Central Park Mixed Use Development

State Significant Development Application for Block 4S, Student Accommodation

Traffic and Transport Report

transportation planning, design and delivery

125139500 20/12/12

GTAconsultants

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Traffic and Transport Report

Issue: B 20/12/12

Client: Frasers Broadway Pty Limited
Reference: 12S1395000
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1. Introduction

This traffic and transport report relates to a State Significant Development application (SSDA) seeking approval to construct a new residential building to provide student accommodation with retail use on the ground floor on Block 4S within Central Park (formerly known as Frasers Broadway). The Central Park site has Concept Plan approval permitting it to be redeveloped into a mixed used development.

Figure 1.1 shows the location of Block 4S in the context of the overall Central Park site.

Figure 1.1: Locality Plan

The SSDA seeks approval for a total gross floor area (GFA) of some 23,209m^2 comprising approximately 22,355m^2 of residential floor area plus 854m^2 of non-residential/retail floor area on the ground and floor and Level 1. The building would have 694 apartments (with 826 beds) for student accommodation use. It is not proposed to provide any on-site parking to serve the proposed student accommodation development.

It is noted that Block 4S was originally approved for non-residential uses in the Concept Plan and the Project Application for Blocks 1 and 4 (for which Block 4S was part of) MP 08_0253. The subject application to which this report relates to is one of three concurrent applications to the Department of Planning and Infrastructure (DoPI) seeking modifications to the overall Concept Plan and Project Application approval for Blocks 1 and 4 as follows:

- Application MP 06_0171 MOD 8 seeks approval to amend the mix of the approved use within Blocks 1 and 4 (including Block 4S) to include residential use, and re-distribute the approved floor areas within Blocks 1 and 4.
- Blocks 1 and 4 Project Application MP 08_0253 MOD 4 – this application seeks approval to excise Building 4S and Block 8 from the original Project Application approval (MP 08_0253) and Buildings B1 and 4N continue to be developed as commercial use as per the original approval.

The DoPI has issued Director-General's Requirements (DGRs) for this project. The issues raised in the DGRs have been considered during the preparation of this transport assessment report. Table 1.1 summarises the relevant issues (as related to transport and traffic) together with descriptions how the issues have been addressed.

Table 1.1: Director-General's Requirements

Issues	How Addressed	Report Section
Detail access arrangements at all stages of construction.	This is addressed in the Construction Traffic Management Plan prepared by GTA Consultants (Ref: 121221rep-12S1395000 – Block 4S CTMP dated 20 December 2012).	The CTMP is provided under a separate cover (see GTA Report Ref: 121221rep-12S1395000 – Block 4S CTMP dated 20 December 2012).
Detail support of non-private vehicle travel methods such as provisions for bicycle parking and car sharing scheme.	The site is located in close proximity to high frequency, good quality public transport services. In addition, it is not proposed to provide any car parking, instead bicycle parking spaces are proposed. The Concept Plan approval (Condition B7) requires commercially operated car schemes be available to residents. Some 70 car share pods would be available within the wider Central Park site. In addition, the amended Concept Plan for the overall site proposes a number of additional pedestrian and cycle facilities.	See Section 5 See Section 6
Provide accurate details of daily and peak vehicle movements and assess the impacts of this traffic on the local network, including intersection capacity, having regard to local planning controls.	Parking is not being proposed to serve the proposed development. As such, it is not expected that the proposed development would generate any additional traffic. In addition, the then RTA assessed the traffic effects arising from the Concept Plan, which the RTA has subsequently approved. The Concept Plan traffic assessment has an allowance of 117 vph during the peak periods for Blocks 1 and 4. This included the subject site (Block 4S) proposed as commercial office tower. With the proposed modifications of Blocks 1 and 4, it is now expected to generate about 74 vph. As the estimated traffic has reduced, the proposed development would have positive benefits.	See Section 4
Demonstrate appropriate provision of on-site car parking	It is not proposed to provide any car parking spaces on site. Survey data at an existing student accommodation suggests low car ownership rate amongst students. In addition, a number of student accommodation operators has indicated that this is not required.	See Section 5.
A Work Place Travel Plan and Travel Access Guides for employees, residents and visitors to the site.	As the building is yet to be occupied at this stage, it would be difficult to prepare an effective Travel Plan. However, in Section 7 of this report, a framework for the development and implementation of such a travel plan has been outlined. It is suggested that there should be a consent condition requiring a travel plan be prepared after occupation of the buildings. The Travel Access Guide is provided in Appendix A.	See Section 7. See **Appendix A**.
Construction Management Plan and Traffic Management Plan.	A Construction Traffic Management Plan has been prepared by GTA Consultants (Ref: 121221rep-12S1395000 – Block 4S CTMP dated 20 December 2012).	See GTA Report Ref: 121221rep-12S1395000 – Block 4S CTMP dated 20 December 2012.

In addition, in their submission to the DoPI, Roads and Maritime Services (RMS) also requested for the implications of the proposed development for non-car travel modes to be assessed. This is discussed further in Section 6.

The remainder of this report is set out below:

- Chapter 2 provides an overview of the project to date
- Chapter 3 describes the development proposal
- Chapter 4 reviews the traffic implications of the proposal
- Chapter 0 assesses the off street car park provision and servicing arrangements, and
- Chapter 6 presents a summary and concludes the study.

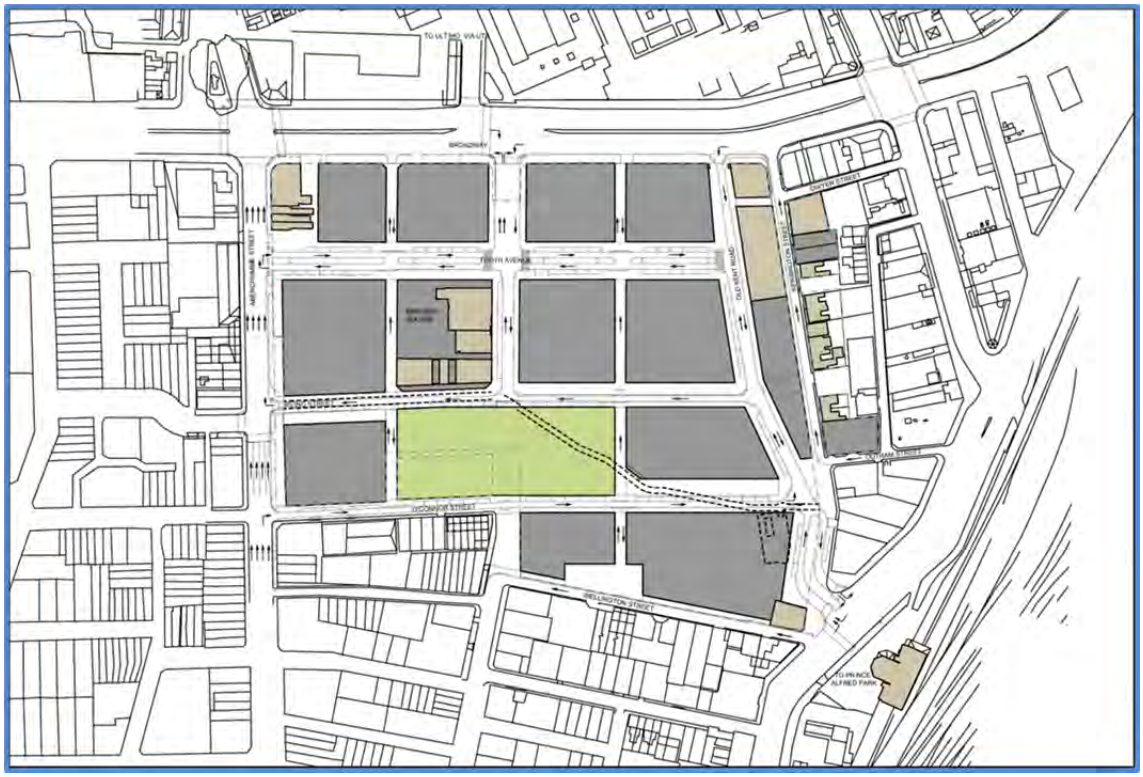
2. Project to Date

2.1 Original Concept Plan

The Carlton and United Brewery site (as it was known back then) was originally approved for redevelopment in February 2007 (MP06_0171) under the Part 3A process. The proposed redevelopment of the site includes high density residential, commercial and retail uses.

A plan showing the development as approved in February 2007 is shown in Figure 2.1.

Figure 2.1: Original Approved Concept Plan



Halcrow (formerly Masson Wilson Twiney Pty Limited) prepared a traffic and transport assessment report[1] for the original concept scheme. The findings and recommendations of this report were taken into account in the concept plan approval.

