Parramatta Light Rail: Stage 1

Environmental Impact Statement Submission

23 October 2017

Table of Contents

1. Introduction and General Comments....1
2. Major Location-Based Issues....2
2.1. Parramatta CBD....2
2.1.1. Accessibility of the Parramatta Square stop....2
2.2. Rydalmere precinct....2
2.2.1. Accessibility of the Rydalmere stop....2
2.2.2. Additional stop at Western Sydney University (Parramatta South)....3
2.2.3. Rydalmere stop locations....7
3. Impacts During Construction....9
3.1. T6 Carlingford line closure....9
3.1.1. Replacement bus frequency....9
3.1.2. Replacement bus routes....9
3.1.3. Accessibility of replacement bus stops....10
4. Urban and Technical Design....11
4.1. Clyde to Camellia closure....11
4.2. Pennant Hills Road bridge....11
4.3. Future extension to Epping or Macquarie Park....12
4.3.1 Carlingford to Epping extension....12
4.3.2. Macquarie Park via Eastwood alignment safeguarding....13
References....14

Acknowledgements

The structure of this submission is loosely based on environmental impact statement (EIS) submissions by the City of Sydney and Randwick City Council.

1. Introduction and General Comments

The Parramatta Light Rail Stage 1 proposal is intended to provide significantly better public and active transport connections for Western Sydney residents, as well as facilitating access to burgeoning cultural and recreational destinations within Sydney's second CBD. Consisting of about 12 kilometres of light rail from Westmead to Carlingford, it will link together the Greater Parramatta to Olympic Park (GPOP) priority growth precinct and

Overall, the Respondent strongly supports the proposal for Stage 1 of the Parramatta Light Rail project, especially given the public transport and city building benefits for residents along the project corridor.

However, there are still areas of concern in the Environmental Impact Statement (EIS) that may limit the potential of the project to achieve its strategic goals and objectives. These include:

- Accessibility of light rail stops from major trip generators
- Impacts of the light rail alignment on total line capacity
- Protection of corridors for future light rail extensions
- Limiting customer impacts between the closure of the T6 Carlingford line and completion of the project

2. Major Location-Based Issues

2.1. Parramatta CBD

2.1.1. Accessibility of the Parramatta Square stop

The Macquarie Street alignment proposed for the project means that passengers interchanging between rail services and light rail would have to detour around Darcy Street and Smith Street to reach the stop, a distance of about 400 metres. This disrupts the continuity between the two modes and increases the difficulty of navigating public transport, especially for infrequent users.

As a result, a direct link between the Parramatta Square stop and the railway station is essential for generating patronage. Though there is a tentative framework in place by Parramatta City Council for the future Parramatta Civic Link, this has not been finalised and committed to.

Recommendation 1

That the Proponent collaborates with Parramatta City Council and other stakeholders to ensure the Parramatta Civic Link is open between Parramatta railway station and Macquarie Street before the opening of the light rail line.

2.2. Rydalmere precinct

2.2.1. Accessibility of the Rydalmere stop

Currently, residents living north of Victoria Road and west of the railway corridor must take a long detour from Rydalmere railway station via the Victoria Road bridge, then turning back to walk through the underpass. Walking to the beginning of Rippon Avenue alone requires walking a minimum of 450 metres from the station, and then even further to the resident's home.

Rydalmere railway station is also difficult to access for people with disabilities, given the need to climb up two flights of stairs or take an even longer detour to access areas west of the railway corridor.

The stop should be designed to allow safe pedestrian crossing to improve access, as well as being accessible to people with disabilities.

This is also an issue for passengers travelling to the Western Sydney University (UWS) Parramatta South campus. As discussed further in section 2.2.2, the lack of a direct connection to the university means that it currently requires 12 minutes to walk 850 metres from Rydalmere railway station to the Whitlam Library at UWS Parramatta.

It is also of concern that the Proponent failed to identify Rydalmere as a minor interchange stop in section 3.6.8.3. With significantly higher frequencies than before, passengers will be more inclined to interchange for buses on Victoria Road, especially for passengers travelling towards Carlingford and stops like Harris Street and Tramway Avenue.

