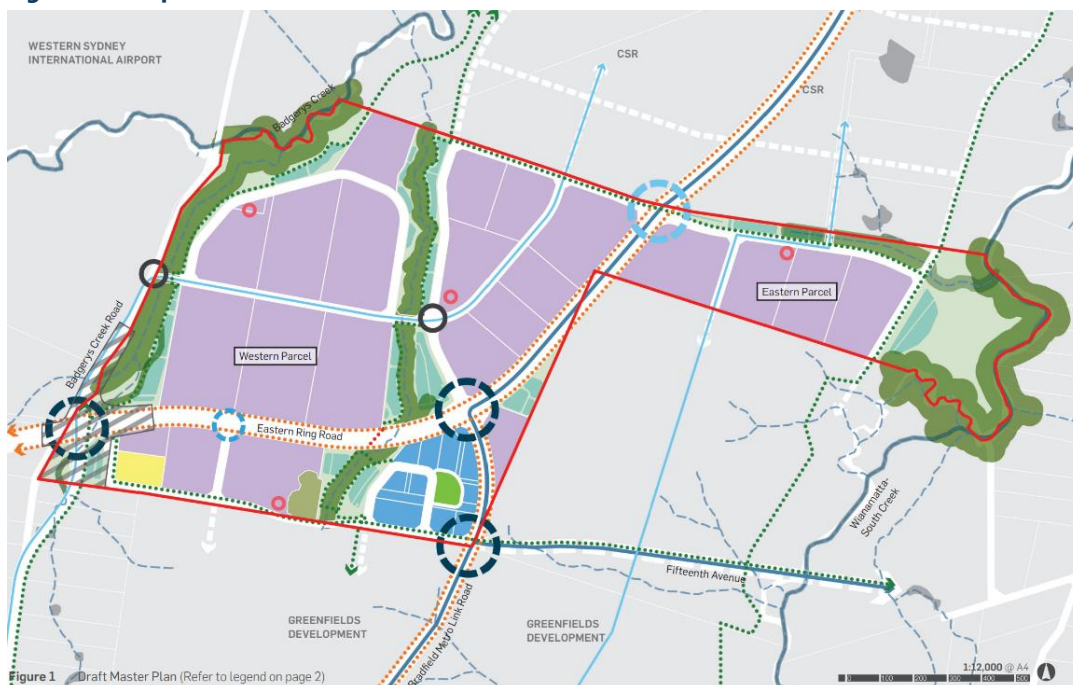
1 Introduction

The Ingham Property Group (IPG) site is located at 475 Badgerys Creek Road, Bradfield, legally known as Lots 99 and 100 in DP1287207 and comprises a total area of 184 ha along Badgerys Creek Road, centrally located within the Western Parkland City. Lot 99 comprises the zone substation and lot 100 comprises the remainder of the site. The site forms part of the Aerotropolis Core Precinct within the Western Sydney Aerotropolis and is predominately zoned for ENT Enterprise use under the State Environmental Planning Policy (Precincts – Western Parkland City) 2021 (WPC SEPP).

The site is largely defined by grass land and is largely clear of vegetation as it is currently used for agricultural purposes. There is also an internal road network within the site which had previously connected the now demolished sheds and ancillary structures dispersed across the site. The site is suitable for development and free of contamination which has been confirmed by environmental testing and site investigations.

The site is situated within the Western Sydney Aerotropolis, with a direct interface with the Western Sydney International Airport (WSI). The site is bound by two significant riparian corridors which define Western Sydney, with South Creek to the east and Badgerys Creek to the north-west. The immediate surroundings of the site are characterised by large rural landholdings used predominately for agricultural and light manufacturing purposes, all of which will be redeveloped in accordance with the *Aerotropolis Precinct Plan* vision.

Figure 1 - Proposed Master Plan



IPG is currently undertaking the Master Plan pathway with the Technical Assurance Panel (TAP), which is an optional design process established under the WPC SEPP to amend the *Aerotropolis Precinct Plan* as it applies to the site. IPG is in the process of preparing a Master Plan, as part of a co-design process with the TAP, for the site which will be formally lodged to the Department of

Planning Housing and Infrastructure (DPHI) in accordance with the Western Sydney Aerotropolis Master Plan Guidelines.

The IPG Master Plan was informed by a detailed assessment of the site-specific considerations through preliminary site investigations. The Master Plan breaks down the general application of the Enterprise zone across the site and provides a more granular approach to land use planning with considerations made to the opportunities and constraints of the site. The structure plan is made up of four key land uses which include enterprise and light industry, business and enterprise, employment zone centres and mixed use.

Infrastructure & Development Consulting (IDC) has been engaged by Ingham Property Group (IPG) to prepare this Infrastructure Delivery Strategy (IDS) to support the proponent-led master planning process for their site on Badgerys Creek Road in the Western Sydney Aerotropolis.

1.1 Purpose of the Infrastructure Delivery Strategy

The purpose of this Infrastructure Delivery Strategy (Strategy) is to clearly identify the infrastructure needed to support the delivery of the IPG Bradfield site:

- Identify the infrastructure required to be delivered under the existing Western Sydney Aerotropolis contributions framework
- Mechanisms of delivery
- Identify who is likely to deliver the infrastructure
- Identify any changes in amount of infrastructure from the existing contributions framework to any proposed changes (i.e. increased open space or increased road areas)
- Assist government and the community in understanding the infrastructure delivery task for the site.

1.2 Staging

The staging plans shown in this report have been prepared based on the information available at the time of preparing this document. They are indicative only and subject to change as may be required to respond to detailed design amendments, market uptake rates, broader changes in agency and government plans and the like.

The timing of the staging plans is therefore not pegged to a particular year, but rather the infrastructure that is required to unlock a particular part of the site (e.g. stormwater drainage and open space works) or yield (e.g. utilities and transport).

Throughout the TAP process, discussions have taken place with Sydney Water, Liverpool City Council, Transport for NSW and DPHI to understand the proposed staged delivery of infrastructure on the site and how this aligns with their internal planning.

1.3 Traffic Modelling

A Transport Management & Accessibility Plan (TMAP) has been prepared as part of the master plan for the IPG site. It should be noted that the assumptions included in the traffic modelling for 2036 and 2041 do not represent commitments of Government for that infrastructure.

1.4 Engagement With Agencies and Authorities

Within the Technical Assurance Panel process, the project team has had extensive discussions and negotiations with key agencies including Transport for NSW, Sydney Water, Liverpool City Council and NSW Department of Planning Housing and Infrastructure (DPHI) to agree on the scope and staging of infrastructure.

The following IDS report is consistent with these discussions and agreements and provides a development staging plan that responds to a number of infrastructure threshold and service catchment issues.

2 Existing Contributions Framework

There are several development contributions that apply to the subject site and land in the Western Sydney Aerotropolis.

2.1 Local Infrastructure Contributions

Local infrastructure contributions are proposed to be levied by Liverpool City Council under a Section 7.12 Plan for development in the Western Sydney Aerotropolis. The *Draft Liverpool Aerotropolis Development Contributions Plan 2023* plans to collect contributions from developers to deliver local infrastructure, including local roads and intersection upgrades and social infrastructure, such as open space and community facilities. Importantly, unlike most other local contributions plans, this plan does not include stormwater, which is covered by Sydney Water's Development Services Plan.

The contributions plan has not yet been formally adopted by Council, but we understand will be shortly. It is discussed in more detail below.

2.2 Special Infrastructure Contribution - Western Sydney Aerotropolis

This is a NSW State contribution which took effect on 25 March 2022. The Special Infrastructure Contribution (SIC) will help fund the delivery of infrastructure in the Western Sydney Aerotropolis.

A SIC is paid by developers within a defined Special Contributions Area to contribute towards the cost of State infrastructure delivery. The contribution helps ensure key infrastructure such as state and regional roads, regional open space, schools and health facilities are in place in time for incoming residential and worker populations.

The Western Sydney Aerotropolis SIC is discussed in more detail below.

2.3 Housing & Productivity Contribution (HPC)

On 28 June 2023, the NSW Parliament passed the Environmental Planning and Assessment Amendment (Housing and Productivity Contributions) Act 2023. The Housing and Productivity Contribution replaces the previous Special Infrastructure Contribution (SIC) provisions in the NSW planning legislation and is a development charge that will help fund the delivery of State infrastructure.

Whereas the current SIC charges are based on net developable area, the new HPC charges are to be based on the gross floor area of non-residential development. Further, instead of a number of precinct-based charges the HPC is a single rate for Greater Sydney.

The HPC is discussed in more detail below.

2.4 Sydney Water Development Services Plan

Sydney Water is the trunk drainage, potable water and sewer authority for the Western Sydney Aerotropolis. Sydney Water will be responsible for delivering, managing and maintaining the regional stormwater network along with drinking water, wastewater and the recycled water

network. Under the proposed DSP regime, developers will be required to fully fund (i.e. at no cost to Sydney Water) all potable water, sewer and stormwater assets. The water and sewer DSP has been set, whilst the stormwater DSP has not yet been calculated.

These DSPs are discussed in more detail below.

3 Local Contributions

3.1 Draft Aerotropolis 7.12 Contributions Plan 2023 (Liverpool)

The *Draft Aerotropolis 7.12 Contributions Plan 2023* (7.12 Plan) at the time of writing the report has not yet been adopted by Liverpool City Council, however we understand that this will occur soon.

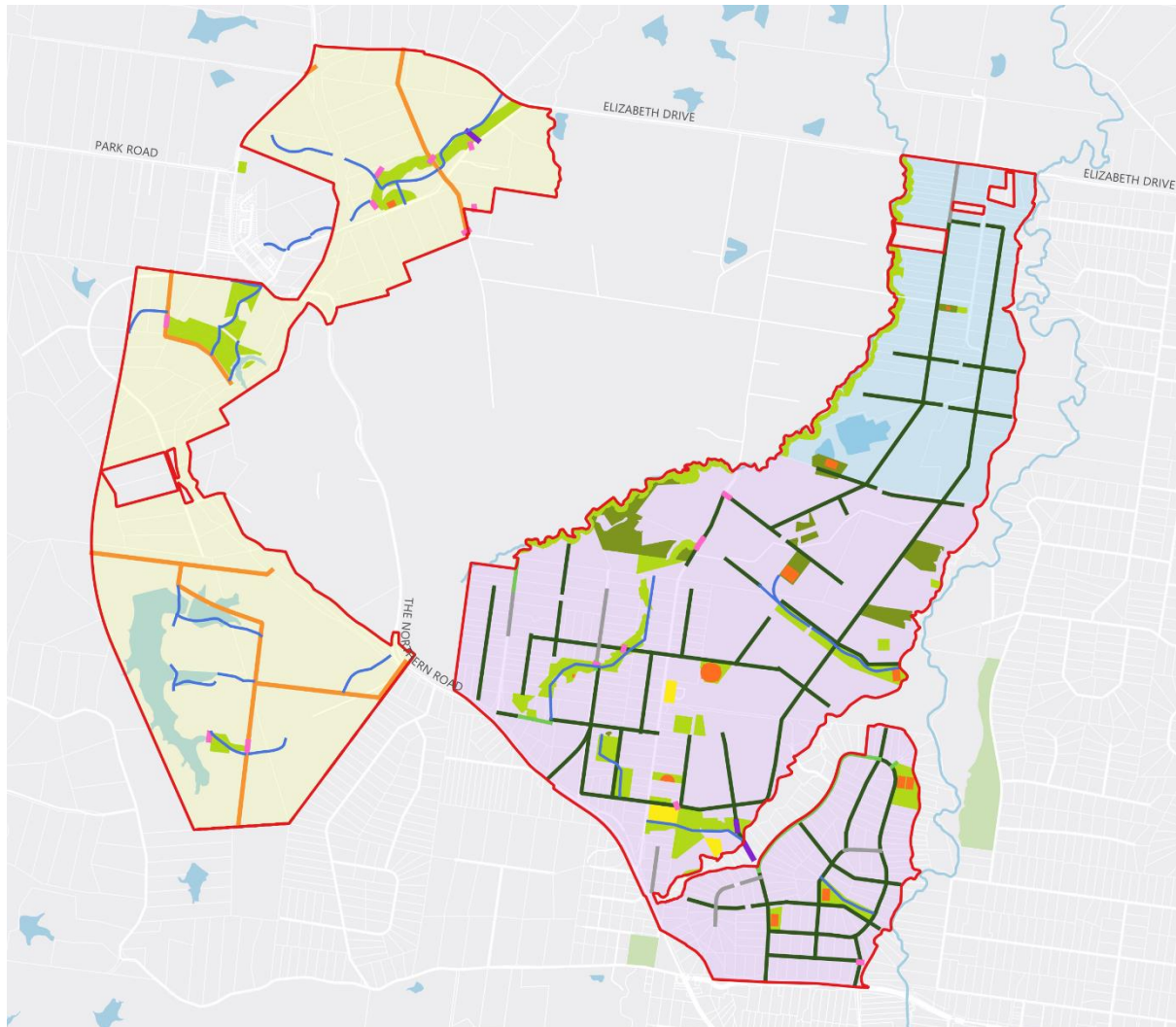
The 7.12 Plan identifies the cost of land and works needed to provide local infrastructure, including roads, open space and recreation, and community facilities in accordance with the requirements of the Precinct Planning documents and other relevant planning controls. Stormwater infrastructure within the Aerotropolis is the responsibility of Sydney Water which is subject to another contributions framework and is therefore not included in the S7.12 Plan.