Traffic implications of the original concept plan were examined in detail by the then RTA (now known as Roads and Maritime Services, RMS) using a Paramics microsimulation traffic model. The RTA found the traffic impacts of the development were within acceptable limits and granted its agreement to the concept plan transport elements including all proposed road connections to the surrounding road network.

[1] Carlton and United Brewery Site – Stage 1 Masterplan Traffic Report, Masson Wilson Twiney Pty Limited October 2006

2.2 Amended Concept Plan

The site was purchased in June 2007 by Frasers.

Following a series of stakeholder consultations, Frasers developed an amended scheme for the site. The amended Concept Plan was approved by the then Department of Planning (DoP) in July 2007 (MP 06_171 MOD 1). This was followed by a number of further modifications[2] to the original approval. The last one being MP 06_0171 MOD 6 approved in July 2012. It is noted there are two further proposed modifications currently before the Department for determination in relation to the approved Concept Plan. This is further discussed at the end of this section.

The approved amended Concept Plan included the same grid like building configuration as the original concept scheme. Below is a summary of the relevant amendments to the original approval (from the six approved modifications):

- increase in site area and gross floor area with revised residential and commercial land use mix
- changes to building envelopes for the 11 development blocks
- increase in area of public open space
- reduced car parking provision (maximum of 2,000 car spaces) provided within various combined underground car parks proposed to minimise surface traffic within the site
- removal of some internal streets to create a low speed traffic environment within the precinct.

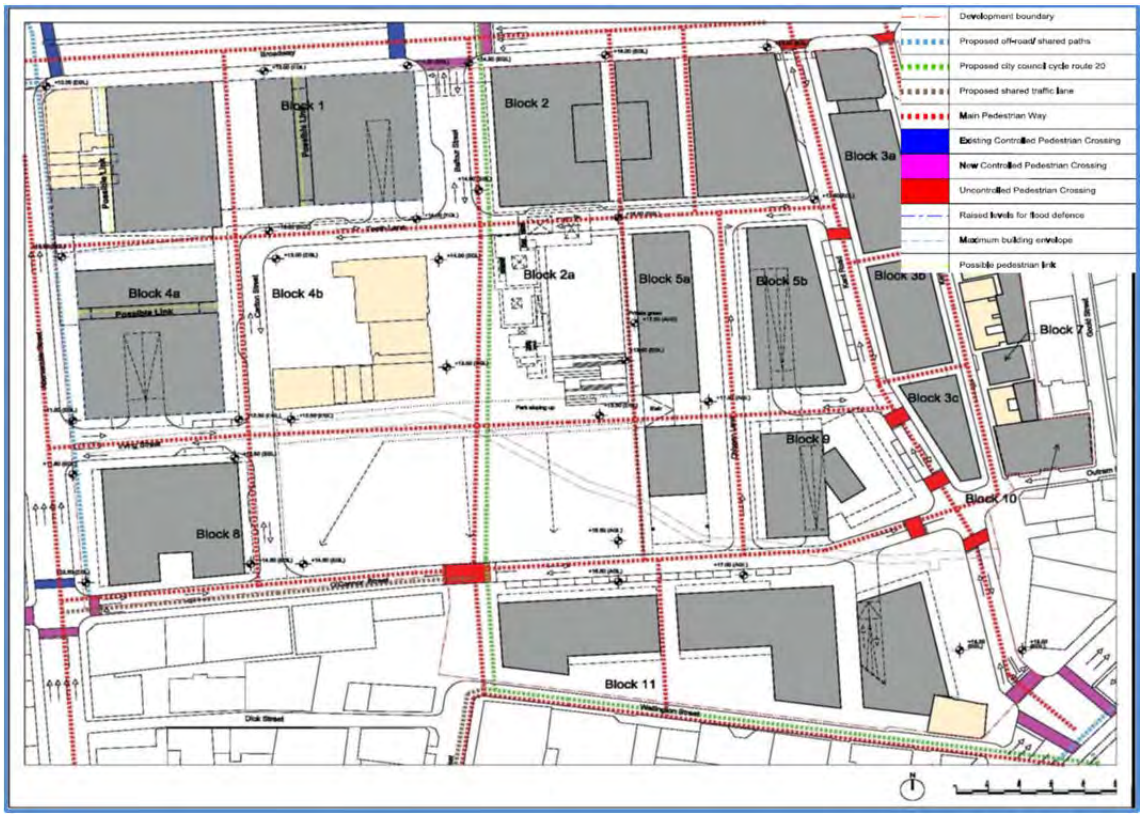
The current approved development mix is as follows:

- up to a maximum of 255,500m^2 GFA for mixed use
- a minimum of 76,650m^2 of commercial use (including retail use)
- a maximum of 178,850m^2 (equivalent to approximately 2,000 apartments) of residential use.

A plan showing the approved amended Concept Plan including the internal road network and external road network connections is shown in Figure 2.2.

[2] MP 06_0171 (MOD 2) was the last significant modification relating to this approval. Subsequent approvals MP 06_0171 (MOD 3 and MOD 4) are of no significance to traffic and transport impacts. MP 06_0171 (MOD 6) allows the modification of the approved floor areas and building envelopes to Blocks 6 and 10. In addition, DoPI is currently considering an application (MOD 7) to re-allocate gross floor area within the Kensington Precinct with the total gross floor area across the site staying the same.

Figure 2.2: Amended Concept Plan



As indicated previously, DoPI at present is considering two proposed modifications to the Concept Plan (MP 06_0171 MOD 7 and MOD 8). Application MP 06_0171 MOD 7 was lodged with DoPI in October 2012 seeking approval to re-allocate gross floor area (GFA) within Kensington Precinct while maintaining the approved gross floor area and the distribution of residential and non-residential floor areas across the entire site. In addition, a S75W application (MP 06_0171 MOD 8) has been lodged concurrently with the subject application and another Project Application to develop Building 4S within Blocks 1 and 4 to provide student accommodation. MP 06_0171 MOD 8 seeks approval to include both residential and non-residential uses within Blocks 1 and 4 (currently approved for non-residential uses only), and to excise Buildings 4S from Blocks 1 and 4. These are currently being determined by DoPI.

2.3 Blocks 1 and 4 Project Application Approval

The approval to Project Application (MP 08_0253) was granted In May 2010. The approval allows the construction of a 10-15 storey commercial building with five levels of basement for car parking within Blocks 1 and 4 at Central Park.

The approved building would be aligned along the Broadway and Abercrombie Street corner with three separate, but linked structures. Building B1 would be located adjacent to Central Park Street (formerly Balfour Street) and fronts on to Broadway. Building 4N would be located at the immediate corner of Broadway with Abercrombie Street. Building 4S would be located to the south of Building 4N and adjacent to Abercrombie Street).

The approval includes commercial floor space area, retail floor space area (generally on the ground floor level) and a childcare centre. In addition, a maximum of 533 car parking spaces was also approved.

This included 148 spaces to serve the development within Block 8. The approved car spaces are to be provided in the combined basement beneath Blocks 1 and 4.

Three subsequent proposed modifications to the original approval were granted by the Department of Planning and Infrastructure (DoPI) with the last one granted in May 2012. These approved modifications relate mainly to the Brewery Yard and the central thermal plant, and therefore have no implications to the overall traffic and parking effects of the development.

3. Development Proposal Description

3.1 Proposed Development

The application seeks approval for the construction of a new residential building (student accommodation) on Block 4S within the Central Park site. The proposed building comprises fourteen (14) storeys and includes:

- residential accommodation for 826 students
- 688 individual apartments with 826 beds
- a variety of communal recreation areas
- dining and study facilities
- rooftop terraces
- administration facilities
- ground floor retail
- a basement Central Park precinct-wide central thermal plant/tri-generation plant.

The application seeks approval for a total gross floor area of some 23,763m^2 comprising:

- approximately 22,564m^2 of residential (student accommodation) floor area
- approximately 1,199m^2 of non residential (retail) floor area.

It is not proposed to provide any on-site car parking spaces to serve the proposed development. Instead, it is proposed to provide 197 bicycle parking spaces to serve the proposed development. In addition, it is proposed to provide four motorcycle spaces. These are proposed to be located on the ground floor.

It is proposed to provide temporary loading areas on the ground floor on the southern side of Block 4S off Irving Street, and a separate area adjacent to Central Park Avenue on the eastern side of Block 4S. These would ultimately be combined and relocated into the basement beneath Block 4S following the completion of Blocks 1 and 4N. Following the relocation of the temporary loading areas into Block 4S basement, these areas would be converted into retail areas. This is discussed further in Section 5.4.