The proposed improvements to the underpass at Victoria Road mentioned in section 15.2.2.1 are supported by the Respondent and would help to facilitate interchanges between bus services and light rail.

Recommendation 2

That a pedestrian crossing at the Rydalmere stop and a direct walking connection to UWS Parramatta be a condition of approval of the project.

That the Proponent develop a strategy to improve the underpass along Victora Road to create a safer, more accessible and aesthetically pleasing environment. This should incorporate improvements to lighting and other design changes to follow Crime Prevention Through Environmental Design (CPTED) best practice.

That provisions for easier interchanging between buses and light rail are made for the Rydalmere stop in terms of stop design, signage and connecting walkways.

2.2.2. Additional stop at Western Sydney University (Parramatta South)

2.2.2.1. Background

More accessible university campuses play a critical role in reducing barriers to tertiary education, helping to implement the NSW Premier's 12 key priorities, as well as helping to achieve targets set under Goal 6 of *NSW 2021: A Plan to Make NSW Number One.*

This is particularly important for students from lower socioeconomic backgrounds, who may need to maintain part time employment to support themselves. As such, the project should aim to optimise travel times to the Western Sydney University (UWS) Parramatta South campus, while balancing this with the needs of other potential users of the project.

Given the level of interest in such an additional stop, including from Parramatta City Council, some stakeholders have questioned the rationale behind the proposal not to include this additional stop. This attempts to provide more detail to demonstrate whether or not it should be built.

2.2.2.2. Description of feasible options

Three main options were identified and compared to the base case:

- Option 1 – a new stop at the south-eastem end of UWS Parramatta, adjacent to car park P14.
- Option 2 – a new stop at the eastern end of UWS Parramatta, near car park P3 and the Ian and Nancy Turbott Auditorium (building EE). This would be similar to Option 1 but about 150 metres further north along the railway corridor.
- Option 3 – a new stop at the location of the existing Rydalmere railway station with a direct active transport path built.
- Base case – the existing Rydalmere railway station without a direct active transport path.

2.2.2.3. Assessment of design options

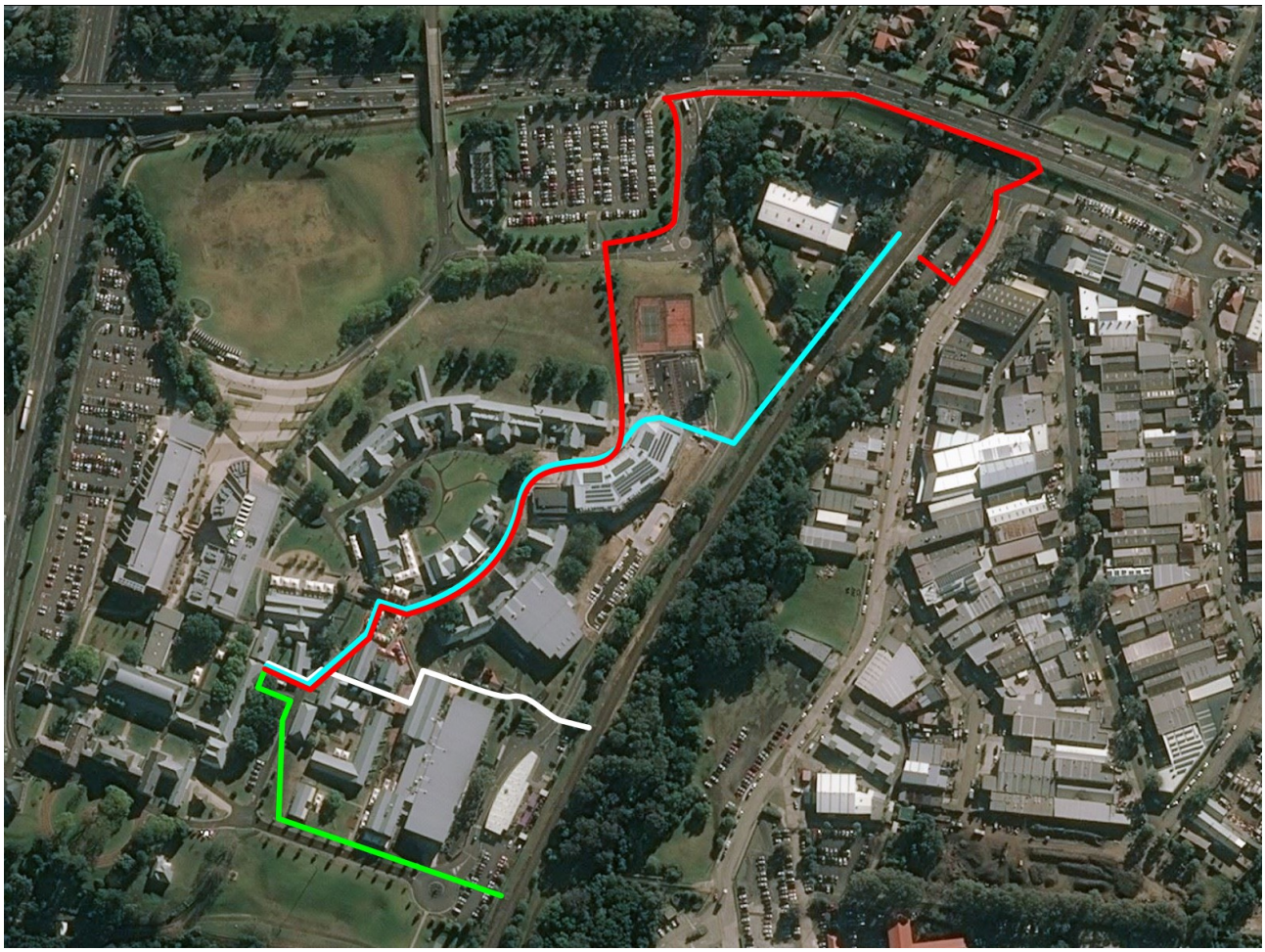
The Proponent notes that stop spacing is important to strike a balance between accessibility and operating speed, which the Respondent agrees with.

