



10. Servicing Infrastructure

10.1 Telstra

Existing Infrastructure

The potential industrial area lies within the boundaries of three telephone Exchange Service Areas (ESAs): Cannington, Maddington and Forrestfield. Approximately two thirds of the proposed development is in the Maddington ESA and one third in the Forrestfield ESA, approximately 5 kilometres from the Maddington Exchange, which has minimal existing communication infrastructure. There is insufficient existing infrastructure within the immediate vicinity to service the potential number of customers that such a development would generate.

Required Infrastructure

Without knowing the specifics of the types of industries or types of services required, the best approach to service the communication needs of this area would be to establish a mini-exchange building approximately in the middle of the development (say corner of Victoria and Bickley Road in Area 2) and deliver services from the mini-exchange. This would provide the best transmission coverage and highest quality of service with the ability to have the latest technology, rather than providing services from the Maddington Exchange and being limited by existing plant at that exchange.

The proposed mini-exchange would be at the developer's expense. Costs include:

- » the provision of land (approximately 12 x 12 m, freehold title),
- » the exchange building (approximately \$100,000),
- » contributions towards exchange equipment (approximately \$100,000), and
- » headworks costs (approximately \$100,000) for conduits and cable feeds.

Telstra Staging

The chosen location of the Telstra mini-exchange building may define the staging of development. Locating the exchange in the middle of the development, on the corner of Victoria and Bickley Road would suggest Area 2 could be developed first. Areas 1A, 1B and 3 would be served from the exchange. The first area developed will have to include the upfront costs of the associated mini-exchange costs and then distribute this cost onto subsequent areas.



Table 11 Telecommunications infrastructure

AREA	TELSTRA INFRASTRUCTURE REQUIRED		Total (excludes GST)
	Trunk / General	Reticulation	
1A	Plot of Land (12x12)	2800 x \$15/m = \$42,000	
1B	Exchange Building (\$100,000)	1850 x \$15/m = \$27,750	
2	Exchange Equipment (\$100,000)	5750 x \$ 15/m = \$86,250	
3	Headworks Costs (\$100,000)	6850 x \$15/m = \$102,750	
TOTAL	\$300,000	\$258,750	\$558,750

Note: Reticulation lengths include lengths from the mini-exchange to nearest area boundary and reticulation within the area.

3 Service common trench excavation approximately \$15/m.

Totals exclude GST.



Figure 9 Trunk Main Infrastructure Plan



10.2 Gas

Existing Infrastructure

There is an existing high pressure gas transmission main along Brook, Grove and Coldwell Roads in the proposed Area 3. This main has the capacity to supply substantial potential loads. Areas 2 and 1B have medium pressure mains on the southwest fringe along Bickley Road and Kenwick Road, which would have capacity to supply smaller commercial loads. Area 1A has no existing infrastructure in the area.

Required Infrastructure

Should the developer wish to have a gas service to the areas of this industrial development, the trunk and reticulation works will be at the developer's expense, due to the typically low uptake of a gas service in industrial/commercial developments, compared to residential subdivisions.

Area 1A will require the extension of the medium pressure main 300 m from Bickley Road to the boundary of Area 1A. Area 3 will require a pressure-reducing valve to connect to the high pressure main. General 110PE reticulation will be required throughout all the areas at developer's expense and laid in a common trench.

Table 13 Gas infrastructure

AREA	GAS INFRASTRUCTURE REQUIRED		Total (excludes GST)
	Trunk	Reticulation	
1A	300m * \$100/m = \$30,000	1675m * \$32/m = \$53,600	\$83,600
1B	NA	2300 * \$32/m = \$73,600	\$73,600
2	NA	5750 * \$32/m = \$184,000	\$184,000
3	Pressure reducing valve \$45,000	5750 * \$32/m = \$184,000	\$184,000
Total	\$75,000	\$495,200	\$570,200

Note: Reticulation rates include pipe supply, installation, and laid in common trench.

Totals excluded GST

Staging

Should the developer wish to have a gas service within this industrial area, the provision of a medium pressure gas main along Bickley and Kenwick Road in Areas 2 and 1B suggests it would be advantageous to start the development in either of these areas, ahead of Area 3, due to works associated with connecting into a high pressure gas main. Area 1A requires an extension of the medium pressure main from Bickley Road.



10.3 Water

Existing Infrastructure

On the southern boundary of the proposed industrial area, an existing 510 Cast Iron (CI) water main runs along Bickley Road from Roe Highway to Brentwood Road. This main changes to a 460CI along Bickley Road from Brentwood Road to Kelvin Road. This main should be sufficient to service Area 1B, 2 and 3, with an extension to the main to service Area 1A.

Areas 1A, 1B and 2 have existing DN100 reticulation and Area 3 has a limited service of DN150 reticulation along all the existing roads..

Required Infrastructure

The water main along Bickley Road will need to be extended some 800m from Kelvin Road to Tonkin highway to service Area 1A with a 400 Steel (S) Pipe or 375 Plastic (P) pipe. The 375P pipe is cheaper than the 400S, however pressures in the pipe may dictate the type of pipe to be used. Micro-tunnelling under Tonkin Highway will be required to connect into the Canning Trunk Main on Tonkin Highway.

A DN500-S booster service will be required for the northern parts of Area 3 (possibly also for the north-west corner of Area 2), coming across Welshpool Road from Hale Road. Currently this DN500 is being extended to Arthur Road, and is on a 5 year program to be extended to Welshpool Road.