3.2 Vehicular Access

As indicated previously, it is not proposed to provide any on-site parking spaces to serve the development. As such, vehicle access onto the site is not required. However, the bicycle spaces can be accessed from the main entrance on the northern side of the building and via the loading dock off Irving Street from the southern side of the building. The motorcycle spaces can be accessed via the loading dock off Irving Street.

Vehicle access to the temporary loading dock on the south side of Block 4S would be off Irving Street. This temporary loading dock incorporates a vehicle turn table which would enable vehicles to enter and exit the dock in a forward direction. The driveway to the temporary loading dock is proposed to be designed to the requirements set out in the relevant Australian Standard, namely AS2890.2:2002

Loading activities for the second temporary loading area are proposed to take place on Central Park Avenue on a temporary basis.

Following the relocation of the loading areas into Block 4S basement, access to the loading area would be from Abercrombie Street.

4. Traffic Implications

4.1 Previous Blocks 1 and 4 Traffic Estimates

As stated in Section 2 of this report, the traffic impacts of the site as a whole have been assessed and deemed satisfactory by then RTA (now RMS). In addition, the proposed connections to the surrounding road network have also been approved by the then RTA.

The approved Concept Plan (and the subsequent amended Concept Plan) estimated that the entire development would generate some 493 vehicle trips per peak hour. Subsequent modifications to the original approval for Blocks 2 and 5 resulted in the overall development traffic increasing from 493 vph to 535 vph. Traffic analysis conducted by Halcrow indicates that with the additional traffic demand arising from modifications to Blocks 2 and 5, the external access intersections would continue to operate satisfactorily in the future.

The approved Concept Plan (MP 06_0171) allows a maximum floor space area of 77,000m^2 of non – residential use. The traffic assessment that accompanied the Concept Plan application estimated that Blocks 1 and 4 would generate some 117 vehicles per hour (vph) during the peak periods.

The traffic assessment that accompanied the Project Application for Blocks 1 and 4 (MP 08_0253) (which was subsequently approved) related to a total floor space area of some 72,000m^2 GFA of non-residential (commercial and retail) uses. It was estimated to generate about 130 vph including some 30 vph due to the proposed development within Block 8 (i.e. Blocks 1 and 4 generate about 100 vph).

It is noted that additional traffic assessment was not conducted as part of the MP 08_0253 project application. Instead, it relied on the traffic assessment conducted as part of the MP 06_0171 Concept Plan application i.e. the various traffic assessments continued to have a traffic allowance of 117 vph for Blocks 1 and 4 as estimated in the Concept Plan traffic assessment.

It is further noted that the traffic effects of Block 4S together with Blocks 1 and 4N were assessed collectively as a single block in the previous traffic assessments.

4.2 Traffic Generation in Current Scheme

4.2.1 Blocks 1 and 4N

The Project Application MP 08_0253 MOD 4 (which is being submitted to the DoPI concurrently with the subject SSDA and a separate application to modify the Concept Plan in MP 06_0171 MOD 8) proposes Blocks 1 and 4N to have a non-residential floor space area of about 50,699m^2 including some 46,464m^2 of commercial floor space area. In accordance with City of Sydney *Local Environmental Plan Chapter 2 Central Sydney*, a total of 232 car parking spaces would be required. Using a traffic generation rate of 0.32 peak hour trips per commercial parking space (as adopted in the traffic assessment for the Concept Plan), therefore Blocks 1 and 4N are expected to generate about 74 vph.

However, if Block 1 was to be developed for residential use (with Block 4N continues to be developed as commercial use and the Brewery Yard as mixed residential and retail uses) as proposed in the

concurrent application to modify the Concept Plan (MP 06_0171 MOD 8), Blocks 1 and 4N would generate about 127 vph[3].

Therefore, as a worst case scenario Blocks 1 and 4N would generate a total of 127 vph (assuming Block 1 would be developed as residential use).

4.2.2 Block 4S

In relation to Block 4S, it is expected that the proposed use to provide student accommodation (residential) within Block 4S would not generate any traffic for the following reasons:

- the majority of students would not own a motor vehicle
- on-site parking is not provided for students (so that students that did own cars would tend to live elsewhere)
- the site is located within walking distances to nearby public transport nodes including Central Railway Station and bus stops and terminal at Railway Square
- the site being within the City Centre is located within walking distances to amenities, services and other recreational facilities
- educational campuses where the students living on the site could be attending are located within walking distances e.g. UTS (including its Broadway, Haymarket and Blackfriars campuses), TAFE NSW Sydney Institute Ultimo Campus and University of Sydney Camperdown Campus.

In the light of the above, any additional traffic arising from the proposed student accommodation development In Block 4S would have negligible traffic effects.

4.2.3 Combined Blocks 1, 4N and 4S Traffic Generation

From the above, the proposed developments within Blocks 1, 4 N and 4S (including the Brewery Yard) would generate about 127 vph during the peak periods at worst (assuming Block 1 would be developed as residential use). That is, a net increase of 10 vph (being 127 vph (from the current proposal based on the worst case scenario) less 117 vph (allowance for Blocks 1 and 4 in the Concept Plan traffic assessment).

Previously, consultants Halcrow conduct a traffic capacity analysis of the three access intersections serving the Central Park site to assess the traffic effects arising from the proposed changes to Blocks 2 and 5 apartment mixes and yield where the overall development traffic was estimated to be 535 vph[4]. The SIDRA analysis results indicate that the access intersections serving the site would have good level of service (level of service B or better) in the future.

Including the additional 5 vph arising from the recent proposed modifications to Kensington Precinct (see project applications and the accompanying traffic assessment reports for MP 11_0089 (Block 3A), MP 11_0090 (Blocks 3B, 3C & 10)[5] and MP 11_0091 (Blocks 6 & 7)), the overall site development traffic would increase from 535 vph to 550vph i.e. a total increase of 15 vph.

[3] For detailed estimates of Blocks 1 and 4N refer to GTA's traffic statement (121219ltr-12S1395000 Central Park Concept Plan Proposed Modification MP 06_0171 MOD 8) dated 19 December 2012.
[4] Halcrow report *Central Park Mixed Use Development – Project Application for Block 5C Residential Building Traffic Report* (Ref: CTLRDOr05 110819 Final.doc) dated Final, 19 August 2011.
[5] It is noted that the project application MP 11_0090 has been approved as proposed by the DoPI in November 2012.

The additional 15 vph represents about three per cent of the total development traffic estimated in the Concept Plan traffic assessment (i.e. 493 vph). It is noted that the adjacent arterial roads (i.e. Broadway and Abercrombie Street) have peak hour volumes in the range between 2,000 vph to 5000 vph. Therefore, the additional 15 vph is very low in comparison to the existing background traffic. In additional, this traffic would be spread across a number of access points to/from Central Park. The previous SIDRA analysis conducted by consultants Halcrow indicated the three access intersections would operate at good level of service with additional spare capacity.

Therefore, it is considered that the additional traffic arising from the proposed modifications within Blocks 1 and 4 would have negligible traffic effects. The surrounding road network would continue to operate well in the future as originally planned.

Finally, it is noted that the above estimated development traffic for Blocks 1 and 4 (127 vph) represent a worst case scenario. This level of traffic relates to Block 1 being developed for residential use. If Block 1 was continued to be developed as commercial use (as per current approval), then Blocks 1 and 4 (including the Brewery Yard development) would generate about 82 vph during the peak periods[6].

[6] Based on 46,465m² of commercial floor space area requiring 232 car parking spaces @ 0.32 trips per hour per space

5. Parking Assessment

5.1 Parking Requirement

Parking requirement for the proposed Block 4S student accommodation (residential) has been assessed against the following relevant guidelines and codes:

- *State Environmental Planning Policy (Affordable Rental Housing)* 2009 (SEPP Affordable Housing)
- City of Sydney *Boarding Houses Development Control Plan* 2004 (Boarding House DCP)
- City of Sydney *Local Environmental Plan Chapter 2 Central Sydney* (LEP).

SEPP Affordable Housing states that a consent authority cannot refuse development on the grounds of parking if, in the case of development in an accessible area (as is in this case i.e. the site is within 400m walking distance of a bus stop):

- 0.2 parking spaces are provided for each boarding room
- 1 parking space is provided for each person employed.

Thus, the proposed development is required to provide 168 parking spaces (based on 826 beds proposed and assuming the student accommodation would have three employees). However, in accordance with clause 29(4) of SEPP Affordable Housing, a consent authority can approve a development proposal with proposed parking provision at a lesser parking rate if it considers it reasonable in the circumstances. In this case, it is appropriate to provide parking at a lesser rate as the site is located within walking distances to high frequency public transport services (heavy rail and regular bus services) with local amenities and services including recreational facilities. In addition, the development is for student accommodation who would be attending the nearby educational campuses such as UTS, Sydney TAFE and Sydney University and plus other nearby private educational institutions.