However, it is also important that stops are placed near areas of high demand. Given the already high demand for existing bus services towards UWS Parramatta and expected future growth of student numbers as the university becomes more established, the benefits for passengers using the additional stop may outweigh the increased travel time for other passengers.

Figure 2.1 shows that the walking distance from buildings on the south side of the UWS Parramatta would be somewhat shorter if an additional stop at UWS Parramatta is built, saving up to five minutes in travel time (Table 2.1).

This is further compounded when compared to the current situation, where there is no direct link to the university from the stop. In this case, up to 10 minutes in travel time would be saved.

Figure 2.1: Walking distances from building EM at UWS Parramatta



Source: Bing Maps (aerial imagery)

Table 2.1: Travel time between building EM (UWS Parramatta) and Parramatta Square

Option	Stop Location	Walking Distance from Building EM (metres)	Journey Time to Parramatta Square[1] (minutes)
Option 1 ■	UWS Parramatta (SE)	255	16
Option 2 ■	UWS Parramatta (E)	230	16
Option 3 ■	Rydalmere (with path)	550	21
Base case ■	Rydalmere (no path)	890	26

As can be seen in Table 2.2 though, it is also important to note that users travelling from different parts of the UWS Parramatta campus may experience little to no time savings, such as students in the New Science Faculty (Building EHa).

Table 2.2: Travel time between building EHa (UWS Parramatta) and Parramatta Square

Option	Stop Location	Walking Distance from Building EHa (metres)	Journey Time to Parramatta Square[1] (minutes)
Option 1 ■	UWS Parramatta (SE)	320	17
Option 2 ■	UWS Parramatta (E)	190	15
Option 3 ■	Rydalmere (with path)	210	16

If the additional stop is built, the stop spacing between Harris Street and Carlingford would be somewhat below the proposed suburban criteria of about one kilometre between stops, though not by a large amount. Regardless of the stop spacing criteria, the extra stop would still increase travel times by about one minute for other passengers not travelling to or from UWS Parramatta.

However, both the CBD and South East Light Rail and the Inner West Light Rail have closer stop spacings than this. Table 2.3 shows the stop spacing of currently operational and under construction light rail lines in Sydney.