The contribution for development is determined by applying a fixed percentage rate to the cost of that development (called a Section 7.12 Levy). This rate reflects the ratio of the total infrastructure costs to total development costs. For the Aerotropolis Precincts located within the Liverpool LGA, the Section 7.12 Levy is 4.5% of CapEx.

The *Aerotropolis Precinct Plan* formed the basis of the 7.12 Plan. Land use, road hierarchy and open space network plans were used to determine the quantum of infrastructure required to support development within the Aerotropolis. The 7.12 Plan includes costs for land acquisition and construction and embellishment. No allowances are made for operation and maintenance, as these costs are not permissible to be included in a 7.12 Plan.

The infrastructure included in the 7.12 Plan is shown in Figure 2. It is important to note that there are minor departures to the Precinct Plan as part of the master planning process and that the principles of the infrastructure provision have been taken from the Precinct Plan and applied to the amended layouts. The infrastructure located within the site boundary is further discussed in Section 6.2.

Figure 2 - 7.12 Plan Infrastructure (Based on Precinct Plan)



Aerotropolis Section 7.12 Plan (Liverpool) - Infrastructure

 Land Application Boundary	 Local Open Space	 Sub Arterial Road	 Bridge
 Aerotropolis Core Precinct	 Indicative Open Space	 Collector Road	 Culvert
 Agribusiness Precinct	 Active Open Space	 Local Street	 Active Transport
 Badgerys Creek Precinct	 Community Facilities	 Open Space Edge Road	

Source: Draft Aerotropolis 7.12 Contributions Plan 2023 & Background Report – GLN Planning & IDC (2023)

4 State Infrastructure Contributions

4.1 Western Sydney Aerotropolis Special Infrastructure Contribution (SIC)

The Western Sydney Aerotropolis SIC will help fund key infrastructure as well as provide for biodiversity offset. In the Aerotropolis, this will include:

- Rail and bus infrastructure
- Schools
- Community health and emergency service facilities
- Parks and other open spaces
- Upgrades to State and regional roads
- Bicycle network
- Regenerating the Cumberland Plain Conservation Area

The Western Sydney Aerotropolis SIC includes a list of projects which will be funded, however locations for many of these projects, particularly social infrastructure projects such as schools and community health facilities, have not yet been confirmed.

The Aerotropolis Precinct Plan identifies a number of road projects, and one regional park, which will be funded through the SIC. The locations of these projects are shown in Figure 3.

The current SIC rate applicable to the development is shown in Table 1 below.

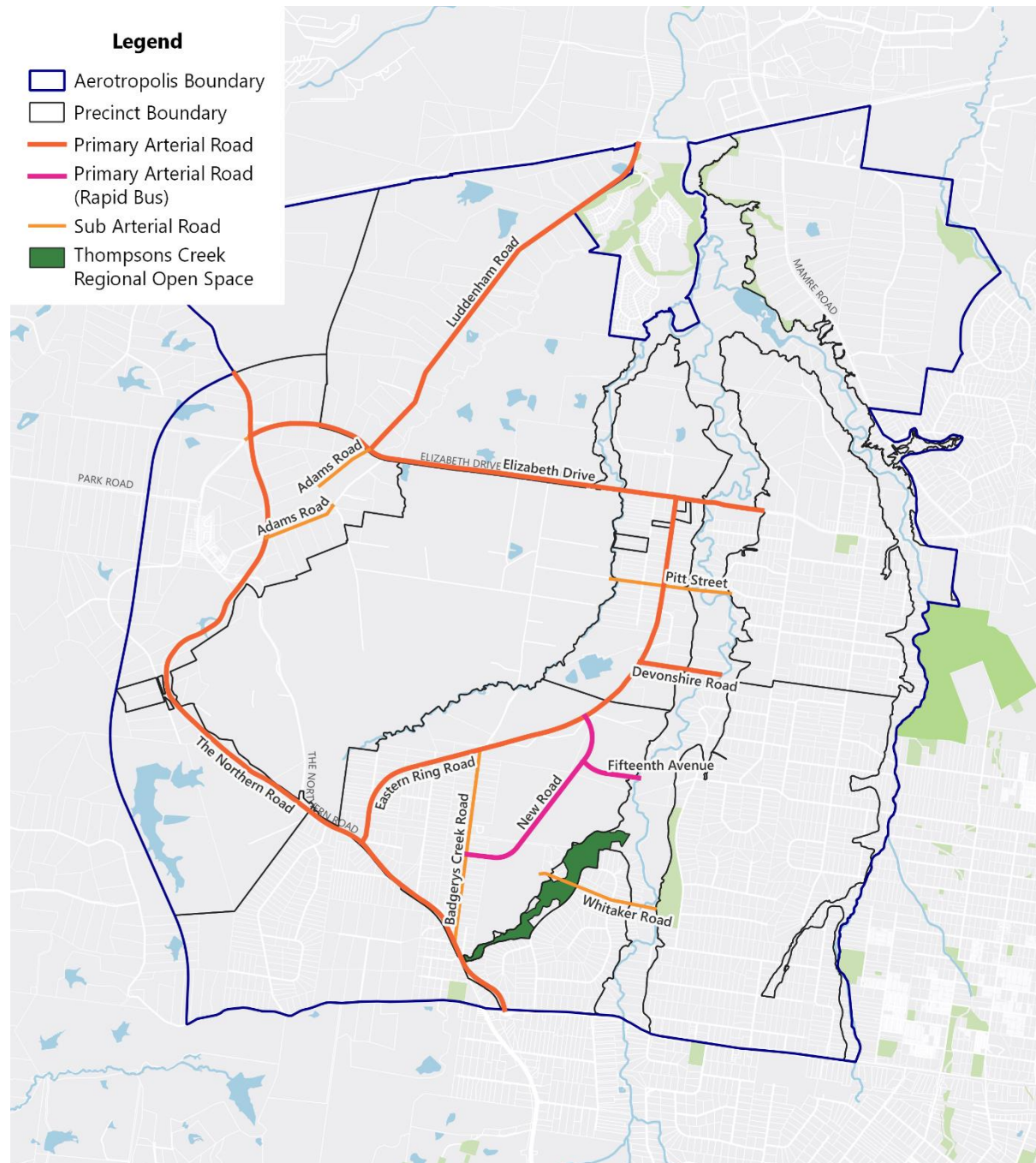
Table 1 - Existing Western Sydney Aerotropolis SIC Contribution Rates - FY2023-24

Class of development	Contribution rate
Development within the Agribusiness, Enterprise, and Mamre Road Industrial Zones (as identified in clause 11(1) of the Determination)	\$226,065 per hectare of net developable area
Development within the Mixed-Use Zone (as identified in clause 11(1) of the Determination)	\$565,162 per hectare of net developable area

To help new development proposals adapt to the new charge, the SIC has been phased with a 50% reduction until 30 June 2023 and a 25% reduction in 2023-24. The full rate of \$226,065 per Ha NDA (current as of 1 July 2023) will apply from 1 July 2024.

It is important to note that the Western Sydney Aerotropolis SIC will be phased out by 1 July 2026 and replaced with the Housing & Productivity Contribution (HPC). This is discussed in more detail below.

Figure 3 - SIC Infrastructure Identified in Aerotropolis Precinct Plan



Source: Draft Aerotropolis 7.12 Contributions Plan 2023 & Background Report – GLN Planning & IDC (2023)

4.1 Housing and Productivity Contribution (HPC)

As mentioned earlier, the HPC will be phased in to replace the SIC gradually over time. It is expected that the HPC, which is a broad-based development levy across Greater Sydney will fund the same projects that were highlighted in the SIC.

Table 2 below summarizes the current HPC rates for non-residential land in Greater Sydney.

Table 2 – HPC Contribution Rates (Greater Sydney)

Land Use	Contribution Rate
Industrial	\$15 per square metre of new gross floor area for industrial development
Commercial	\$30 per square metre of new gross floor area for commercial development
Retail	\$30 per square metre of new gross floor area for retail development

As a comparison, based on approximately 118.35Ha of NDA and proposed development yield (in GFA) as presented in Table 12, the SIC obligation would be approximately \$26.8M, whilst the HPC would be \$11.3M.

5 Sydney Water Contributions

5.1 Sydney Water Developer Services Charge (DSP)

Sydney Water is working towards the reintroduction of infrastructure contributions for potable water, wastewater and stormwater services to help recover the cost of providing infrastructure to new developments.

This follows recommendations set out by the NSW Productivity Commission's Infrastructure Contributions Review which were adopted by the NSW Government.

Whilst stormwater charges have not yet been released by Sydney Water, the sewer and potable water charges have, and are listed in Table 3 below.

Table 3 - Sydney Water DSP Charges

Sydney Water Development Servicing Charges (DSPs)	Price per Equivalent Tenement (ET)
Wastewater DSP (Nepean System)	
Wastewater price (\$ / ET) 1 July 2024 - 30 June 2025	\$4,149.28
Wastewater price (\$ / ET) 1 July 2025 - 30 June 2026	\$8,298.57
Wastewater price (\$ / ET) 1 July 2026 onwards	\$16,597.14
Drinking Water DSP (Greater Sydney)	
Wastewater price (\$ / ET) 1 July 2024 – 30 June 2025	\$850.00
Wastewater price (\$ / ET) 1 July 2025 – 30 June 2026	\$1,700.00
Wastewater price (\$ / ET) 1 July 2026 onwards	\$3,400.00
Stormwater DSP (Western Sydney Aerotropolis)	
Not yet Determined	t.b.c.

Please note that one (1) equivalent tenement (ET) is equal to one low density dwelling. Depending on the nature of non-residential development, the ET will be calculated based on the type of non-residential development (once known). We therefore expect that the non-residential DSP charges for water and wastewater would be set with the issue of a notice of requirements, after the master plan approval.

6 Infrastructure Provision

6.1 State Contributions Plan (SIC) Infrastructure

The site is bisected by two proposed primary arterial roads, and one sub arterial which will be funded through the SIC. The proposed road hierarchy is also shown in Figure 5 below. These roads include:

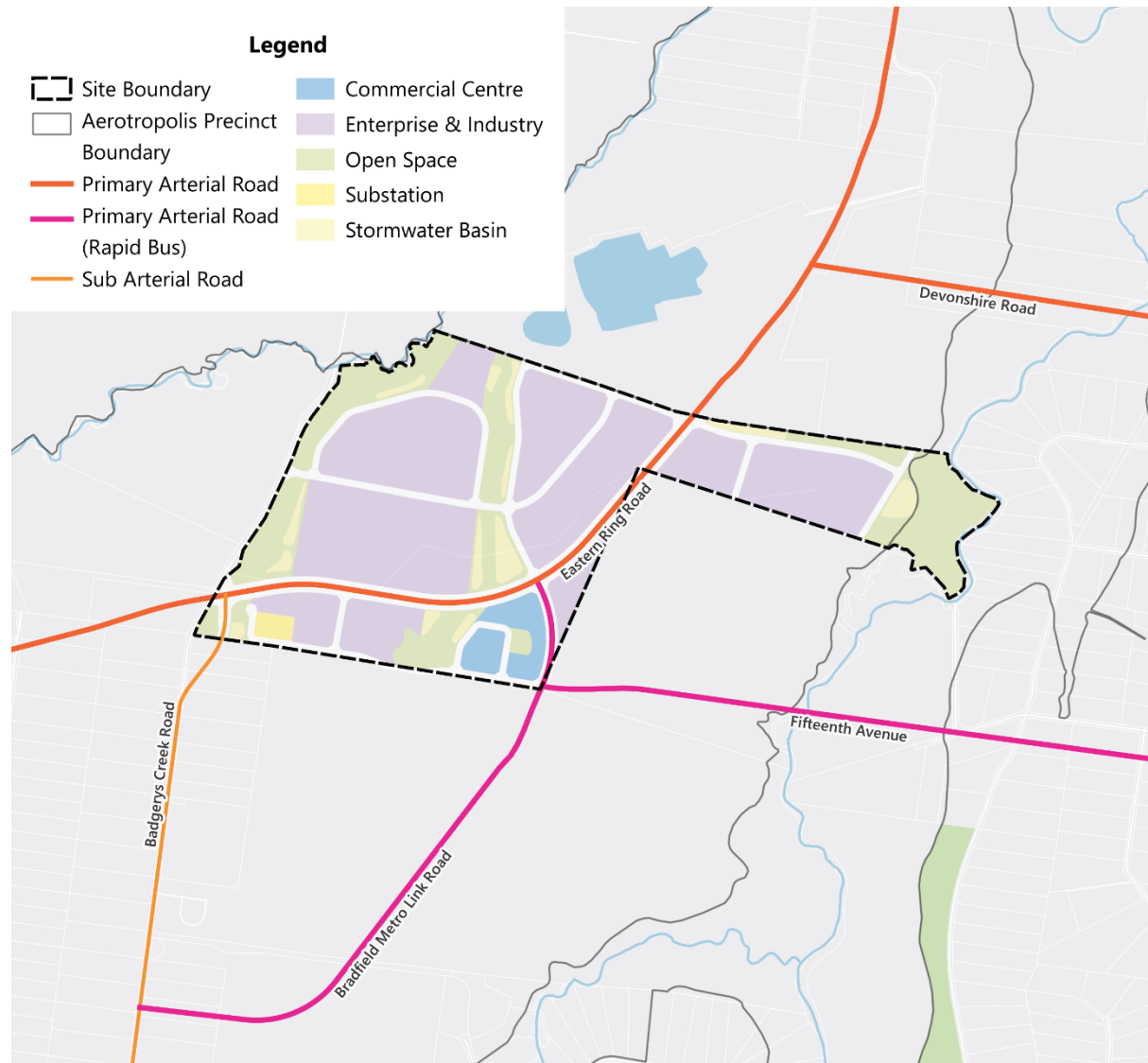
- The Eastern Ring Road – a primary arterial road with a 60m wide reserve and two travel lanes in each direction
- The Bradfield Metro Link Road - A primary arterial road with a 45m wide reserve, with one travel lane in each direction and one dedicated bus lane in each direction
- Badgerys Creek Road – a sub arterial road with a 40m wide reserve and two travel lanes in each direction. Note the length of Badgerys Creek Road north of the Eastern Ring Road is a collector road (subject to the local S7.12 Plan).