SEPP Affordable Housing also requires at least one bicycle parking space and one motorcycle parking space for every five boarding rooms. Therefore, 165 bicycle and 165 motorcycle parking spaces (based on 826 beds proposed) are required to be provided.

In relation to Council's Boarding Houses DCP, it requires off-street parking to be provided in accordance with the requirements of the relevant local environmental plan or development control plans. Assessment of the parking requirement against the relevant LEP is discussed further below.

In addition, the Boarding Houses DCP also requires bicycle parking spaces to be provided at a rate of two racks per six bedrooms. Therefore, the DCP requires 275 bicycle spaces (based on 826 beds proposed) to be provided.

The Sydney City Council's *Local Environmental Plan Chapter 2 Central Sydney* (LEP) requires parking for various types of development uses. However, it does not provide parking rates specifically for a student accommodation use. In this case, the LEP indicates that the following parking provision be provided if the LEP does not have a specific rate for such a use:

$$Max.\,Car\ Parking = \frac{Total\ Other\ FSA}{Total\ FSA\ within\ Development} \times \frac{Site\ Area}{50}$$

Based on a proposed floor space area of 23,763m^2, the permissible maximum car parking spaces is 109 spaces.

In addition, Council's *Central Sydney Development Control Plan 1996* (DCP) requires parking for motorcycles to be provided at rate equivalent to at least one car parking space for every 100 car parking spaces provided. Similarly for bicycles, one car parking space for the exclusive use of bicycles to be provided for every 100 car parking spaces provided.

On this basis, one car space (say four motorcycle parking spaces) is to be provided for the parking of motorcycles plus one additional car space (say four bicycle parking spaces) for the parking of bicycles.

Table 5.1 summarises the parking requirements contained within various guidelines and codes. The proposed parking provision, which is discussed further below, is also shown in Table 5.1.

Table 5.1: Parking Requirements and Proposed Provision

Parking Requirements	SEPP Affordable Housing	Boarding Houses DCP	LEP/DCP	Proposed Provision
Car	168	109	109	0
Bicycle	165	275	4	197
Motorcycle	165	§	4	4

§ - no specific requirements

5.2 Proposed Parking Provision

It is proposed not to provide any on-site car parking spaces to serve the proposed development for the following reasons:

- the accommodation is specifically aimed at students who would not have a car
- the site is located within walking distances to major transport nodes, and amenities and services
- a number of tertiary educational campuses are located in close proximity of the site (UTS, University of Sydney and TAFE NSW)
- a significant number of car share spaces will be provided on the Central Park site and will be available for student use.

Council and the Department of Planning and Infrastructure have made clear their objective to reduce the amount of parking provided on the site due to the site's central location. The proposal of not providing any on-site parking is consistent with this objective and Frasers intention to deliver a sustainable development where use of sustainable forms of transport is encouraged.

In relation to provision for motorcycle and bicycle parking, it is proposed to provide four motorcycle parking spaces and 197 bicycle parking spaces.

5.3 Justifications for Proposed Parking

Feedback from existing operators of student accommodation indicate that most students do not own a car, a large proportion of students studied at nearby educational campuses, and the vast majority of students' travel preference is by public transport. In this regards, it is noted that consultants Cardno as part of their assessment of the proposed student accommodation at 157-163 Cleveland Street, Redfern,

conducted a questionnaire surveys of the travel patterns of students living at an existing student accommodation development known as Urbanest Quay Street at Haymarket.

It is noted that this development has been approved by DoPI in May 2012.

The survey results confirms the experience of the existing operators indicated above. The salient findings of the surveys from the Cardno report are reiterated below:

- *76% of residents studied at either University of Sydney or UTS (within walking distance of the either development site)*
- *For trips with a study purpose, 0% of the respondents travelled via car, 34% used public transport, 65% walked, and 1% travelled via motorbike/scooter*
- *For trips with a work purpose, 0% of the respondents travelled via car, 23% used public transport, 59% walked, 2% travelled via motorbike/scooter, and 2% took a taxi*
- *For trips with a social purpose (going out, dinner etc), 0% of the respondents travelled via car as a driver, 2% travelled as a passenger, 33% used public transport, 61% walked, 0% travelled via motorbike/scooter or bicycle and 4% took a taxi*
- *Bicycles are the vehicle of choice for the respondents; 14% said that they owned or planned to own a bicycle during their stay at urbanest. This compares with 10% for a car and 6% for a motorbike/scooter*
- *Of those that took public transport, approximately 70% outlined that this was their preference as it was either faster, cheaper or more convenient that the other alternatives*
- *14% of respondents said they either owned, or planned to own a bicycle during their residence at Quay Street (note that this compares consistently with the requirements of the draft City of Sydney DCP for student accommodation that bicycle parking should be provided at rates of 1 per 6 beds, or approximately 17% of demand.*
- *Of the residents that owned cars, 40% parked in a paid parking space, and 60% used a friends or relatives space*
- *For 55% of residents, their friends and relatives did not visit by car, and of the visitors who arrived by car, 66% visited once per week or less.*

From the above, it is noted that zero per cent of the respondents travel by car, while in some cases up to 99 per cent of the respondents travel by either public transport or walking. These results relate to the three major trip purposes of study, work and social activities.

It is expected that similar travel patterns would arise from the proposed development on Block 4S given that the subject site is relatively better located than the Quay Street site in terms of proximity and accessiblilty to good quality public transport system, amenities and services.

A potential operator of the proposed student accommodation on Block 4S has indicated, based on their experience, car parking facility would not be required to be provided for student accommodation developments.

In addition, a number of existing student accommodation developments in the vicinity of the site operated without any on-site parking provision for the tenants without any issues. These existing developments include:

- UniLodge Sydney at Corner of Broadway and Bay Streets, Broadway (limited car parking available at extra costs)

- Urbanest Quay Street at 83 Quay Street, Haymarket
- Link 2 at Dwyer Street Sydney.

In addition, Sydney City Council has recently approved the proposed Iglu Central at 1 Regent Street, Chippendale. The approval allows the development of a 98-bed student accommodation building without any on-site parking provision. Council cited by not allowing on-site parking would reduce car dependency. Council also approved in June 2012 a 665 bed student accommodation development at 445 Wattle Street, Ultimo with 86 motorcycle parking spaces and 86 bicycle parking spaces, but no provision for on-site parking. Similarly, DoPI also approved a 461-bed student accommodation development at 157 Cleveland Street, Redfern in May 2012. The development was approved with 135 bicycle spaces and no provision for car parking.

It is noted DoPI also recently approved a student accommodation development within Blocks 3B, 3C and 10 at Central Park. The approval was for 267 beds with five car parking spaces for administration staff only.

From all of the above, it is evident that the travel behaviour of students and the subject site's location (proximity to various public transport options, amenities and services including nearby educational intuitions) is such that it does not necessitate the need to provide car parking facilities for residents living at the proposed development.

In relation to bicycle parking provision, it is proposed to provide 197 bike racks on the ground floor. This represents about 24 per cent (or approximately 1 in 4) of the total students living on the site having access to a bicycle parking space. The proposed provision is consistent with the survey results from the Quay Street student accommodation development.

It is noted that the approved student accommodation development at Wattle Street was approved with bicycle parking provision rate similar to the proposed provision rate i.e. 1 rack per 8 beds.

The survey results from the Quay Street development indicate very low usage of motorcycle/scooter as a travel method (about two per cent) amongst students. This implies low motorcycle ownership amongst the student population.

It is noted that the proximity of the site to existing public transport nodes (including regular bus services along Broadway and Railway Square, and Central Railway Station) and other amenities and services including a new major retail on the site (within Block 2) would not necessitate the use of motorcycles. These are literally located at the door step of the proposed building. In addition, the Central Park development includes commercially operated car share schemes with up to 70 car share pods or vehicles. This is conditioned in the Concept Plan approval (MP 06_0171 MOD 2 Condition B7). The cost to join and use a car share scheme would be more economical than the costs associated with owning and maintaining a motorcycle.

In the light of the above discussion, it is proposed to provide four motorcycle parking spaces. This level of provision compares with Sydney Council's *Central Sydney Development Control Plan 1996*. If a student with a motorcycle moves into the proposed development, alternative arrangements for the parking of the motorcycle would be required e.g. rent a parking space, park at relative/friend's house.

It is noted that some recent approvals for student accommodation developments in the vicinity of the subject site did not include provision for motorcycle parking.