Table 2.3: Stop spacing of project compared to other Sydney light rail lines

Light Rail Line	Stops	Stop Spacing (metres)
Parramatta (Option 1)	UWS Parramatta (SE) – Rydalmere (existing location)	500
Parramatta (Option 1)	Harris Street – Carlingford (with additional stop)	915[2]
Parramatta (Option 3)	Harris Street – Carlingford (without additional stop)	1065[2]
CBD and South East	Central (Chalmers Street) – Nine Ways	700[2]
CBD and South East	Central (Chalmers Street) – Randwick Junction	790[2]
CBD and South East	UNSW High Street – Randwick Junction	500
Inner West	Lilyfield – Dulwich Hill	620[2]

An example of this is the UNSW High Street stop on the CBD and South East Light Rail line. Despite it being only 500 metres from the Randwick Junction stop, it was still decided for the stop to be built because of the large demand for travel to the University of New South Wales.

1 Includes walking time (at 1.3 m/s), average waiting time (3 min 45 sec) and time in light rail vehicle
2 Average stop spacing

2.2.3.4. Selection of preferred design option

Because of the limited time savings provided by the additional stop, the Respondent agrees with the assessment conducted that the additional stop for UWS Parramatta is not necessary at the moment. This is provided that the proposed active transport link is built. If not, the significantly shorter walking distance would warrant building the additional stop.

However, if demand for travel to the university increases, this may still warrant building an additional stop in the future. This would be especially true if an extension to Epping or Macquarie Park is built, which would create greater demand for travel in both directions.

Recommendation 3

That the design and construction of the light rail alignment ensures that a future stop at either the south-eastern or eastern ends of the campus will not be precluded.

That an additional stop should be provided for UWS Parramatta if the proposed active transport link is not built for any reason.

2.2.3. Rydalmere stop locations

2.2.3.1. Background

If an additional stop for UWS Parramatta is built, this may provide an opportunity for the Rydalmere stop to be relocated to better meet strategic outcomes.

The following discussion assumes that an additional light rail stop for UWS Parramatta is built. If it is not built, the preferred location for the Rydalmere stop would be the existing railway station, as it would provide the best accessibility compromise between the university to the west, the light industrial area to the east and residential areas to the north.

2.2.3.2. Description of feasible options

Three main feasible options were identified:

- Option 1 – a new stop at the location of the existing Rydalmere railway station.
- Option 2 – a new stop to the north of Victoria Road.
- Option 3 – a new stop to the south of Reserve Street.

2.2.3.3. Assessment of design options

An assessment of these options is provided in Figure 2.2.

Figure 2.2: Stop locations in Rydalmere

	Option 1	Option 2	Option 3
Land use integration			
Traffic and transport			
Safety			
Urban design			
Environment			
Property			
Stakeholders			
Cost and program			
Other/operation			

2.2.3.4. Selection of preferred design option

The stop north of Victoria Road (Option 2) would provide the following advantages over the current Rydalmere stop site (Option 1):

- Increased prominence and residential catchment area for the light rail stop, reducing car dependency and providing a catalyst for urban renewal within the area (such as the nearby Property NSW development).
- Increased walkability within the residential area by providing a closer direct crossing between the two sides of the railway corridor, especially as the northern side does not have a bridge over the railway corridor.

Option 1 would provide better access to the light industrial area, however, the UWS Parramatta stop would also provide access to the light industrial area, as well as a potential future light rail line. It also does not provide the urban renewal benefits for the residential area that Option 2 does.

Although Option 3 would also have improved walkability by allowing a pedestrian crossing between Reserve Street and Rippon Avenue (through Anna Maria King Park), it was not the preferred option as the catchment area overlapped significantly with the Dundas stop. Option 3 also increased residential noise and light spill, and prevented bus interchanges along Victoria Road.

Recommendation 4

If a stop at UWS Parramatta is built, consideration should be given to moving the Rydalmere stop north of Victoria Road.

3. Impacts During Construction

3.1. T6 Carlingford line closure

3.1.1. Replacement bus frequency

The EIS appears to be highly inconsistent with regards to the bus replacement arrangements for the T6 Carlingford line. Table 3.1 shows the different wording present in various sections of the EIS.