Table 4 - SIC Infrastructure Provision

Item	Infrastructure Type	Quantity Within Site Boundary (m)
Eastern Ring Road	Primary Arterial Road (60m Reserve Width)	2,060
Bradfield Metro Link Road	Primary Arterial Road (Rapid Bus) (45m Reserve Width)	380
Badgerys Creek Road	Sub Arterial Road (40m Reserve Width)	160 ¹

¹Length of Badgerys Creek Road through the site boundary is a result of a potential re-alignment of the Badgerys Creek Road / Eastern Ring Road intersection by TfNSW

Figure 4 - Proposed SIC Infrastructure



6.2 Local Contributions Plan

6.2.1 Roads Infrastructure

A number of collector roads funded through the 7.12 Plan are located within the site boundary. The collector roads located on the site are shown in Figure 5.

Badgerys Creek Road, which fronts the western boundary of the site, is an existing collector road, but is nominated as a sub arterial road south of the intersection with the future Eastern Ring Road in the SIC as outlined above. The collector roads inside the site are expected to be delivered by IPG under a works in kind agreement with Council.

Figure 5 - Road Hierarchy



6.2.2 Open Space Infrastructure

The 7.12 Plan also includes allowances for open space included in the *Aerotropolis Precinct Plan*. The plan includes open space identified in the Aerotropolis SEPP Land Reservation Acquisition Plan, as well as additional open space identified in the *Aerotropolis Precinct Plan*. This additional open space is denoted as “indicative open space” on the Precinct Plan.

Active transport links will be provided through open space that is owned by both Sydney Water and Council. Proposed alignments for active transport links are shown in Figure 6.

6.2.3 Summary

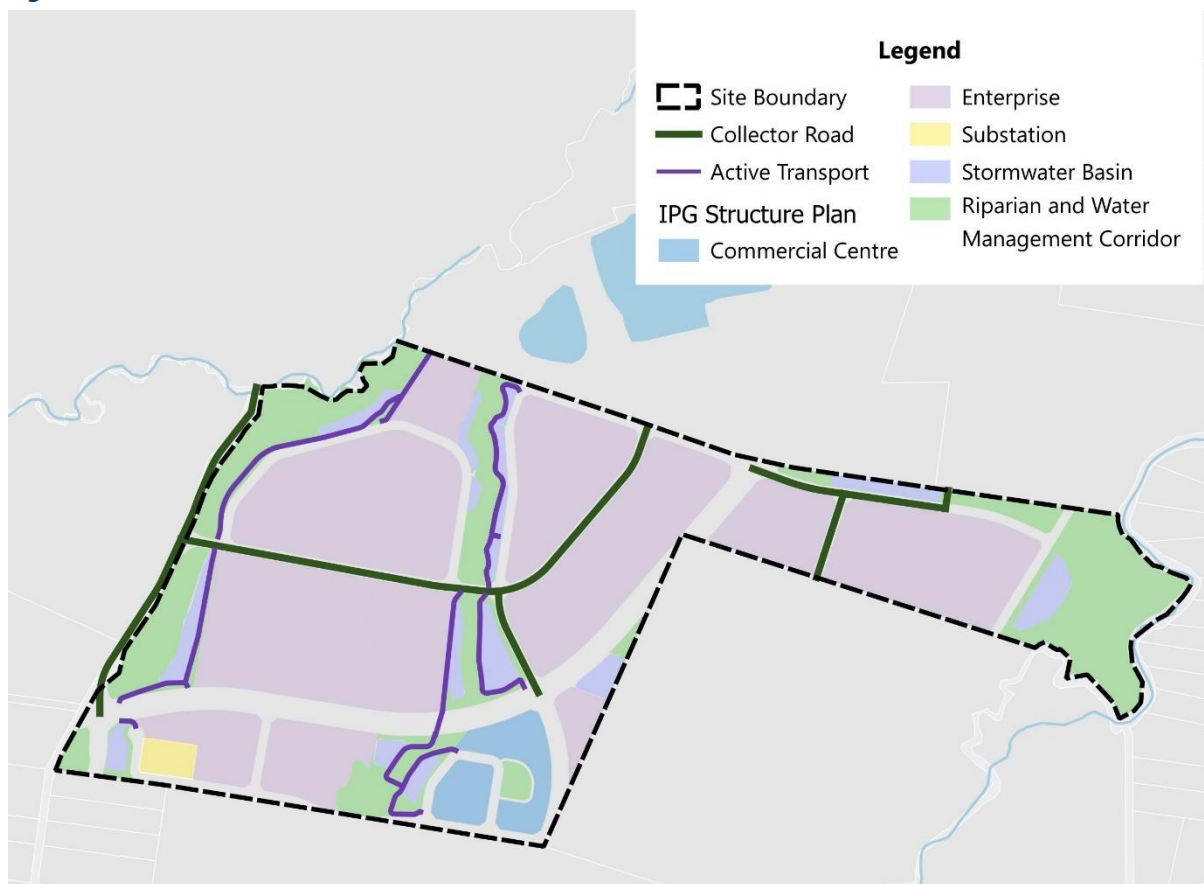
A summary of the infrastructure to be funded through the 7.12 Plan on the site is provided in Table 5.

Table 5 - Local Infrastructure Provision

Item	Infrastructure Type	Quantity Within Site Boundary
Collector Roads	Collector Road (25.6m Reserve Width) and Riparian Collector Road (25.6m Reserve Width)	2,445m
Open Space	Open Space	6,640m ²
Active Transport	Active Transport (some links double up as basin access roads for Sydney Water)	2,430m

Where an active transport path has a dual use as a basin access road for Sydney Water, the infrastructure has been assumed to be the responsibility of Sydney Water.

Figure 6 - Local Infrastructure

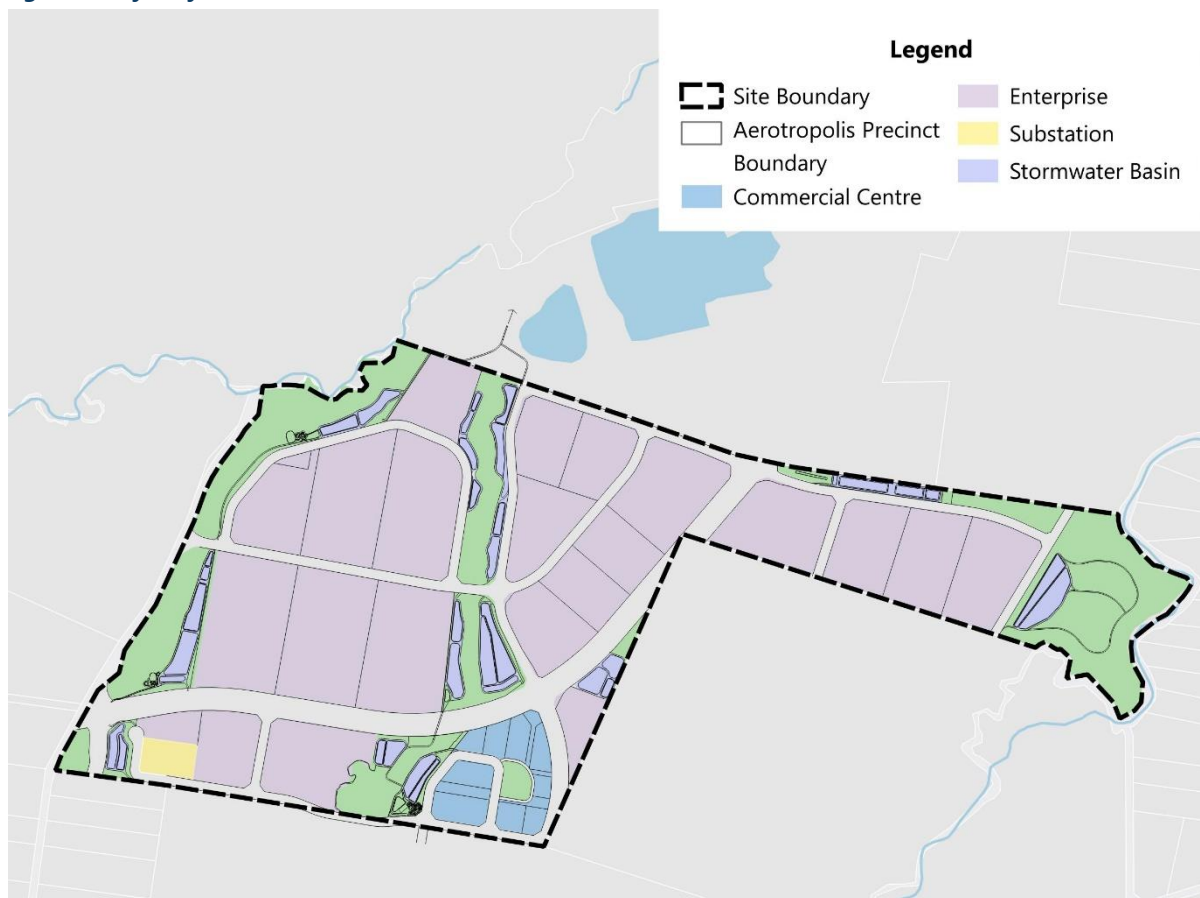


6.2.4 Stormwater DSP Infrastructure

As mentioned earlier, the stormwater DSP charges are yet to be determined. However, because the IPG site is providing infrastructure on site that caters for upstream catchments (in part), we would expect that the IPG site could generate a higher works in kind value than the levy liabilities.

The stormwater infrastructure determined to be required for the IPG site and some upstream catchments that would be offset against the stormwater DSP charge is shown in Figure 7.