5.4 Proposed Service Vehicle Parking Provision

Two separate temporary loading areas are proposed – one for use by the retail tenancies and the other one for the collection of waste generated by the student accommodation use.

The temporary retail loading dock is proposed to be located on the southern side of Block 4S off Irving Street. It would have one loading bay and can accommodate trucks up to an Australian Standard 8.8m long medium rigid truck. The loading bay incorporates a vehicle turn table to allow vehicles to enter and exit the loading dock in a forward direction. This is proposed to be designed in compliance with requirements set out in AS28980.2:2002.

The second temporary loading area is proposed to be on Central Park Avenue to the east of Block 4S where it is closer to the proposed garbage chute for the student accommodation use. This is so that the garage chute could be modified easily to send waste down into the basement when the temporary loading areas are permanently relocated into the Block 4S basement. Waste from the waste chute would be collected and stored in skips. The skips would be stored in a store room on the ground floor and adjacent to Central Park Avenue. On collection days, the waste skips would be manually moved out to the kerbs next to Central Park Avenue where it would be loaded on to waste collection trucks.

In the longer term, these two temporary loading areas would ultimately be combined and relocated into the basement beneath Block 4S following the completion of Blocks 1 and 4N. However, there is a potential that the temporary loading areas may be relocated into the basement earlier if construction of Blocks 1 and 4N occur during the construction of Block 4S. Block 4S basement loading dock would share the Abercrombie Street driveway with Blocks 1 and 4.

The student accommodation will be provided fully furnished, therefore requirement for removalist vehicles to access the site would be very low. On rare occasions when this is required, removalist vehicles could also use the loading dock off Irving Street and the on-street parking spaces on Central Park Avenue adjacent to the building. Following the relocation of the loading areas into the Block 4S basement, removalist vehicles like other service vehicles to Block 4S would also use the basement loading dock.

6. Other Transport Implications

6.1 Existing Public Transport

The site, being within the Sydney City Centre, is well served by regular bus services along Parramatta Road/Broadway as well as Harris Street with direct services into the CBD and surrounding destinations such as Glebe, Newtown, Abbotsford, Kogarah etc. The nearest bus stop is on Broadway which is literally at the "door step" to the site.

In addition, the site is located approximately within 550m walking distance to Central Railway Station. Central Railway Station services all train lines within the CityRail network, and is a major terminus for suburban as well as interstate rail services. As such, all CityRail railway stations could be accessed from Central.

The site is also located within walking distance of a light rail stop at Central Railway Station. Running from Central Railway Station, the light railway network connects Lilyfield to the inner city areas such as Darling Harbour and Ultimo. It has a peak period frequency of 10 minutes.

The Travel Access Guide prepared for the site (see Appendix A) provides details on the available bus and train services near the site. The Travel Access Guide indicates that the area is very well served by public transport.

6.2 Existing Walking & Cycling Facilities

The site is also very well situated in terms of provision for walking and cycling. There are a number of strategic and local cycling routes and links in the vicinity of the site.

Public footpaths are currently provided along the majority of roads in the local network. Fully constructed footpaths are available on both sides of Broadway in the vicinity of the site with generous width. Similarly, along Harris Street, Regent Street, and Abercrombie Street fully constructed pedestrian footpaths are also available on both sides of the streets. The pedestrian network continues into the residential streets to the south and west of the site as well as across Broadway into the area to the north of the site.

There is an existing on-road cycle path that runs along Wilson Street near Newtown that joins on to Shepherd Street to continue along Broadway near Mountain Street before heading north along Jones Street towards Pyrmont Bay. The section along Broadway is provided as off-road shared pedestrian/cycle path.

A combination of other on-road and off-road cycle links provide access to the surrounding suburbs.

In addition, on-road cycling is also permissible on the local road network where traffic volumes are generally considered to be moderate.

6.3 Existing Bicycle Parking Provision

City of Sydney Council provides free bicycle parking spaces on most streets within its local government area. They are provided either as bicycle parking rings or U-rail parking. There are a number of bicycle parking rings located on Broadway within the immediate vicinity of the site.

6.4 Proposed Cycling and Walking Arrangements

It is anticipated that the development would attract some additional walking and cycling trips. However, it is considered that the development would have minimal impact on existing walking and cycling facilities on the surrounding road network.

The following enhancements to pedestrian and cycle networks are proposed as part of the amended Concept Plan for the overall Central Park development site.

Pedestrian crossing facilities will be provided across the main roads surrounding the site, namely Broadway, Abercrombie Street and Regent Street. Pedestrian pathways will be provided on both sides of all internal streets within the site. A shared pedestrian/cycleway link to Wellington Street would be provided through the proposed park. This shared pathway would continue through the park to connect to Central Park Street (Balfour Street). A raised pedestrian threshold is also proposed across O'Connor Street adjacent to the main park at the centre of the overall site.

The provision of bicycle facilities through the site has accounted for external linkages to existing and proposed bicycle routes as part of the City of Sydney Council's Bicycle Plan.

A shared pedestrian/cycleway will be provided through the park from Wellington Street to Balfour Street. Recreational cyclists will utilise the shared laneways to access Central Park Avenue (Tooth Avenue) before making their way to Broadway. Non-recreational cyclists will utilise the sign posted cycle route through the site along Balfour Street.

This will create a permeable pedestrian/cycle network through the Central Park site which will be fully accessible by local people and people traversing the site. This accessibility will thus enhance existing pedestrian/cycle accessibility between Chippendale and the node of public transport represented by Railway Square/Central Station.

In addition, Council's has plans for an off road shared pedestrian/cycle pathway along the eastern side of Abercrombie Street.

Figure 2.1 also shows the above amended Concept Plan proposed additional pedestrian and cycle facilities.

In addition, the proposed overall Central Park development proposes to provide bicycle parking spaces in accordance with the requirements set out in Council's LEP and DCP.

6.5 Future Public Transport Patronage

It is expected that employees working and residents living on the site would make use of the existing available public transport services. However, as the site is well serviced by both bus and heavy rail services, it is not expected that it would require further augmentation to enhance existing public transport service in the area.

Further, any improvement to public transport services would be a matter for the consideration of the Ministry of Transport as part of its long term strategic planning and implementation of public transport services.

7. Green Travel Plan

7.1 Introduction

Transport is a necessary part of life, but it has economic, public health and environmental consequences. The transport sector is one of the fastest growing emissions sectors in Australia, and therefore is one of the key opportunities for reducing greenhouse gases. As well as delivering better environmental outcomes, providing a range of travel choices with a focus on walking, cycling and public transport will have major public health benefits and will ensure a strong and prosperous community.

The physical infrastructure being provided as part of the development is only part of the solution. A Green Travel Plan will ensure that the transport infrastructure, services and policies both within and external to the site are tailored to the users and co-ordinated to achieve the most sustainable outcome possible.

7.2 What is a Green Travel Plan

A Green Travel Plan is a package of measures aimed at promoting sustainable travel and reducing reliance on the private car. It is not designed to be 'anti-car', but will encourage and support people's aspirations for carrying out their daily business in a more sustainable way. Travel Plans can provide both:

- measures which restrict car use (disincentives or 'sticks')
- measures which encourage or support sustainable travel, reduce the need to travel or make travelling more efficient (incentives or 'carrots').

The Travel Plan would promote the use of transport, other than the private car, for choice for travel to and from the site, which is more sustainable and environmentally friendly.

Indeed, there are a range of "non-car" transport options that are available at the site which have been described in this report.

7.3 Key Objectives

The aim of the Green Travel Plan is to bring about better transport arrangements for residents living on the site. The key objectives of the Travel Plan are:

- to encourage walking
- to encourage cycling
- to encourage the use of public transport
- to reduce the use of the car, in particular single car occupancy
- where it is necessary to use the car, encourage more efficient use.

It is the intention therefore that the Travel Plan will deliver the following benefits:

- enable higher mode share targets to be achieved
- contribute to greenhouse gas emission reductions and carbon footprint minimisation
- contribute to healthy living for all

- contribute to social equity and reduction in social exclusion
- improve knowledge and contributes to learning.

Green travel plans are historically the most common type of travel plan in the UK and the USA as regular journeys such as the daily commute to work tend to be the easiest to influence.

It is difficult at this stage without knowing the type and location of the occupants to prepare a detailed Green Travel Plan. It would be reasonable for a condition to be imposed on a development consent which would ask the developer to design and implement a plan prior to occupation of the site and Frasers (and any future owners of the buildings) will commit to providing such a Travel Plan.

7.4 Site Specific Measures

As stated earlier, it is difficult to be specific about the measures that might be introduced until the demographics of the occupants are fully understood.