Table 3.1: Bus replacement frequency in EIS

Location in EIS	Peak periods	Inter-peak (weekdays)	Off-peak and evenings
Table ES.1	“every 10 minutes”	N/A (assumed off-peak)	“hourly every 30 minutes” [sic]
Table 4.5	“every 10 minutes”	N/A (assumed off-peak)	“hourly”
Table 4.6	“every 10 minutes”	“every 10 minutes”	“hourly”
Section 6.14.4.4	“every 10 minutes”	N/A (assumed off-peak)	“every 30 minutes”
Section 8.2.2.6	“every 10 minutes”	“every 10 minutes”	“every 30 minutes”

With the new timetable from 26 November 2017, trains on the T6 Carlingford line will run every 30 minutes at all times. With replacement buses, traffic congestion means that the reliability of bus services is likely to be lower than train services. To mitigate this, bus services should run every 20 minutes during the day on weekends instead of every 30 minutes or hourly.

The service standards for Metrobus routes also recommend this. As the nature of the bus replacement service is similar to Metrobus routes, it is proposed that the bus replacement follows these frequency guidelines instead.

Recommendation 5

That the Proponent clarifies the intended service level for replacement buses along the T6 Carlingford line.

That bus replacement frequencies should be as follows:

- Peak: every 10 minutes
- Off-peak (weekdays): every 15 minutes
- Off-peak (weekends): every 20 minutes
- Late evening (all days): every 30 minutes

3.1.2. Replacement bus routes

Given that there are already existing bus services that run to Parramatta directly from every station along the T6 Carlingford line, running a shuttle bus to Parramatta is unlikely to provide the most benefit to customers during the railway closure period.

Instead, replacement buses should operate to Clyde railway station to allow greater access to rail services on the T2 Inner West and Leppington line. With the new timetable from 26 November 2017, T1 and T2 services stopping at Clyde will significantly increase, with a train at least every 15 minutes in both directions.

On weekends, the route should also extend to Granville railway station as T2 Leppington services will not stop at Clyde.

To simplify operations and customer trip planning, all bus replacement services should follow the route and stopping pattern of the current 11T6 bus replacement service.

Recommendation 6

That bus replacement services operate to Clyde railway station (and Granville on weekends) instead of Parramatta, following the current 11T6 route.

3.1.3. Accessibility of replacement bus stops

To increase accessibility, the walking distance towards these replacement bus stops should be reduced where possible to compensate for the slower bus journey. This can be done by opening the railway corridor for pedestrian crossing at designated points where the construction schedule allows for this. This should also include temporary measures to allow easy level crossing over the rails.

Furthermore, bus stops should be able to be accessed by customers of all abilities and have level concrete footpaths between the stop and nearby local destinations, so that people are able to travel easily with any wheeled objects, such as prams, trolleys and wheelchairs.

Recommendation 7

That the Proponent establishes a plan to allow for level pedestrian crossings of the railway corridor to be opened near replacement bus stops after the T6 Carlingford line has closed. These should remain open as often as possible while ensuring safety during the construction schedule.

That the Proponent conducts a review of footpath conditions around the proposed rail replacement bus stops and takes measures to allow access by people of all abilities if conditions are found to be unsatisfactory. This should be performed in conjunction with local councils and other stakeholders.

4. Urban and Technical Design

4.1. Clyde to Camellia closure

Table 5.2 in the EIS notes that the existing tracks between Camellia Station and Parramatta Road would not be subject to removal, while section 5.10.2 of the EIS says otherwise:

> *At this stage, consideration is being given (pending further investigations during detailed design) to whether the closure of the T6 Carlingford Line between Camellia (south of Grand Avenue North) and Parramatta Road would also include the removal of the rail infrastructure (such as tracks, station platforms associated with Rosehill Station, etc.) pending further investigation during design development.*

These two parts appear to be inconsistent with each other. The alignment between Clyde and Camellia could be useful for implementing future light rail network extensions, such as an extension to Bankstown via Clyde Street. If the tracks are usable for such an extension, this would reduce the amount of work that has to be done.

Recommendation 8

That the Proponent clarifies whether or not it intends to remove the existing tracks between Camellia Station and Parramatta Road.