Figure 7 - Sydney Water Stormwater Infrastructure

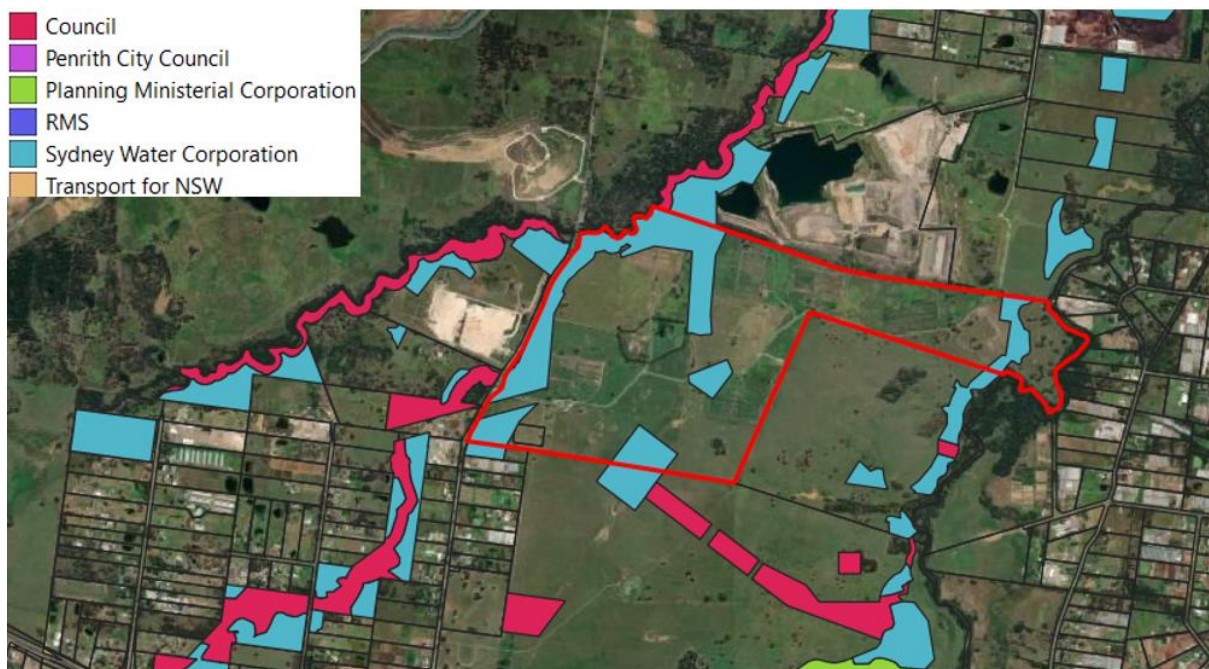


7 Land Acquisition

7.1 Open Space and Stormwater Precinct Plan Land Acquisition

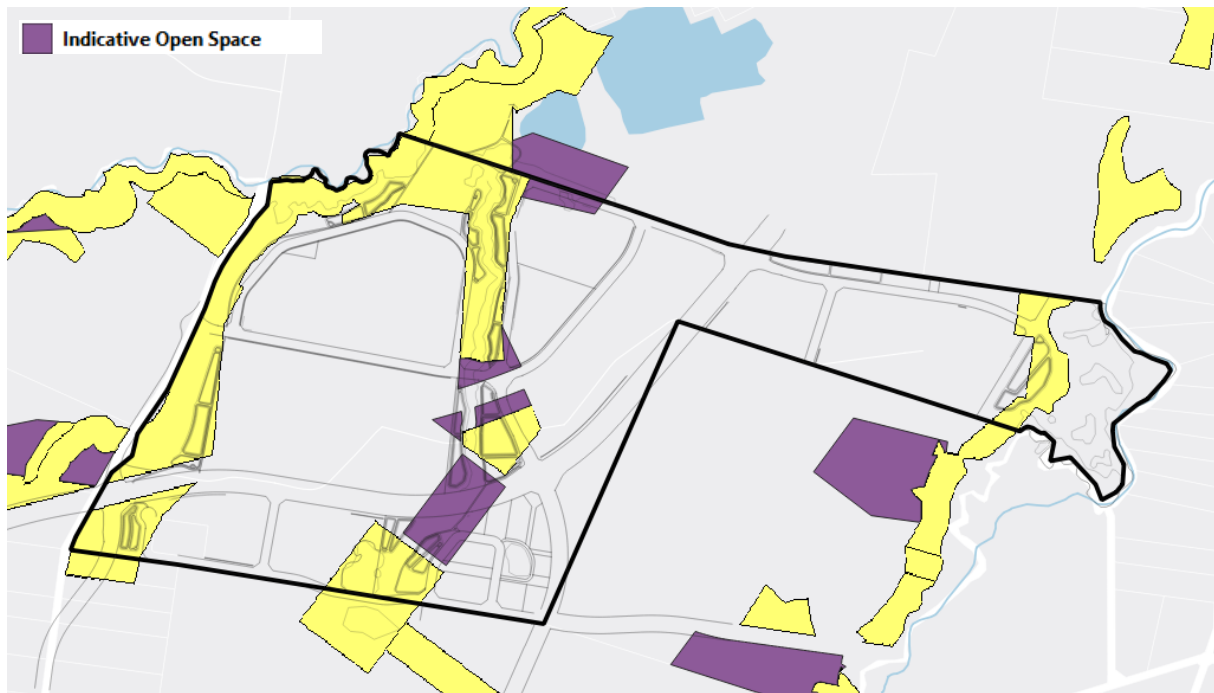
The Land Reservation Acquisition mapping the SEPP indicated that all land acquisition on the IPG Bradfield site would be undertaken by Sydney Water for the purposes of water management basins and corridors under a new Stormwater Development Services Plan (see Figure 8 below). The areas were nominated by Sydney Water were based on their initial modelling to comply with the various water management targets (flow duration, pollution removal and flood management).

Figure 8 - Land Acquisition by Authority



In addition to the SEPP mapping, the Western Sydney Aerotropolis Precinct Planning documentation nominated additional "indicative open space" which was included in Liverpool City Council's *draft* Section 7.12 Contributions Plan. This is shown in Figure 9 below.

Figure 9 - Additional Indicative Open Space



Combining these, a summary of the originally estimated land acquisition from both Liverpool City Council's draft Section 7.12 Plan and the Western Sydney Aerotropolis SEPP is shown in Table 6 below, with over 41.3Ha of land nominated for acquisition for either open space, or water management.

Table 6 - Land Acquisition – Precinct Plan & SEPP

Acquisition Authority	S7.12 or SEPP Land Acquisition (m ²)
Sydney Water	343,971
Liverpool City Council	69,384
TOTAL	413,355

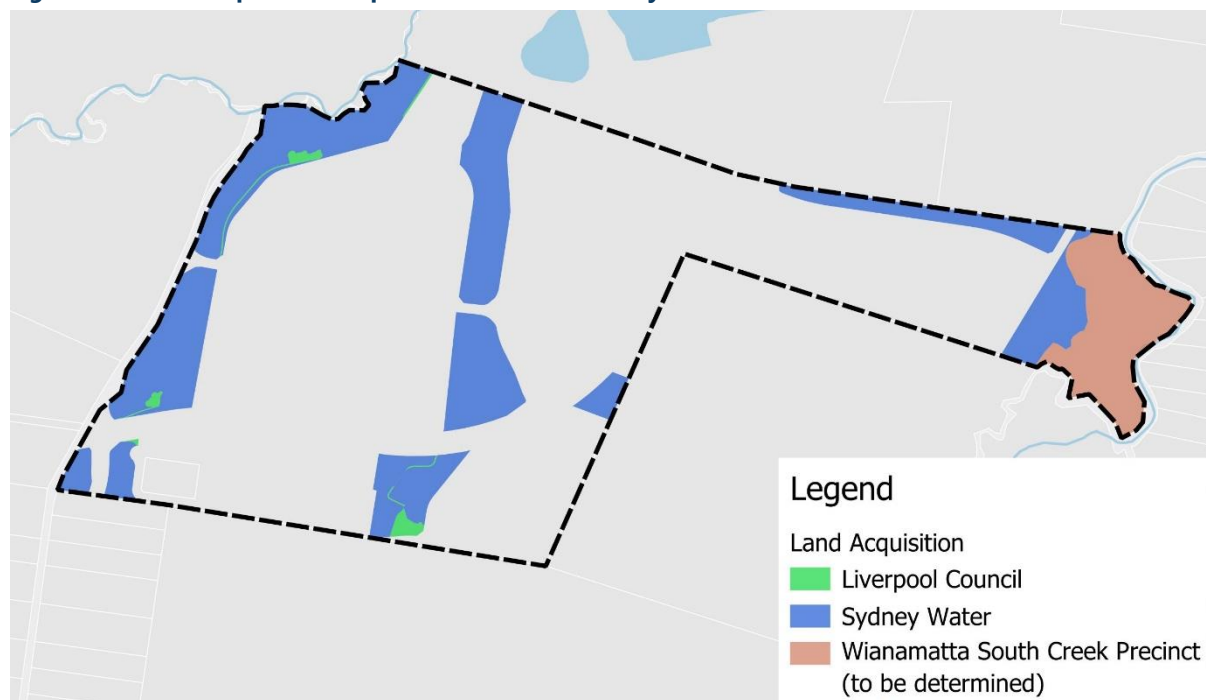
7.2 Open Space and Stormwater Master Plan Land Acquisition

The initial modelling by Sydney Water informing the precinct plan has been updated as part of the Integrated Water Cycle Management Report for this Master Planning process by IDC. This IWCMP has been based on the site-specific designs, layouts, land uses, etc. This represents a more accurate and appropriate scenario for a revised land acquisition proposal and is shown in Figure 10 below. These basin sizes and locations will achieve the water management targets with the following land acquisition required.

Table 7 - Land Acquisition Areas

Acquisition Authority	S7.12 or SEPP Land Acquisition (m ²)	Master Plan (MP01) Acquisition (m ²)	Difference (m ²)
Sydney Water	343,971	356,443	+12,472
Liverpool City Council	69,384	9,556	-59,828
Sub TOTAL	413,355	365,999	-47,356
WSC future Precinct (tbd)	0	96,588	+96,588
TOTAL	413,355	462,550	+49,195

Figure 10 - Land Acquisition Required for Master Plan Layout



This shows that the overall quantum of land acquisition remains similar to the original proposal, with an additional 3% of land to be acquired by Sydney Water and less by Liverpool City Council. The total difference of an additional 49,195m² of land to be acquired is related to the part of the site that sits within the Wianamatta-South Creek Precinct in the eastern end of the site. We understand that the reason this was not included in the previous SEPP mapping is because it was part of a separate place-based business case for the Wianamatta-South Creek Precinct.

The Wianamatta South Creek Precinct land will be dedicated as part of the Stage 6 development to either Sydney Water, Council or the State Government and we will continue to consult with all of these stakeholders to identify the most appropriate responsible parties to manage this important ecological and future active transport corridor in perpetuity. We note that the development of Stage 6 is expected to be around 5 years away and sufficient time exists for these

agreements to be reached once more detail of how this type of land will be dealt with across the Aerotropolis.

Until this time, the land will remain in private ownership with no public access.

7.3 Transport Land Acquisition

In addition to the above land acquisition for open space and drainage purposes, Land acquisition will also be required for roads. This will be required for both Liverpool City Council and TfNSW.

7.3.1 Liverpool City Council

The land acquisition for local roads will occur as part of the regular subdivision (local roads) and in the form of works in kind (collector roads).

7.3.2 Transport for NSW

The land acquisition for sub-arterial roads (and above) will be undertaken in a staged manner to match the road delivery staging. If TfNSW are undertaking the work, then it is expected that the land would be acquired from IPG by TfNSW in the normal channels. However, if the roads are being delivered by IPG then the land acquisition would take place via a VPA.

This master plan includes proposed changes to the alignments of future state roads. These amendments are shown in Figure 11, and the expected increase or reduction in road length is summarised in Table 8 below.

Figure 11 - Proposed Changes to State Road Alignments

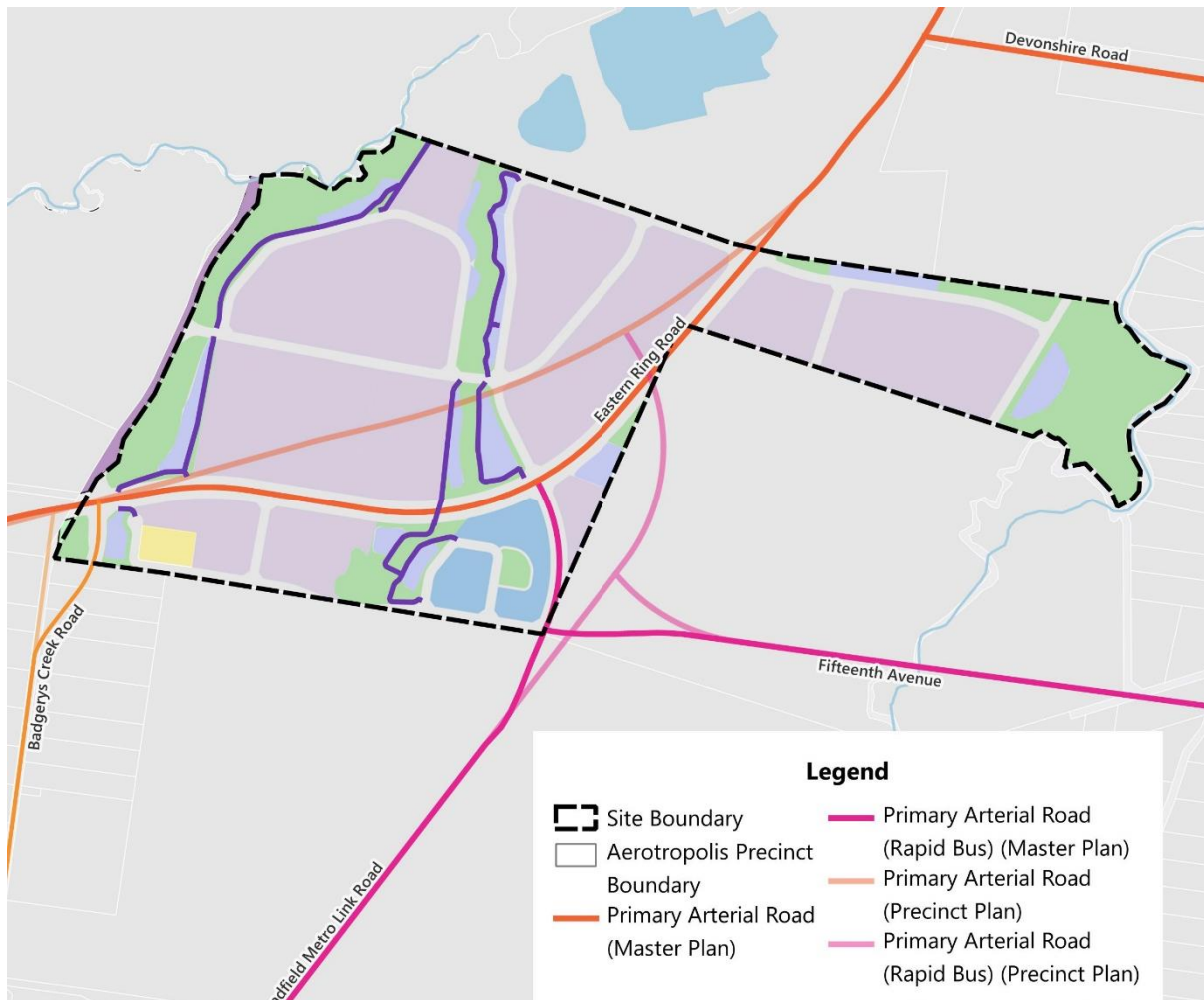


Table 8 - Proposed Changes to Roads

Item	Infrastructure Type	Change in Length (m)
Eastern Ring Road	Primary Arterial Road (60m Reserve Width)	+136
Bradfield Metro Link Road	Primary Arterial Road (Rapid Bus) (45m Reserve Width)	-497
Badgerys Creek Road	Sub Arterial Road (40m Reserve Width)	+162
Fifteenth Avenue	Primary Arterial Road (Rapid Bus) (45m Reserve Width)	+348