However, it is likely that the Travel Plan at this site could include the following measures:

- compliance with the stringent parking controls applicable to the site
- creation of street networks and associated cycle ways, footpaths and links to encourage cycling and walking
- provision of a TAG (the proposed guide is contained in Appendix A) which would be given to every new occupant of the dwellings (this information will need to be updated prior to occupation to ensure that the most up to date information is available to new residents)
- public transport information boards to make residents and visitors more aware of the alternative transport options available (the format of such information boards would be based upon the travel access guide)
- provision of free 'My Zone Quarterly' public transport tickets for the initial occupation of the dwellings so that residents will be encouraged to make public transport their modal choice from the day they occupy their into the property
- In accordance with NBN requirements, all properties will be provided with high quality telecommunication points which will provide residents with the opportunity to work from home thus reducing the need to travel.
- provision of bicycle parking spaces both for residents and for visitors to the site
- a half yearly newsletter will also be provided to every household for up to two years after occupation bringing the latest news on sustainable travel initiatives in the area.
- provision of half yearly membership to a car sharing.

All of these measures would need to be in place from 'Day One' as people will establish habits of a lifetime from day one.

Frasers has therefore put together the framework of a Travel Plan which would form the basis of the formal document. Future building owners will also make a commitment in how the plan will be practically managed.

7.5 Travel Plan Management

There is no standard methodology for this, but it is suggested that the tasks below be undertaken:

- Appoint a company travel plan co-ordinator – as stated above, this is only likely to involve an additional task for somebody already holding another post. They will be responsible for issuing information to residents about transport initiatives.
- Monitor the Travel Plan to ensure that it is achieving the desired benefits and modify it if required.
- If the targets have not been met, the operator will be expected to introduce additional measures to try and achieve the required modal shift. It will not be possible at this stage to state what these additional measures might involve as this will be dependent upon the particular circumstances prevailing at that time.

There are however, several keys to the successful development and implementation of a Travel Plan. These include:

- Communications – good communications are an essential part of the Travel Plan. It will be necessary to explain the reason for adopting a plan, promote the benefits available and provide information about the alternatives to driving alone.
- Commitment – Travel Plans involve changing established habits or providing the impetus for people in new developments to choose a travel mode other than private car use. To achieve co-operation it is essential to promote positively the wider objectives and benefits of the Plan. This commitment includes the provision of the necessary resources to develop and implement the Plan, beginning with the introduction of the 'carrots' or incentives for changing travel modes.
- Consensus – it will be necessary to obtain broad support for the introduction of the Plan from the residents.

Once the Plan has been adopted it is essential to maintain interest in the scheme. Each new initiative in the Plan will need to be publicised and marketing of the project as a whole will be important. Once up and running the scheme needs regular new publicity drives to attract new takers e.g. as part of a resident newsletter at say every six months. This will be the responsibility of the Travel Plan Co-ordinator.

As not all of the initiatives can be implemented prior to the occupation of the buildings, it is proposed that two additional milestones are set:

- Within three months of the first occupation of the building, a travel survey will be conducted. The results of the travel survey will be analysed and used to determine if measures are required to cater for existing demand and also encourage modal shift away from the private car. The measures will be dependent on the needs of the occupants.
- Within six months of occupation the full travel plan will be developed and include:
  - results of the travel survey
  - recommended travel plan measures including how they will be adopted
  - agreed procedure and timescales for implementation
  - details of future travel plan monitoring and review.

Full implementation of the plan will then proceed.

7.6 Travel Access Guide

A Travel Access Guide (TAG) provides information to residents and visitors on how to travel to the site using sustainable transport modes such as walking and public transport. The information is presented visually in the format of a map showing the site location and nearby transport nodes highlighting available pedestrian and cycle routes. The information is usually presented as a brochure to be included in a welcome pack or on the back of company stationary and business card.

A preliminary TAG has been specifically prepared for the subject proposed development. This is contained in Appendix A.

7.7 Summary

Future building owners/managers should be required to develop and utilise a Travel Plan to improve the use of sustainable transport by the tenants living in the building. Although it is difficult to predict what measures might be achievable until the building is occupied, the above measures provide a framework for the development and implementation of a future Travel Plan for the site.

It is considered that it is appropriate that any development consent is conditioned to ensure that a Travel Plan is implemented prior to occupation of the development.

8. Summary & Conclusions

This report has been prepared to accompany a project application for a proposed development to provide student accommodation within Block 4S at the Central Park site. This is one of three reports accompanying three concurrent applications to the Department Planning and Infrastructure in relation to the Central Park site.

The proposed development would provide a total of 23,763m^2 of gross floor area comprising 22,564m^2 of student accommodation and 1,199m^2 of non residential (retail) uses. The proposed development would accommodate 688 individual apartments with 826 beds.

It is not proposed to provide any car parking spaces to serve the development for reasons stated in this report. Instead, four motorcycle parking spaces and 197 bicycle parking spaces are proposed to serve the proposed development.

The traffic assessment for the approved Concept Plan application estimated the entire site would generate some 493 vph. This overall development traffic included 117 vph arising from the proposed developments on Blocks 1 and 4 (including Block 4S). Subsequent modifications to Blocks 2 and 5 resulted in the overall development traffic increasing from 493 vph to 535 vph.

The proposed development for student accommodation on Block 4S is not expected to generate any development traffic.

It is estimated that the proposed developments within Blocks 1 and 4 would generate about 127 vph or a net increase of about 10 vph. Including the additional 5 vph arising from the recent proposed modifications to Kensington Precinct, it is considered that the additional traffic (i.e. a net increase of 15 vph) arising from the proposed modifications within Blocks 1 and 4 would have negligible traffic effects. The surrounding road network would continue to operate well in the future as originally planned.

On the basis on the expected travel patterns of residents living in a student accommodation development and the close proximity of the site to nearby amenities and services including educational facilities, it is not proposed to provide any car parking facilities for students. Instead, it is proposed to provide 197 bicycle parking spaces and four motorcycle parking spaces. This is consistent with a number of (existing and approved proposed) nearby student accommodation developments.

Two separate temporary loading areas are proposed – one for use by the retail tenancies and the other one for the collection of waste generated by the student accommodation use. The temporary retail loading dock is proposed to be located on the southern side of Block 4S off Irving Street. Waste collection would be conducted within indented parking bays on Central Park Avenue where waste bins would be moved to the kerb on collection day from a storage area adjacent to Central Park Avenue.

These two temporary loading areas would ultimately be combined and relocated into the basement beneath Block 4S following the completion of Blocks 1 and 4N.

Overall, the traffic and parking implications of the proposed development are considered to be satisfactory.

Appendix A

Travel Access Guide

Central Park Block 4S – Travel Access Guide

Transport Services and Facilities

Train

Central Railway Station, located 500 metres away from the site, is one of the largest railway station and transport interchange in Australia. It serves all Sydney suburban, intercity, country and interstate trains except for the Cumberland Line and the regional Hunter Line.

	Frequency – AM Peak		Frequency – PM Peak	
	To city	*From City*	*To city*	*From City*
Suburban Line				
Eastern Suburbs & Illawarra Line	10 min	10 min	10 min	10 min
Bankstown Line	10 min	10 min	10 min	10 min
Bankstown Line	5 min	5 min	5 min	5 min
Airport & East Hills Line	5 min	5 min	5 min	5 min
South Line	5 min	5 min	5 min	5 min
North Shore/ Western Line	5 min	5 min	5 min	5 min
Carlingford Line	30 min	40 min	30 min	30 min
Northern Line	15 min	15 min	15 min	15 min
Intercity Line				
South Coast	15 min	30 min	30 min	15 min
Southern Highlands	30 min	15 min	30 min	15 min
Blue Mountains	15 - 30 min	20 - 40 min	45 min	15 - 30 min
Newcastle & Central Coast	15 - 20 min	30 min	20 - 40 min	15 min

Bus

Route No.	Service Route	Frequency – AM Peak	Frequency – PM Peak
M30	Mosman to Sydenham	10 min	10 min
352	Marrickville to Bondi	15 – 25 min	20 min
422	City to Kogarah	20 min	15 min
423/ L23	City to Kingsgrove	10 min	15 min
426	City to Dulwich Hill	10 – 20 min	5 – 15 min
428/ L28	City to Canterbury	10 – 20 min	5 – 15 min
431	Millers Point to Glebe Point	5 – 10 min	5 – 15 min
433	Balmain & Glebe Point to City	5 – 15 min	5 – 15 min
436	City to Chiswick	10 – 20 min	10 – 25 min
438/ L38	City to Abbotsford	5 – 15 min	5 – 15 min
439/ L39	City to Mortlake	15 – 30 min	15 – 30 min
440	City to Rozelle	5 min	5 – 15 min
461	City to Burwood	10 min	10 – 20 min
470	Lilyfield to City	5 – 15 min	5 – 15 min
480/ 483	City to Strathfield Station	10 – 20 min	10 – 20 min