The cost of trunk works will be pre-funded by the developer, and then the Water Corporation will refund the developer under the Customer Constructed Works Agreement (CCWA).

All areas will require an upgrade of the reticulation to DN 200P-12 at the developers expense.

Water Staging

With the existing 460CI water main along Bickley road, Area 1B would be the better initial area to develop over Area 2, as Area 2 may require the 500S booster service for the north west corner.

Should Area 2 not require the booster service, Area 2 should be the 2nd area developed, followed by Area 3 and 1A. Should Area 2 require the booster service, Area 3 should be the 2nd developed area, followed by Area 2 then 1A.



Table 15 Water Supply infrastructure

Area	Water Infrastructure Required		Total (excl. GST)
	Trunk	Reticulation	
1A	400S=> 710m * \$355/m = \$252,050 (375P=> 710m * \$285/m = \$201,285) Microtunnelling-Tonkin Hwy 90m*\$1200/m = \$108,000 Thrust & receival pits = \$15,000	1650m * \$142/m = \$234,300	\$609,350
1B	NA	2300m * \$142/m = \$326,600	\$326,600
2	NA	5750m * \$142/m = \$816,500	\$816,500
3	500S=> 900m * \$394/m = \$354,600 Microtunnelling-Welshpool Rd 30m*\$1200/m = \$36,000 Thrust & receival pits = \$15,000	5750m * \$142/m = \$816,500	\$1,222,100
Total	\$780,650	\$2,193,900	\$2,974,550

Note: Totals are for use of 400S & 500S pipe. Totals exclude GST.



10.4 Sewer

Existing Infrastructure

The existing gravity sewer reticulation from the Industrial area south of Bickley Road may be extended to service Area 1A only (bounded to the west by Kelvin Road).

There is no capacity to accept flows southwards in the existing industrial area for the other areas.

10.4.1 Required Infrastructure

Area 1A can be serviced by extension of the existing gravity sewer reticulation south of Bickley Road, approximately 1m of fill may be required at the north east corner of lot 307 due to limited fall across the site. However, this may be confirmed at a more detailed stage of design.

Conceptual planning for the remaining area west of Kelvin Road requires a large 750 sewer to be constructed along Bickley Road to connect to the Maida Vale Main Sewer in East Cannington (corner of Bickley Rd and Dulwich St). This may require to be reviewed once more detailed structure planning is available.

For trunk main requirements along Bickley Road, Area 3 will require a 600-RC pipe, Area 2 a 450-RC pipe and Area 1B a 225-PVC pipe. A 750 sewer will need to be tunnelled under Roe Highway to the boundary of Area 3, and extended to the Maida Vale Main Sewer. The cost of trunk works will be prefunded by the developer, and then the Water Corporation will refund the developer under the Customer Constructed Works Agreement (CCWA).

All sewer reticulation in the areas shall be upgraded to a minimum of DN225.

10.4.2 Sewer Staging

Area 1A should be the first area of the development as the reticulation of Area 1A can be serviced by connecting to the existing reticulation to the south.

Areas 1B, 2 and 3 require a trunk sewer to be constructed to the Maida Vale Main Sewer, west of Roe Highway. This sewer will need to be constructed from Area 3 before Area 2 and 1B, effecting the staging respectively.



Table 17 Sewerage infrastructure

Area	Sewer Infrastructure Required		Total (excl. GST)
	Trunk	Reticulation	
1A	NA	1650m * \$434/m = \$721,050 1m of Fill- 5,000m ³ * \$16/m ³ = \$80,000	\$ 801,050 <i>(if 1m fill required)</i>
1B	800m * \$437/m=\$349,600	1500m * \$434/m = \$655,500	\$1,005,100
2	1500m * \$800/m=\$1,200,000	2300 * \$434/m = \$998,200	\$2,198,200
3	800m * \$1070/m = \$856,000	5750 * \$434/m = \$2,495,500	\$2,581,100
Bickley Road to Maida Vale Sewer	Microtunnel-Roe Hwy 90m * \$2010/m = \$180,900 Roe to Maida Vale Main- 750m * \$1220 = \$915,000	NA	\$
Total	\$3,501,500	\$4,950,250	\$6,585,450

Notes: Totals exclude GST.



10.5 Power

Existing Infrastructure

The existing infrastructure within each of the areas and immediate surrounding area will be inadequate to meet the likely demands of a potential industrial area.

Required Infrastructure

Without a more detailed structure plan or specifics on the types of industries that may be developed, it is difficult to determine where the upgraded power will come from and the power service requirements.

For this reason, a total cost for the development of all four areas has been estimated at \$3 million, comprising of \$2 million for the System Charge and \$1 million for cabling, trenching, installation, testing, etc. To breakdown the \$3 million into each area with the limited information, a best guess estimate may be \$900,000 for Area 1A (using the Western Power System Charge calculation of \$42,000 per hectare for 21 hectares of Area 1A) and the remainder \$2.1 million over area 1B, 2 and 3.

To apply the \$42,000 per hectare Western Power System Charge to all of the areas would derive an unrealistic cost of \$16 million, hence the estimate of \$3 million to develop all the areas has been adopted.

Table 19 Electricity infrastructure

Area	Power Infrastructure Requirements
1A	\$900,000
1B	
2	\$2.1 million
3	
Total	\$ 3 million

Notes: Totals exclude GST.

Staging

With the limited development planning information and likely power demands of the area, the source of the nearest power connection to support such a development is unclear.