Increased length of Badgerys Creek Rd due to intersection alignment per TfNSW initiative and not IPG Master Plan

The increase in the length of Fifteenth Avenue is more than offset by the decrease in length of Bradfield Metro Link Road. These major road amendments are discussed in more detail in the Corridor Justification Report.

Table 9 provides a comparison of the total land acquisition within the IPG site for the above state roads based on the Precinct Plan alignments and the proposed Master Plan alignments.

Table 9 - Roads Land Acquisition Summary

Road	Precinct Plan Acquisition	Master Plan Acquisition	Difference
Eastern Ring Road	113,083m ²	116,752m ²	+3,669m²
Bradfield Metro Link Road	5,652m ²	15,006m ²	+9,354m²
Badgerys Creek Road	0m ²	7,536m ²	+7,536m²
Fifteenth Avenue	0m ²	0m ²	0m²

Note that this number is the land acquisition on the IPG site only and does not reflect the overall reduction in land acquisition for the Bradfield Metro Link Road.

8 Coordination of TMAP and Development Staging

The TMAP has proposed four phases of access for the site, which is shown in Table 10 below.

Table 10 - TMAP Phasing Information

Sequence	Site Access	Development Staging	Max Allowable Development GFA (m ²)	Assumed External Road Network Upgrade
1	Driveway access to Lot 1	Lot 1 only (substation)	n/a – substations generate negligible peak hour traffic volumes	Per existing
2	Priority-controlled access – BCR / Road 03	Stage 1 & part Stage 2 (Lots 1, 8 – 11, sub-lots of Stage 2)	146,000	BCR / ED upgrade – signalised intersection (per committed M12 Motorway Works) BCR – single lane in each direction, as existing (with pavement structural upgrade works, as required, to make it fit-for-purpose for heavy truck movements)
3	Roundabout – BCR / Road 03	Stages 1 – 6 (Lots 1 – 22)	507,050	BCR – per Sequence 1
4	Roundabout – BCR / Road 03; ERR between BCR and ED	Stages 1 – 7 (full development)	Full Development	WSI Airport Precinct Road Network, including: BCR upgrade: – North of ERR – single lane in each direction. – South of ERR – 4 lanes. ERR (between BCR and Elizabeth Dr) Fifteenth Avenue (west)

Current plans are to deliver the roundabout at the intersection of Badgerys Creek Road and the internal Collector Road (Road No. 3) at the start of Stage 1 under a separate Development Application with Liverpool City Council. Civil engineering plans and other related studies have been prepared and a pre-Development Application meeting with Liverpool City Council will occur in June or July 2024.

The delivery of this intersection (along with the safety and resilience works to BCR currently being negotiated with TfNSW and Badgerys Creek Road-Elizabeth Drive upgrade works per the committed M12 works) will facilitate the development up a limit of GFA of 507,050m² as per the above TMAP summary. Please note that the safety and resilience upgrades fall outside of this master plan process and are not required to achieve the development outcomes.

9 Critical Infrastructure Delivery

There are a number of infrastructure items that are critical to support development of the site. Table 11 identifies this infrastructure and what items will be delivered by the developer/proponent.

Table 11 - Critical Infrastructure

Infrastructure Item	Relevant Contributions Plan	Delivery by the Developer/Proponent	Delivery Timing
Electrical Zone Substation	N/A	No	2025
High-Voltage Electrical Feeders	N/A	Yes	Staged rollout, refer Section 12 for details
Trunk Water Mains	Sydney Water DSP (Water & Sewer)	No	TBC
Reticulation Water Mains	N/A	Yes	Staged rollout, refer Section 12 for details
Trunk Sewer Mains	Sydney Water DSP Charge (Water & Sewer)	No	TBC
Reticulation Sewer Mains	N/A	Yes	Staged rollout, refer Section 12 for details
Collector Roads	S7.12 Plan	Yes	Staged rollout, refer Section 12 for details
Stormwater Basins	Sydney Water DSP (Stormwater)	Yes	Staged rollout, refer Section 12 for details

Further details of the staged design, funding and delivery of the above infrastructure items are provided in Section 12 and Appendix A below.

10 Voluntary Planning Agreements & Works In Kind

As indicated above, it is anticipated that Works In Kind (WIK) agreements will likely be the vehicle for the funding and delivery of the following:

- Local infrastructure via a VPA with Liverpool City Council (local open space, collector roads and associated drainage) with offsets against Section 7.12 charges.
- Regional infrastructure via a VPA with the State Government (arterial and sub arterial roads) with offsets against HPC charges.
- WIK agreement with Sydney Water for the delivery of Water, Sewer and Stormwater works, including offsets against DSP charges.

There are long established procedures for VPAs with Council and the State. While Sydney Water do not currently have an adopted works in kind policy, a draft policy has recently been made available. We are currently working with Sydney Water to ensure that the works in kind policy facilitates the timely, staged delivery of critical infrastructure in lock-step with the proposed development.

Where items of work are proposed to be undertaken via these mechanisms, they have been nominated in each stage's works delivery schedule in Section 12 below.

11 Development Staging

The proposed development will be delivered over 7 stages. The proposed staging is shown in Figure 12. A summary of the expected yields within each stage is provided in Table 12. The infrastructure required to support each stage is further discussed below.

Figure 12 - Staging Plan

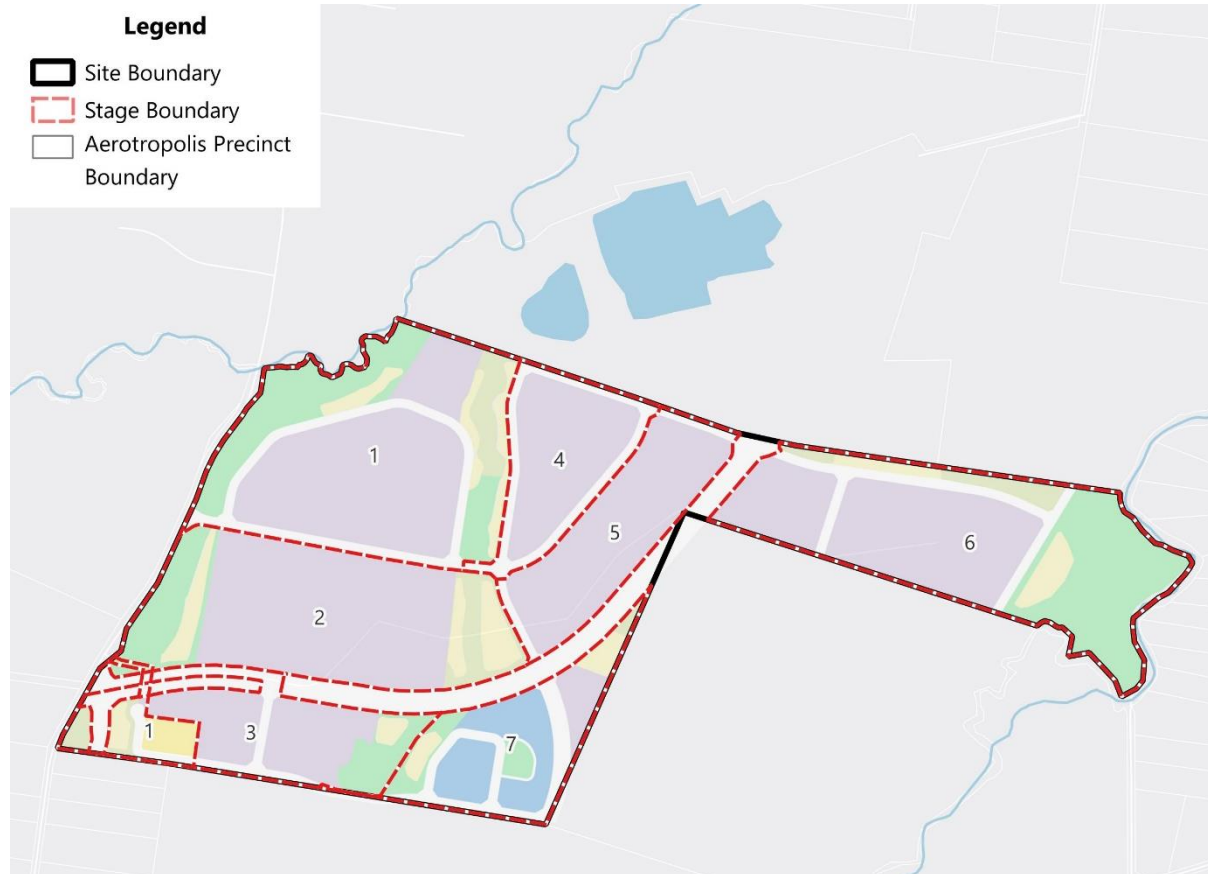


Table 12 - Development Yield

Stage No	GFA (m ²)
1	112,650
2	131,700
3	46,150
4	45,875
5	71,545
6	99,130
7	118,417
TOTAL	625,467

12 Infrastructure Staging

12.1 Stage 1

The first stage of the proposed development will be accessed via a proposed roundabout intersection on Badgerys Creek Road at its intersection with the internal Collector Road. Two roads will be delivered within Stage 1, including a collector road and local road.