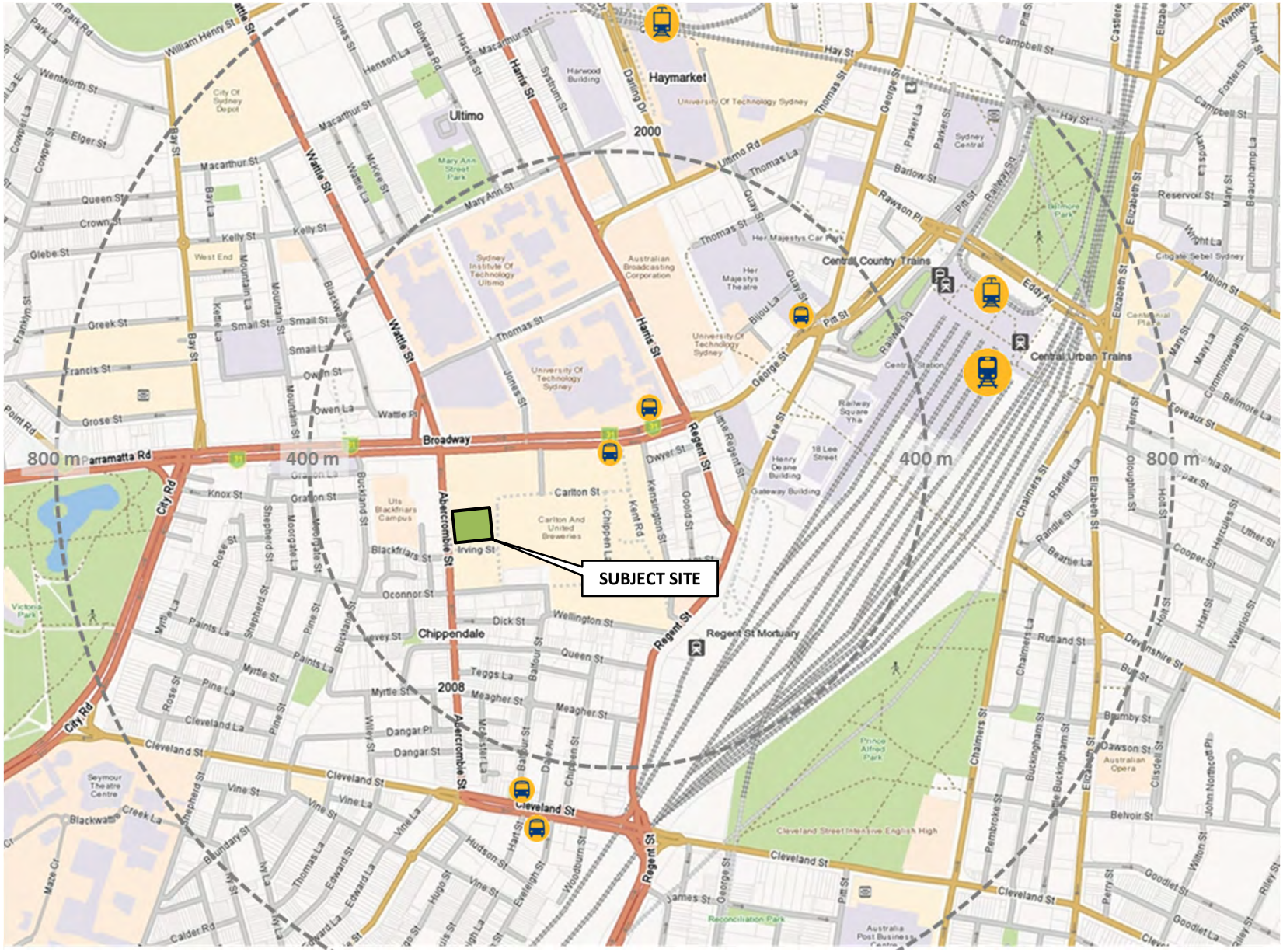
Light Rail

Light Rail operates every 10-15 minutes on day time from Central Station to Lilyfield. Service to Lilyfield finish at 11pm and overnight service is available from Central Station to The Star Casino for every 30 minutes

Wheelchair accessible buses operate on some routes. Call Sydney Buses or the Transport Infoline for details.

The closet cycle routes run along Jones Street, Shepherd Street and Meagher Street. The cycle routes are connected to Sydney CBD, inner west and eastern suburbs.

Note: See attached maps of ***Existing Public Transport Nodes***, ***Existing Bus Routes*** and ***Existing Cycle Network***.



Legend

- Train Station
- Light Rail stop
- Bus stop

Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6243 4826
Adelaide 08 8113 5383
Gold Coast 07 5510 4814
Townsville 07 4722 2765

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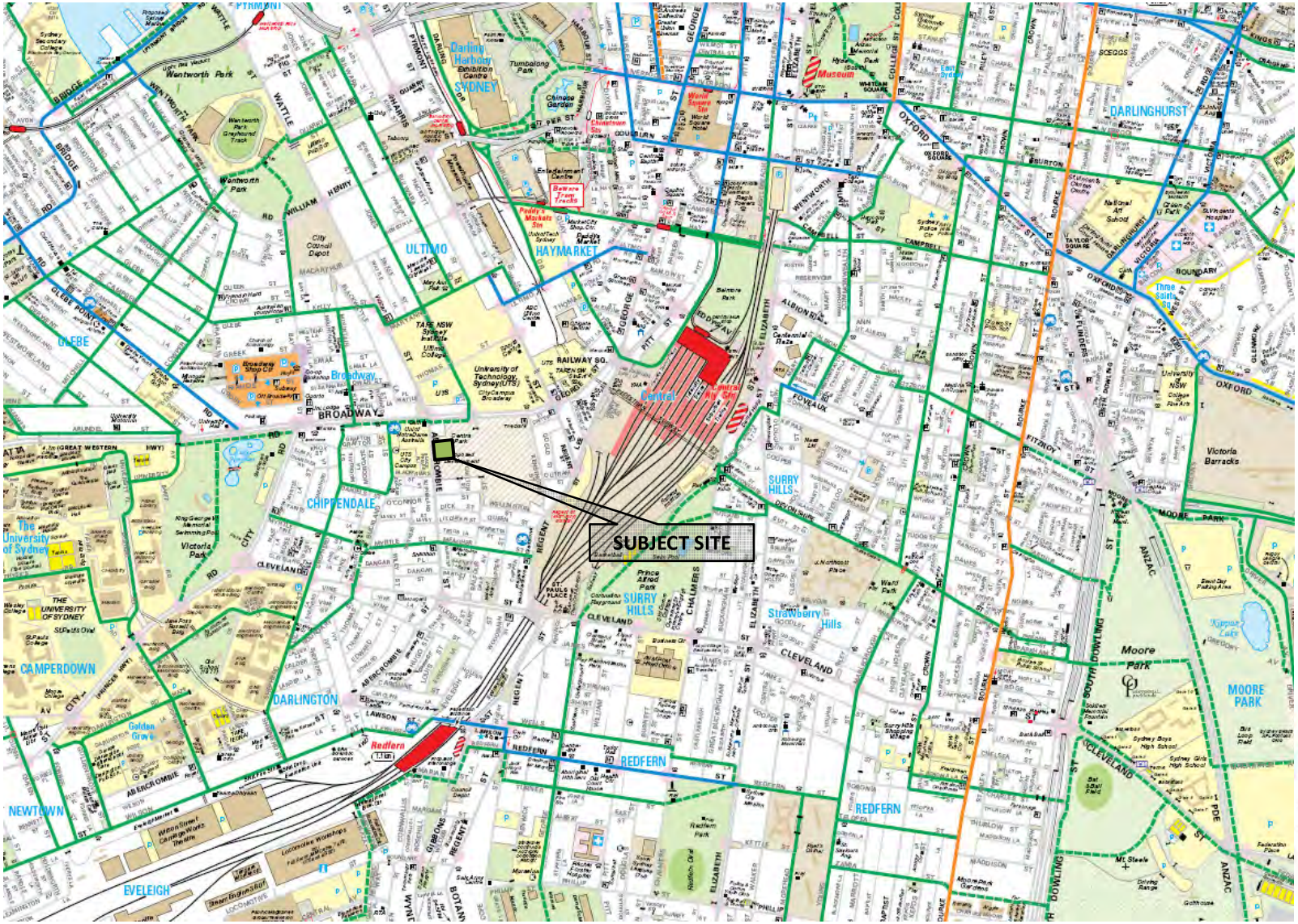
EXISTING PUBLIC TRANSPORT NODES