That the existing tracks between Camellia Station and Parramatta Road not be removed unless the Proponent provides evidence to demonstrate that these would be unsuitable for use by a future light rail line or as an event spur line.

That the alignment does not preclude the Carlingford line segment being redirected towards Granville, Clyde or Lidcombe if another branch of the Parramatta Light Rail system is built.

4.2. Pennant Hills Road bridge

The proposed alignment of the project retains a single track under the Pennant Hills Road bridge between Telopea and Carlingford.

This single track section may limit the maximum frequency achievable, as well as the reliability of services. Although this may be acceptable with initial service frequencies, future demand is likely to require increased frequencies, especially if a future extension from Carlingford to Epping is built.

As a comparison, the single track section near Dulwich Hill on the Inner West Light Rail has been cited as one of the factors preventing further increases in service, despite services in the AM peak being at capacity (Transport for NSW 2017).

Another international example is Bangkok's BTS Skytrain system. A single track on the Silom line around Saphan Taksin station has meant that even with automatic train operation (ATO), the maximum frequency during the AM peak is only 4 min 50 sec, compared to the Sukhumvit line where trains run every 2 min 50 sec (Bangkok Mass Transit System 2017).

Recommendation 9

That the Proponent provide information about the maximum capacity and frequency through that section.

That the Proponent prepares a plan to mitigate service reliability impacts from the use of bidirectional single track operation, and provides details about the expected service reliability based on 2041 service levels.

4.3. Future extension to Epping or Macquarie Park

4.3.1 Carlingford to Epping extension

4.3.1.1. Alignment options

Although an extension of the project from Carlingford to Epping would increase the connectivity of the public transport network by linking the T1 Northern line and Sydney Metro Northwest with the Parramatta GPOP priority growth precinct, there are numerous potential difficulties in constructing such an extension.

A surface alignment along Carlingford Road is limited by the very narrow right of way and numerous driveways in the area for which access would need to be maintained. Alternatives included closing side street access to provide additional on-street parking or excessive amounts of compulsory acquisitions, increasing the cost of the project substantially and having severe adverse effects on the amenity of the neighbourhood.

Another option could include semi-mixed traffic along relatively quiet side streets like Keeler Street, Willoughby Street and Boronia Avenue, however this would slow down operating speed and thus limiting the justification for such an extension.

Tunnelling using the sequential excavation method is possible, however this is also constrained by the location of tunnel portals, as well as the location of a stop in Epping. One option would be to have a tunnel portal north of the station, as briefly touched on in section 5.5.6.4 in the EIS. Another possibility would be to use the embankment between Telopea and Tiptrees Avenue to reach Pennant Hills Road, followed by a tunnel portal entry on Pennant Hills Road.

The steep gradient along Pennant Hills Road is likely to preclude a surface alignment, with the critical grade being more than 10 per cent. Even with significant regrading works, this would still be at the limit of capabilities of a fully motorised light rail vehicle of about 8.5 per cent (Randwick City Council 2011).

4.3.1.2. Carlingford stop location

Table 3.10 in the EIS notes that a stop on the southern side of Pennant Hills Road bridge was considered, but ultimately not selected. Because this would narrow the amount of space available along the corridor for a future line, the Respondent agrees with this assessment.

Recommendation 10

That the corridor between Telopea and Pennant Hills Road bridge is preserved for a potential future extension of the project.

4.3.2. Macquarie Park via Eastwood alignment safeguarding

Given the issues discussed above in section 5.3.1 about potential difficulties constructing an extension from Carlingford to Epping, it would be prudent for the alignment to be future-proofed by preserving the possibility for it to be extended to Macquarie Park via Eastwood instead.

The majority of the corridor is wide enough for a future light rail line and would also link another major university (Macquarie University), the broader Macquarie Park priority growth precinct and a large residential and retail centre at Eastwood.

Recommendation 11

That the Proponent provide more detail about the proposed design of the Dundas stop.

That the alignment and design of the Dundas stop should not preclude a future extension of the light rail system towards Eastwood and Macquarie Park.

References

- Bangkok Mass Transit System (June 2015). *Service Timetable*. Available at: http://www.bts.co.th/customer/en/pdf/ServiceTimetable.pdf [Accessed October 2017]
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