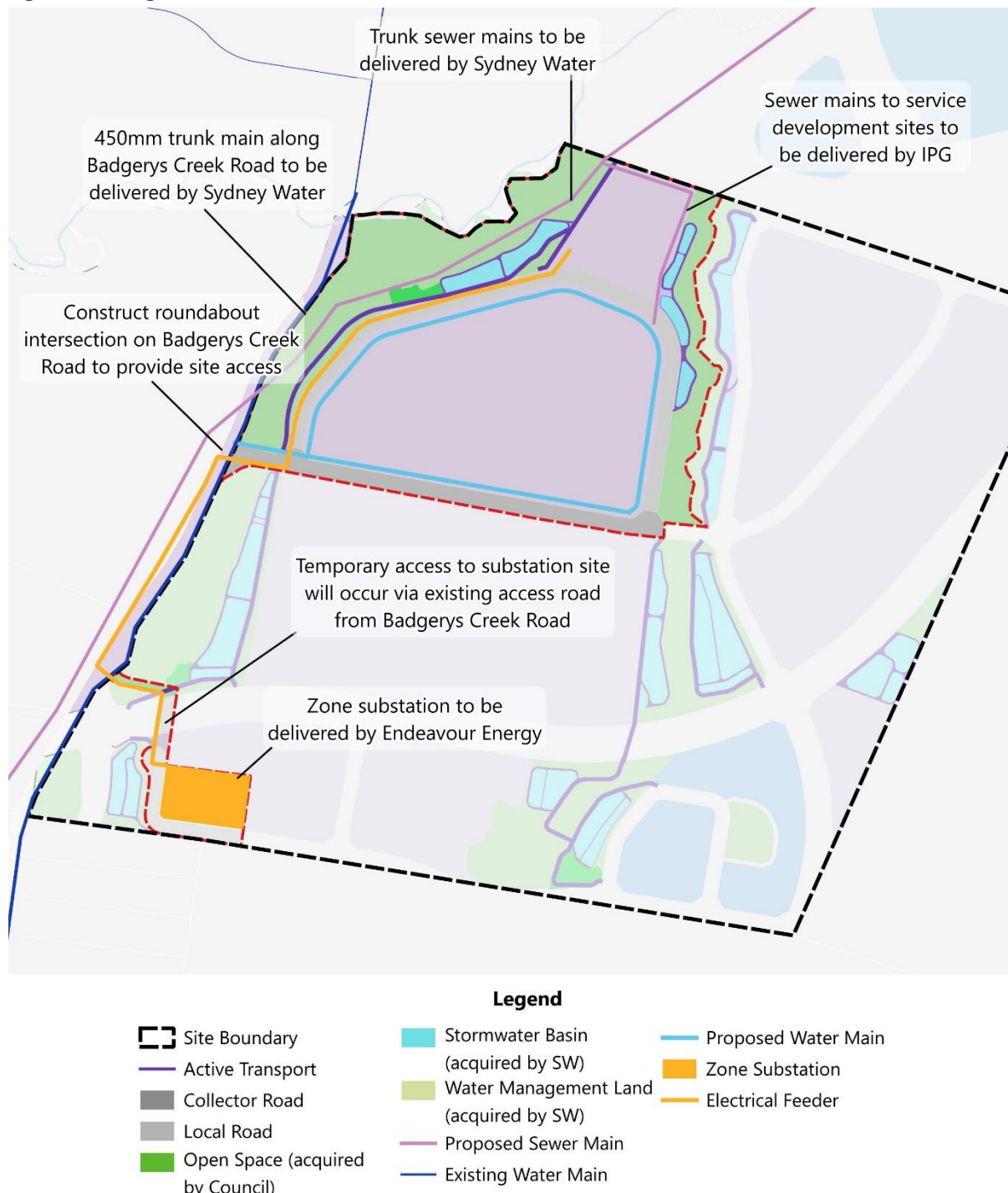
Water and sewer servicing will be achieved via an extension of Sydney Water's proposed trunk infrastructure. Sydney Water have upgraded the previous 150mm diameter watermain on Badgerys Creek Road to provide a 450mm diameter trunk main that terminates approximately 200m from the south-western corner of the site. From this pipe, new mains to support the site will be constructed along all roads within the site boundary (either sized for the IPG development site only at their cost, or sized for final growth at Sydney Water's cost). Sydney Water will also deliver trunk sewer mains to service the Badgerys Creek catchment. An indicative alignment for this main is shown in Figure 13. Reticulation sewer mains will be extended from this trunk main to support each lot.

Endeavour Energy have acquired a site for a zone substation in the south-western corner of the site. This infrastructure is currently planned for delivery in 2025. New feeders will be constructed from this zone substation to supply development on the site. Additionally, the Zone Substation site has its own WSUD basin and therefore, the regional basin (M01) is not required until Stage 3. The infrastructure required to support Stage 1 of the development is summarised in Table 13 and shown in Figure 13.

Table 13 - Stage 1 Infrastructure

Infrastructure Type	Item	Delivery Responsibility	Funding Source	Delivery Timeframe
Road	Collector Road (from Badgerys Ck Rd)	Developer	S7.12	Short
Road	Local Road (from collector road)	Developer	Developer	Short
Intersection	Roundabout Intersection (proposed collector road and Badgerys Creek Road)	Developer	S7.12	Short
Stormwater	Stormwater basins and Water Management Land	Developer	SW DSP	Short
Open Space	Local open space	Developer	S7.12	Short
Active Transport	Active transport linkages through open space & riparian corridor	Developer	S7.12	Short
Utility	Electrical zone substation	Endeavour Energy	Endeavour Energy	Short
Utility	2 x 11 kV High-Voltage Electrical Feeder	Developer	Developer	Short
Utility	Upgraded water main (Badgerys Ck Rd)	Sydney Water	SW DSP	Short
Utility	Water reticulation main (to lot boundaries)	Developer	Developer	Short
Utility	Trunk sewer mains	Sydney Water	SW DSP	Short
Utility	Sewer Main (to lot boundaries)	Developer	Developer	Short

Figure 13 - Stage 1



12.2 Stage 2

Access to Stage 2 of the development will be achieved via the collector road delivered in Stage 1. Utilities infrastructure delivered in Stage 1, including water mains, sewer mains and high voltage feeders, will be extended to lots within Stage 2. One new high voltage feeder will be constructed from the zone substation to supply Stage 2.

Stage 2 will include the delivery of stormwater basins and open space. Some open space proposed for the site will be acquired by Council, however the majority of open space will be acquired by Sydney Water. Active transport connections will be provided within some open space on the site, as shown in the 7.12 Plan and the *Aerotropolis Precinct Plan*.

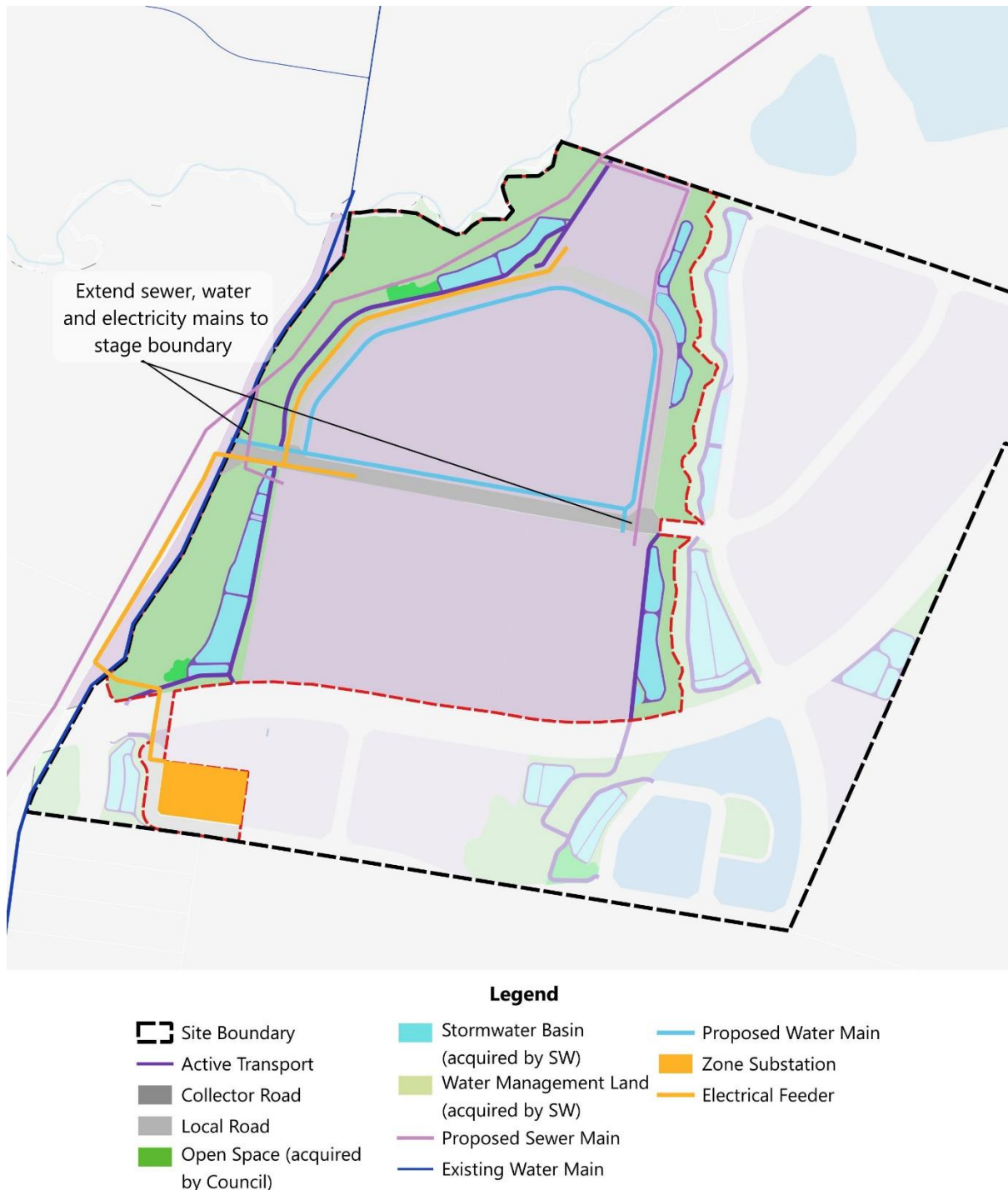
The areas of open space to be acquired by Sydney Water and Council have been determined based on the Aerotropolis SEPP Land Reservation Acquisition Map and the Blue-Green Infrastructure Framework in the *Aerotropolis Precinct Plan*.

The infrastructure required to support Stage 2 is summarised in Table 14, and shown in Figure 14.

Table 14 - Stage 2 Infrastructure

Infrastructure Type	Item	Delivery Responsibility	Funding Source	Delivery Timeframe
Stormwater	Stormwater basins and Water Management Land	Developer	SW DSP	Short
Open Space	Local Open Space	Developer	S7.12	Short
Active Transport	Active Transport Link Through Open Space	Developer	S7.12	Short
Utility	11kV High-Voltage Electrical Feeder	Developer	Developer	Short
Utility	Water Main (to lot boundaries)	Developer	Developer	Short
Utility	Sewer Main (to lot boundaries)	Developer	Developer	Short

Figure 14 - Stage 2



12.3 Stage 3

Access to Stage 3 of the development will be achieved via the construction of a half road along the Eastern Ring Road corridor. This half road may be constructed by the developer, depending upon the timing for the delivery of the Eastern Ring Road by Transport for NSW (TfNSW). The remaining build of the Eastern Ring Road will be delivered by TfNSW at a later date. The delivery timing for the remainder of the road is unknown at this stage.

Utilities infrastructure will be extended to supply development within Stage 3. A new water main will be extended from the trunk main on Badgerys Creek Road to supply Stage 3. One new high voltage feeder will be constructed from the zone substation to the development front.

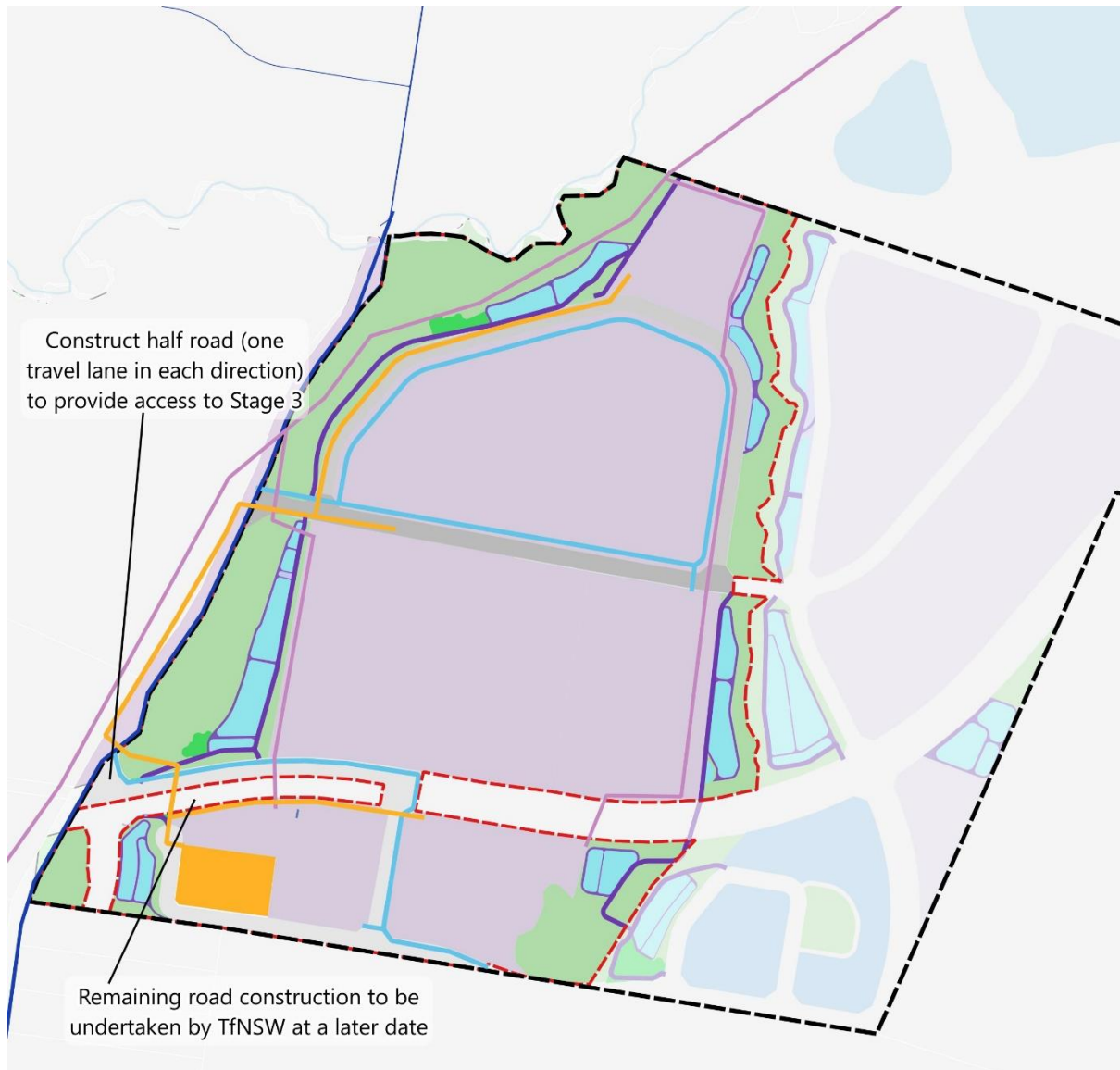
Additional stormwater and open space infrastructure will also be provided. The infrastructure required to support Stage 3 is summarised in Table 15, and shown in Figure 15.