DATE:
2012-12-20

DRAWING NO.
12S1395000 FIG-01-01



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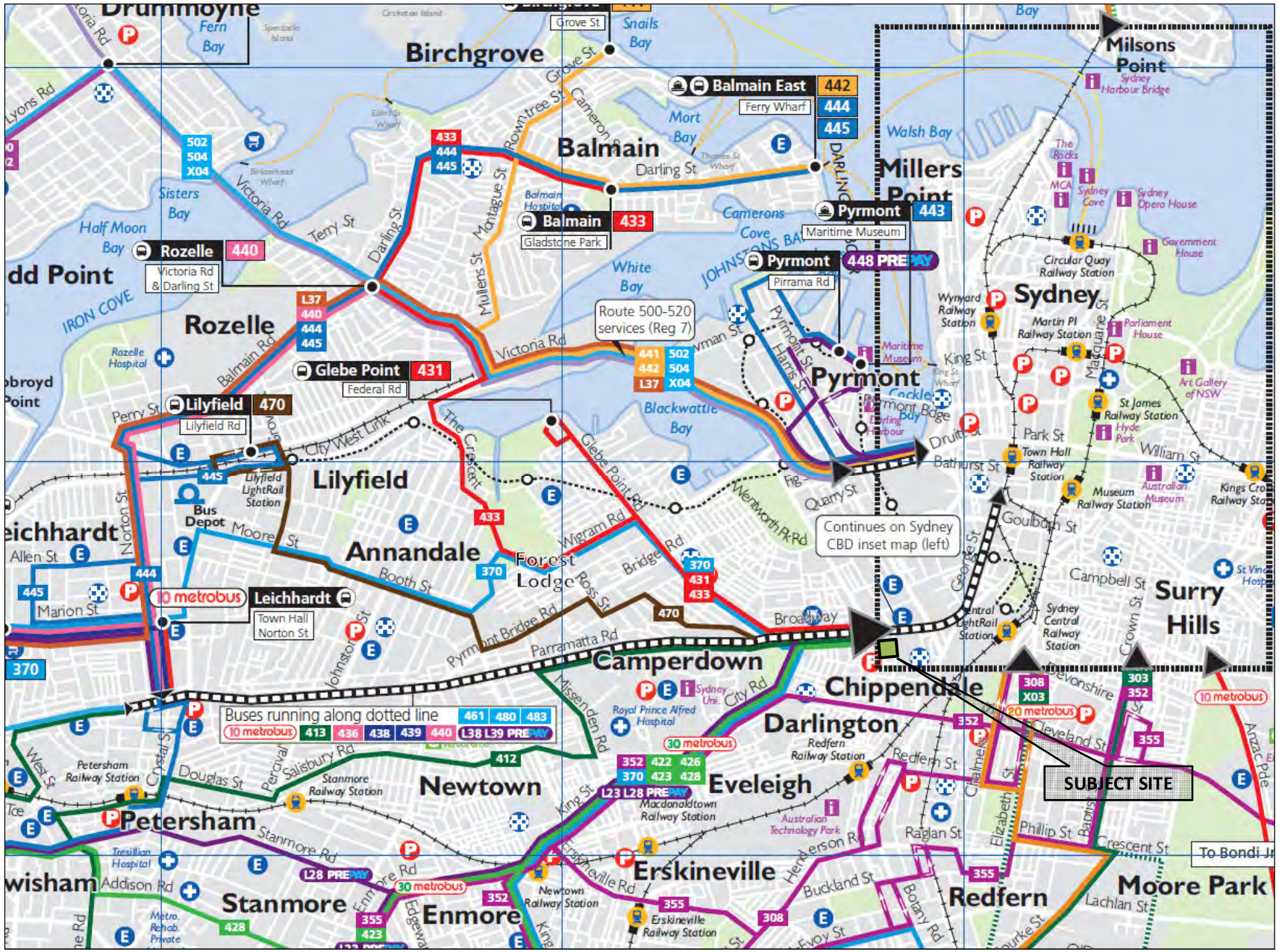
EXISTING CYCLE NETWORK

DATE:
2012-12-20

DRAWING NO.
12S1395000-FIG-01-02



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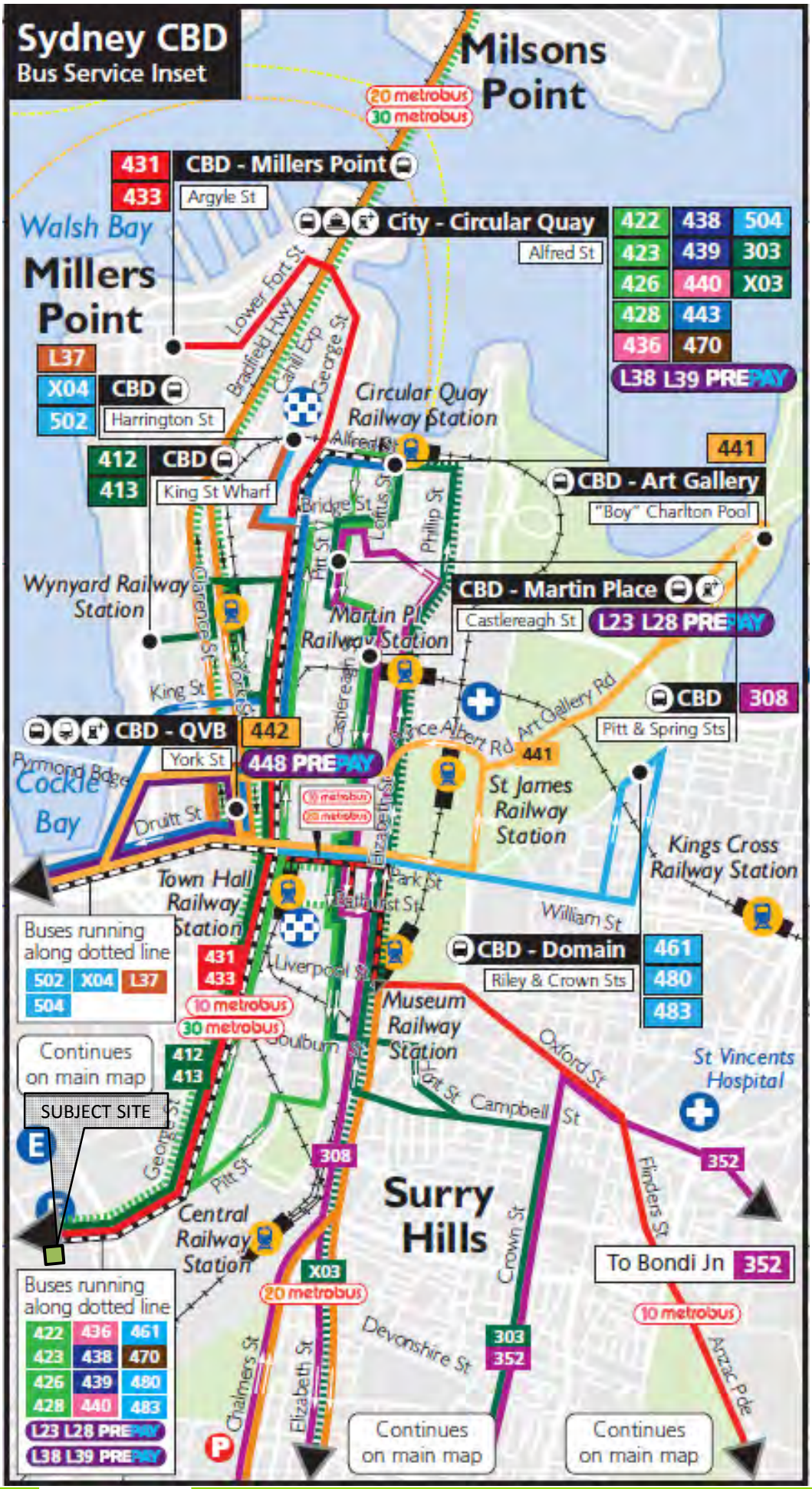
EXISTING BUS ROUTES

DATE:
2012-12-20

DRAWING NO.
12S1395000-FIG-01-03



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12S1395000 – CENTRAL PARK, BLOCK 4S: PROPOSED STUDENT ACCOMMODATION
EXISTING BUS ROUTES – SYDNEY CBD

DATE:
2012-12-20

FIGURE NO.
12S1395000-FIG-01-04

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