Table 15 - Stage 3 Infrastructure

Infrastructure Type	Item	Delivery Responsibility	Funding Source	Delivery Timeframe
Road	Eastern Ring Road (part)	Developer ¹	HPC	Short
Stormwater	Stormwater basins and Water Management Land	Developer	SW DSP	Short
Active Transport	Active Transport Link Through Open Space	Developer	S7.12	Short
Utility	High-Voltage Electrical Feeder	Developer	Developer	Short
Utility	Water Main (to lot boundaries)	Developer	Developer	Short
Utility	Sewer Main (to lot boundaries)	Developer	Developer	Short

¹ Subject to TfNSW timing for Eastern Ring Road

Figure 15 - Stage 3



Legend

 Site Boundary	 Stormwater Basin (acquired by SW)	 Proposed Water Main
 Active Transport	 Water Management Land (acquired by SW)	 Zone Substation
 Collector Road	 Proposed Sewer Main	 Electrical Feeder
 Local Road	 Existing Water Main	
 Open Space (acquired by Council)		

12.4 Stage 4

Access to Stage 4 will be achieved via an extension of the collector road delivered in Stage 1, and the construction of a new local road which forms a loop around the development area. A roundabout will be constructed at the intersection of the two roads on the southern boundary of the stage.

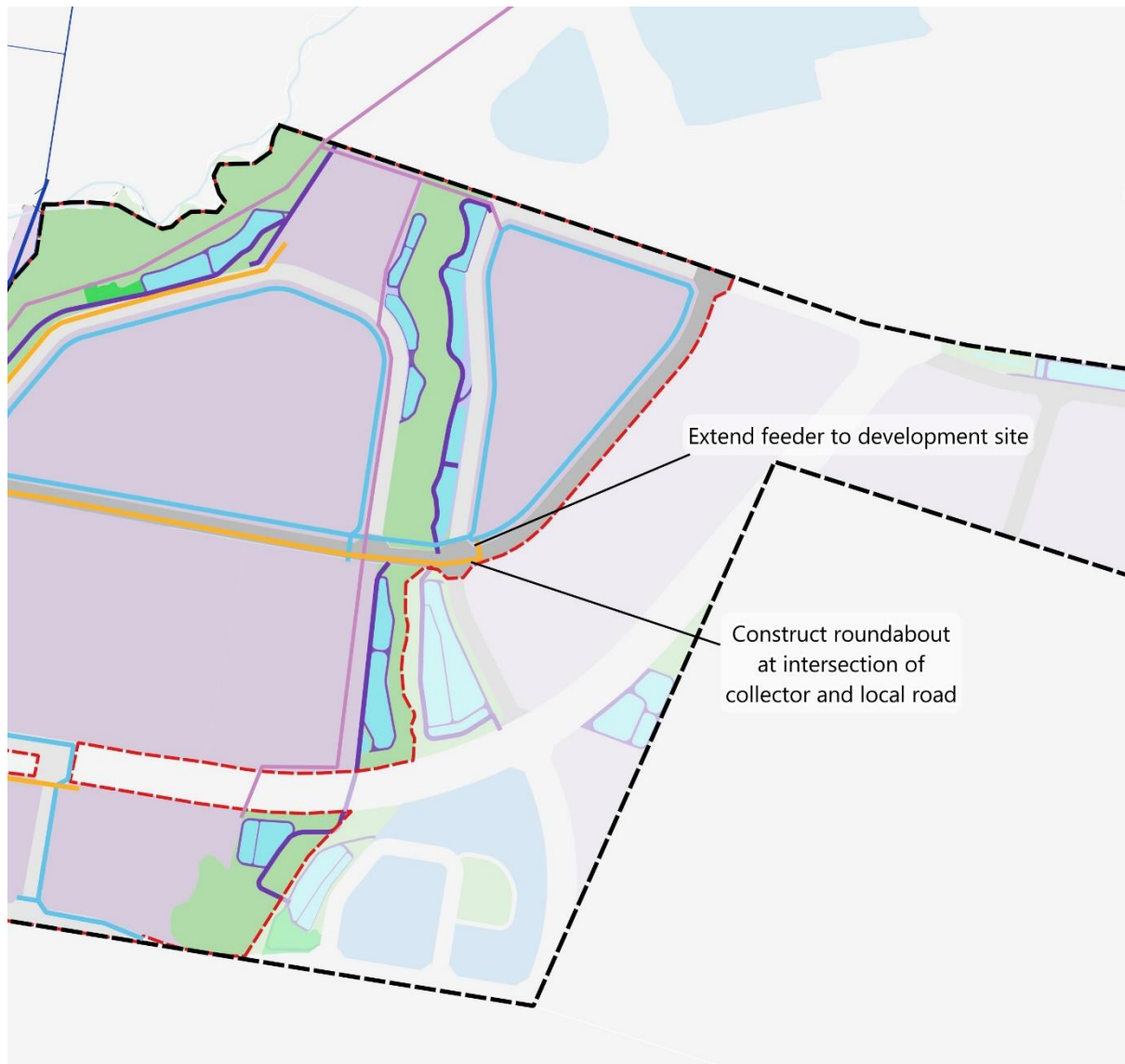
Existing feeders delivered in earlier stages will be extended to supply development within Stage 4. Water and sewer infrastructure will also be extended to lot boundaries.

The infrastructure required to support Stage 4 is summarised in Table 16, and shown in Figure 16.



Table 16 - Stage 4 Infrastructure

Infrastructure Type	Item	Delivery Responsibility	Funding Source	Delivery Timeframe
Road	Collector Road	Developer	S7.12	Short
Road	Local Road	Developer	Developer	Short
Stormwater	Stormwater basins and Water Management Land	Developer	SW DSP	Short
Intersection	Roundabout (proposed collector road and proposed local road)	Developer	S7.12	Short
Utility	High-Voltage Electrical Feeder (extension of existing feeder)	Developer	Developer	Short
Utility	Water Main (to lot boundaries)	Developer	Developer	Short
Utility	Sewer Main (to lot boundaries)	Developer	Developer	Short

Figure 16 - Stage 4



Legend

 Site Boundary	 Stormwater Basin (acquired by SW)	 Proposed Water Main
 Active Transport	 Water Management (acquired by SW)	 Zone Substation
 Collector Road	 Proposed Sewer Main	 Electrical Feeder
 Local Road	 Existing Water Main	
 Open Space (acquired by Council)		

12.5 Stage 5

Stage 5 can be accessed via the collector road delivered in Stage 4. A collector road will be constructed from the roundabout constructed in stage 4 towards the future ERR, while a new local road will be extended along the northern boundary.

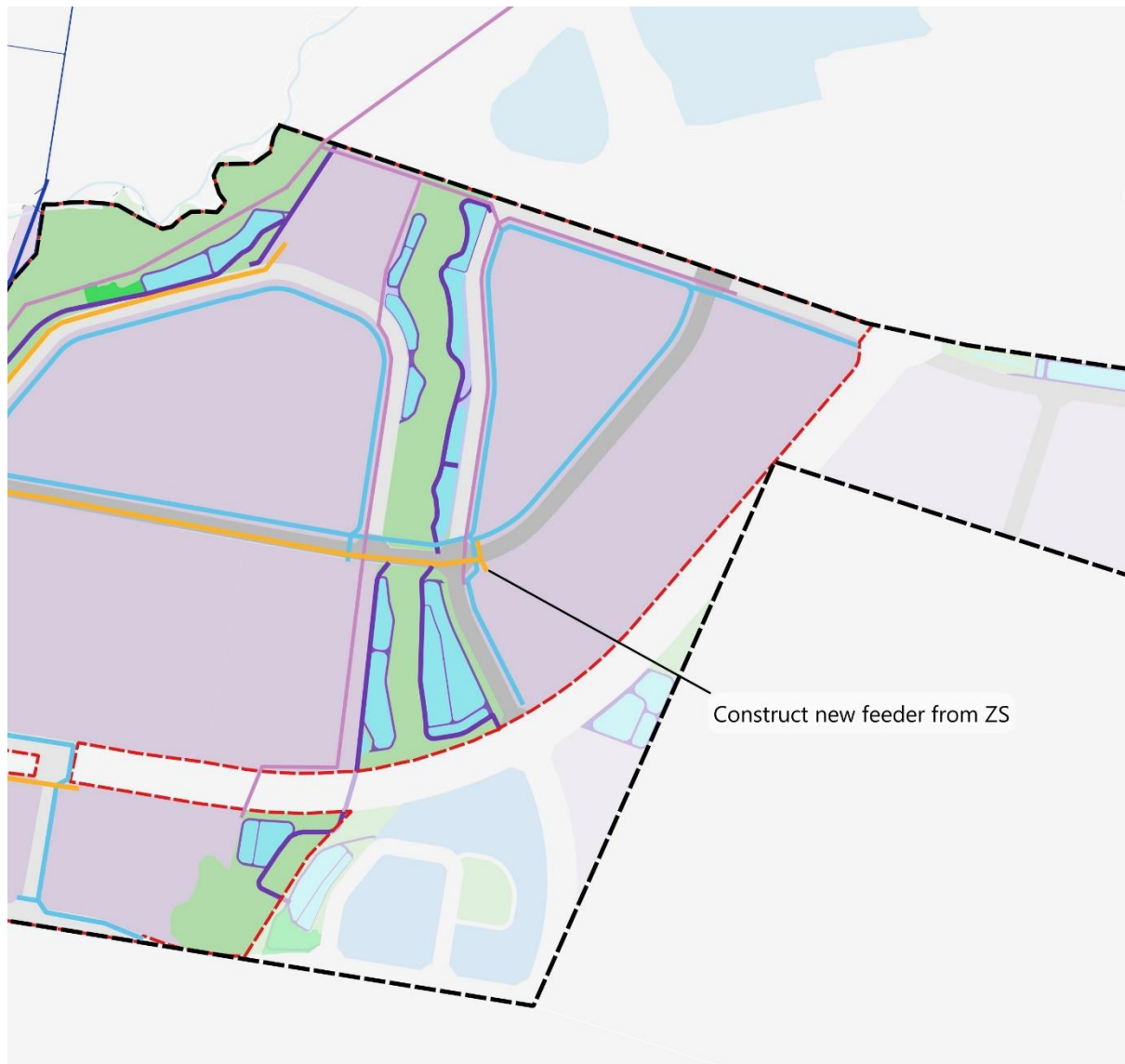
A new feeder will be constructed from the zone substation to supply development within Stage 5. Water and sewer infrastructure will also be extended to lot boundaries.

The infrastructure required to support Stage 5 is summarised in Table 17, and shown in Figure 17.

Table 17 - Stage 5 Infrastructure

Infrastructure Type	Item	Delivery Responsibility	Funding Source	Delivery Timeframe
Road	Collector Road	Developer	\$7.12	Short
Road	Local Road	Developer	Developer	Short
Stormwater	Stormwater basins and Water Management Land	Developer	SW DSP	Short
Utility	High-Voltage Electrical Feeder	Developer	Developer	Short
Utility	Water Main (to lot boundaries)	Developer	Developer	Short
Utility	Sewer Main (to lot boundaries)	Developer	Developer	Short

Figure 17 - Stage 5



Legend

 Site Boundary	 Stormwater Basin (acquired by SW)	 Proposed Water Main
 Active Transport	 Water Management (acquired by SW)	 Zone Substation
 Collector Road	 Proposed Sewer Main	 Electrical Feeder
 Local Road	 Existing Water Main	
 Open Space (acquired by Council)		

12.6 Stage 6

Access to Stage 6 of the development will be achieved via the construction of a temporary half road extending from Stage 5 by crossing the Eastern Ring Road corridor. This temporary road will be decommissioned when the Eastern Ring Road is constructed. Collector roads will also be constructed (including a riparian collector road) linking the future development sites to the north and south of the IPG site and local roads will be constructed to facilitate access to the appropriate development lots.

Sydney Water will deliver trunk sewer mains to support the Thompsons Creek catchment, which includes development within Stage 6. An indicative alignment for this main is shown in Figure 18. Reticulation sewer mains will be extended from this trunk main to support development within Stage 6.

Potable water infrastructure will be extended from Stage 5, and a new electrical HV feeder will be constructed from the zone substation to supply development within Stage 6.

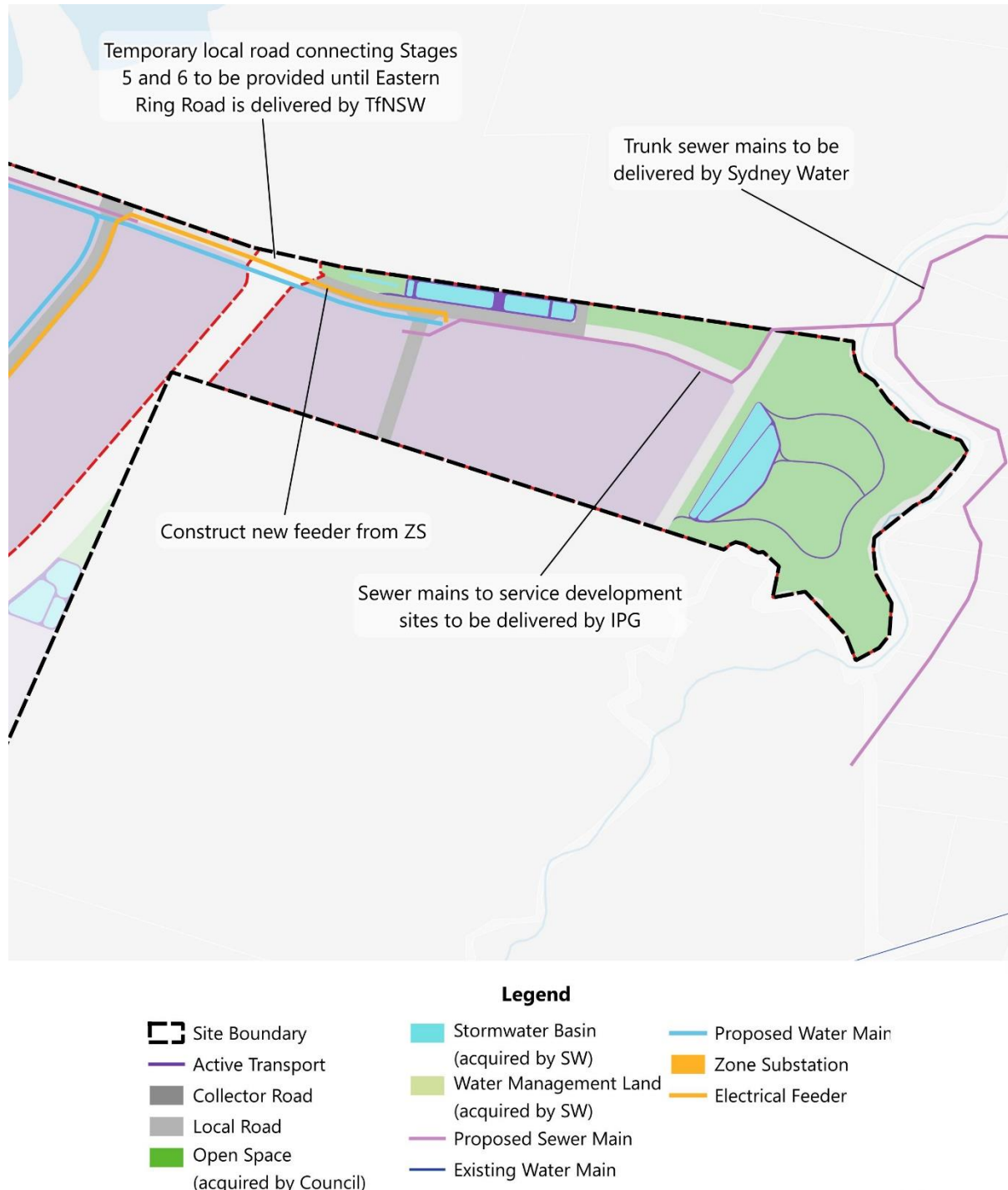
The riparian/open space corridor along Wianamatta South Creek requires dedication to either Sydney Water, Council or the State Government as has been discussed in Section 7.2 above.

The infrastructure required to support Stage 6 is summarised in Table 18, and shown in Figure 18.

Table 18 - Stage 6 Infrastructure

Infrastructure Type	Item	Delivery Responsibility	Funding Source	Delivery Timeframe
Road	Collector Road	Developer	S7.12	Medium
Road	Local Road	Developer	Developer	Medium
Road	Local Road (temporary half road)	Developer	Developer	Medium
Stormwater	Stormwater basins and Water Management Land	Developer	SW DSP	Medium
Open Space	Open Space (Wianamatta South Creek Land)	Developer	t.b.c.	Medium
Utility	High-Voltage Electrical Feeder (extension of existing feeder)	Developer	Developer	Medium
Utility	Water Main (to lot boundaries)	Developer	Developer	Medium
Utility	Trunk Sewer Mains	Sydney Water	SW DSP	Medium
Utility	Sewer Main (to lot boundaries)	Developer	Developer	Medium

Figure 18 - Stage 6



12.7 Stage 7

The timing for the provision of the Local Centre is underpinned by the economics assessment undertaken by Urbis as part of this master plan submission.

Stage 7 will be accessed via the extension of a new local road from Stage 3. The alignment of this road considers existing high value vegetation located near the southern boundary of the site, and as a result part of this road extends through the neighbouring property. A works agreement will be obtained to allow for the partial construction of this road within the neighbouring site. If access can't be provided through the neighbouring site, a temporary road will be provided to access the town centre, potentially from the Eastern Ring Road to the Bradfield Metro Link Road (BMLR).

The BMLR will be delivered by TfNSW, the delivery timing is unknown at this stage. It is possible that this construction will occur prior to, or at the same time as Stage 7. However, if it has not been constructed when required in Stage 7, it is proposed that a temporary half road will be provided along the Bradfield Metro Link Road alignment to provide access to the eastern lot. In this instance IPG will need to enter into an agreement with TfNSW.

Two new feeders will be constructed from the zone substation to supply development within Stage 7. Water and sewer mains will be extended from the adjacent stages to each lot within Stage 7.

The infrastructure required to support Stage 7 is summarised in Table 19, and shown in Figure 19.


Table 19 - Stage 7 Infrastructure

Infrastructure Type	Item	Delivery Responsibility	Funding Source	Delivery Timeframe
Road	Half Bradfield Metro Link Road	Developer	HPC	Medium
Road	Local Road	Developer	Developer	Medium
Road	Local Road (temporary half road if required)	Developer	Developer	Medium
Active Transport	Active Transport Link Through Open Space	Developer	S7.12	Medium
Stormwater	Stormwater basins and Water Management Land	Developer	SW DSP	Medium
Open Space	Local Open Space	Developer	S7.12	Medium
Utility	High-Voltage Electrical Feeder (2x)	Developer	Developer	Medium
Utility	Water Main (to lot boundaries)	Developer	Developer	Medium
Utility	Sewer Main (to lot boundaries)	Developer	Developer	Medium

Figure 19 - Stage 7



Legend

 Site Boundary	 Stormwater Basin (acquired by SW)	 Proposed Water Main
 Active Transport	 Water Management (acquired by SW)	 Zone Substation
 Collector Road	 Proposed Sewer Main	 Electrical Feeder
 Local Road	 Existing Water Main	
 Open Space (acquired by Council)		

Appendix A – Proposed Infrastructure Schedule

For more information on specific infrastructure items, refer to the staging plans and tables shown above.

Note that a short-term delivery timeframe assumes the infrastructure is required within 0-5 years, while the medium-term delivery timeframe assumes infrastructure is required in 5-10 years' time.

Table 20 - Proposed Infrastructure Schedule

Stage	Item	Delivery Responsibility	Delivery Mechanism	Funding Source	Delivery Timeframe
1	Collector Road (from Badgerys Ck Rd)	Developer	WIK	S7.12	Short
1	Local Road (from collector road)	Developer	Subdivision works	Developer	Short
1	Roundabout Intersection (proposed collector road and Badgerys Creek Road)	Developer	WIK	S7.12	Short
1	Stormwater basins and Water Management Land	Developer	WIK	SW DSP	Short
1	Local open space	Developer	WIK	S7.12	Short
1	Active transport linkages through open space & riparian corridor	Developer	WIK	S7.12	Short
1	Electrical zone substation	Endeavour Energy	By Authority	Endeavour Energy	Short
1	2 x 11 kV High-Voltage Electrical Feeder	Developer	Subdivision works	Developer	Short
1	Upgraded water main (Badgerys Ck Rd)	Sydney Water	WIK	Sydney Water	Short
1	Water reticulation main (to lot boundaries)	Developer	Subdivision works	Developer	Short
1	Trunk sewer mains	Sydney Water	By Authority	SW DSP	Short
1	Sewer Main (to lot boundaries)	Developer	Subdivision works	Developer	Short
2	Stormwater basins and Water Management Land	Developer	WIK	SW DSP	Short
2	Local Open Space	Developer	WIK	S7.12	Short
2	Active Transport Link Through Open Space	Developer	WIK	S7.12	Short
2	11kV High-Voltage Electrical Feeder	Developer	Subdivision works	Developer	Short
2	Water Main (to lot boundaries)	Developer	Subdivision works	Developer	Short
2	Sewer Main (to lot boundaries)	Developer	Subdivision works	Developer	Short
3	Eastern Ring Road (part)	Developer ¹	WIK	HPC	Short
3	Stormwater basins and Water Management Land	Developer	WIK	SW DSP	Short
3	Active Transport Link Through Open Space	Developer	WIK	S7.12	Short

Stage	Item	Delivery Responsibility	Delivery Mechanism	Funding Source	Delivery Timeframe
3	High-Voltage Electrical Feeder	Developer	Subdivision works	Developer	Short
3	Water Main (to lot boundaries)	Developer	Subdivision works	Developer	Short
3	Sewer Main (to lot boundaries)	Developer	Subdivision works	Developer	Short
4	Collector Road	Developer		S7.12	Short
4	Local Road	Developer	Subdivision works	Developer	Short
4	Stormwater basins and Water Management Land	Developer	WIK	SW DSP	Short
4	Roundabout (proposed collector road and proposed local road)	Developer	WIK	S7.12	Short
4	High-Voltage Electrical Feeder (extension of existing feeder)	Developer	Subdivision works	Developer	Short
4	Water Main (to lot boundaries)	Developer	Subdivision works	Developer	Short
4	Sewer Main (to lot boundaries)	Developer	Subdivision works	Developer	Short
5	Collector Road	Developer	WIK	S7.12	Short
5	Local Road	Developer	Subdivision works	Developer	Short
5	Stormwater basins and Water Management Land	Developer	WIK	SW DSP	Short
5	High-Voltage Electrical Feeder	Developer	Subdivision works	Developer	Short
5	Water Main (to lot boundaries)	Developer	Subdivision works	Developer	Short
5	Sewer Main (to lot boundaries)	Developer	Subdivision works	Developer	Short
6	Collector Road	Developer		S7.12	Medium
6	Local Road	Developer	Subdivision works	Developer	Medium
6	Local Road (temporary half road)	Developer	Subdivision works	Developer	Medium
6	Stormwater basins and Water Management Land	Developer	WIK	SW DSP	Medium
6	Open Space (Wianamatta South Creek Land)	Developer	WIK	t.b.c.	Medium
6	High-Voltage Electrical Feeder (extension of existing feeder)	Developer	Subdivision works	Developer	Medium
6	Water Main (to lot boundaries)	Developer	Subdivision works	Developer	Medium
6	Trunk Sewer Mains	Sydney Water	WIK	SW DSP	Medium
6	Sewer Main (to lot boundaries)	Developer	Subdivision works	Developer	Medium
6	Sewer Main (to lot boundaries)	Developer	Subdivision works	Developer	Medium
7	Half Bradfield Metro Link Road	Developer	WIK	HPC	Medium

Stage	Item	Delivery Responsibility	Delivery Mechanism	Funding Source	Delivery Timeframe
7	Local Road	Developer	Subdivision works	Developer	Medium
7	Local Road (temporary half road if required)	Developer	Subdivision works	Developer	Medium
7	Active Transport Link Through Open Space	Developer	WIK	S7.12	Medium
7	Stormwater basins and Water Management Land	Developer	WIK	SW DSP	Medium
7	Local Open Space	Developer	WIK	S7.12	Medium
7	High-Voltage Electrical Feeder (2x)	Developer	Subdivision works	Developer	Medium
7	Water Main (to lot boundaries)	Developer	Subdivision works	Developer	Medium
7	Sewer Main (to lot boundaries)	Developer	Subdivision works	Developer	Medium
N/A	Eastern Ring Road	TfNSW	WIK	SIC	TBC
N/A	Bradfield Metro Link Road	TfNSW	WIK	SIC	TBC
N/A	Badgerys Creek Road	TfNSW	WIK	SIC	TBC