MODIFICATION REQUEST:
CBD and South East Light Rail
Various Design Modifications (MOD 4)

Secretary's
Environmental Assessment Report
Section 115ZI(2) of the
Environmental Planning and Assessment Act 1979

April 2016

Cover Photograph: Indicative visual perspective (looking west toward High Street) to the revised Randwick terminus stop (Source: TfNSW, 2016).

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NSW Government
Planning & Environment

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EXECUTIVE SUMMARY

The Proposal

The CBD and South East Light Rail project was declared Critical State Significant Infrastructure on 25 June 2013. The project was approved by the Minister for Planning on 4 June 2014. Transport for New South Wales proposes to modify the approved project by:

- relocating and redesigning the Randwick Terminus from High Cross Park to the eastern end of High Street;
- reconfiguring the UNSW High Street stop, with provision of a new access lane from Arthur Street to properties on High Street as a result of the new configuration;
- changing the local traffic network to accommodate:
  - a one-way westbound section along High Street between Botany Street and Wansey Road;
  - a one-way eastbound section along High Street between Clara Street and Avoca Street;
  - minor changes to bus routes and bus stops, including extension of the afternoon (southbound) peak period bus stop along Belmore Road and provision of a new northbound morning bus stop zone on the western side of Avoca Street;
  - removal of parking along Arthur Street and installation of new traffic light signals;
  - closure of the slip lane from Belmore Street southbound to Avoca Street;
  - conversion of the existing roundabout at the intersection of Barker Street and Botany Street to a signalised intersection; and
- relocating the High Cross Park substation.

Two additional administrative modifications are also sought, including:

- to remove reference to avoiding direct impact to the curtilage of Wansey Cottage in condition B59; and
- to resolve an inconsistency of out of hours works in conditions B89(b) and B4.

The Department publicly exhibited the proposal from 27 November 2015 to 11 December 2015 (15 days) on its website and at a number of locations. A total of 116 submissions were received.

Department's Consideration

The key issues considered in the Department's assessment included operational traffic and changes to transport; impacts to property access along High Street; and noise and vibration.

The Department supports the proposed modification and considers that any residual impacts can be managed to acceptable levels subject to recommended conditions that include:

- consultation with UNSW and affected businesses on the design of the new Arthur Street laneway and surrounding lands;
- consultation with affected landowners to reinstate gated access for impacted High Street businesses;
- inclusion of the intersection of Barker and Botany and other newly signalised intersections in the Network Management Plan required by condition B26; and
- salvage and recycling of building elements of heritage items and integration of an interpretation plan with the Wansey Road/Alison Road stop.

Conclusion and Recommendation

The terminus location will provide a number of benefits including a reduction in traffic impacts at the Avoca Street and Belmore Road intersection, improved visual and landscape character outcomes, fewer impacts to trees in High Cross Park, and retaining the heritage significance of the park. The Department considers that the modifications are unlikely to increase the environmental impacts of the approved project, and can be managed through revised conditions and mitigation measures.

1. BACKGROUND

1.1 Project Approval

The CBD and South East Light Rail (CSELR) project was identified as a key priority transport infrastructure project in the Government's *Long Term Transport Master Plan* and was subsequently declared critical State Significant Infrastructure by the then Minister for Planning and Infrastructure in June 2013. Planning approval of the project was granted by the then Minister for Planning on 4 June 2014.

1.2 Project Description

The CSLER project consists of approximately 13 kilometres of new light rail track between Circular Quay and Randwick/Kensington providing an efficient mass transit system and improving access to jobs, residences, educational, health, entertainment and sporting facilities. The key components of the project include:

- 19 light rail stops;
- a pedestrian zone on George Street (between Hunter and Bathurst Streets);
- approximately 12 substations to provide power for the light rail vehicles (LRVs); and
- an LRV stabling facility in Randwick, and a maintenance depot at Lilyfield.

The proposal would result in a new high frequency light rail service departing every two to three minutes during peak periods within the CBD; with services operating every five to six minutes between Moore Park and the Randwick and Kingsford branches. The project location and layout is shown on **Figure 1**.

The original conditions of approval require a range of management plans to manage impacts during construction and operation; the establishment of stakeholder reference groups; design performance standards for the Randwick stabling facility; and mitigation measures such as noise attenuation for residents in Surry Hills.

1.3 Subsequent Modifications

The project has been modified three times subsequent to the Minister's approval. The scope of these modifications is summarised in **Table 1**.

Table 1: Summary of Modifications

Modification	***Description of Modification***
SSI-6042 MOD 1 approved 17 February 2015	• increase in light rail passenger capacity, LRV size and platform length; • provision of wire-free infrastructure within the CBD; • amended design for the Grosvenor Street stop; • removal of a light rail stop at World Square; • amended design for the Moore Park stop; • realignment of the light rail and stops along Alison Road; • flood mitigation changes at Centennial Park; • realignment of the light rail at the Anzac Parade/Alison Road intersection; • revised construction methodology for the tunnel under Anzac Parade; • increased height of the Randwick stabling facility; and • relocation of substations
SSI-6042 MOD 2 approved 17 March 2015	Amendment to the definition of construction to enable some low impact works to commence ahead of pre-construction commitments being completed.
SSI-6042 MOD 3 approved 30 September 2015	Minor amendment to condition B24 requiring preparation of property access plans to ensure that best endeavours are demonstrated to obtain landowner agreement

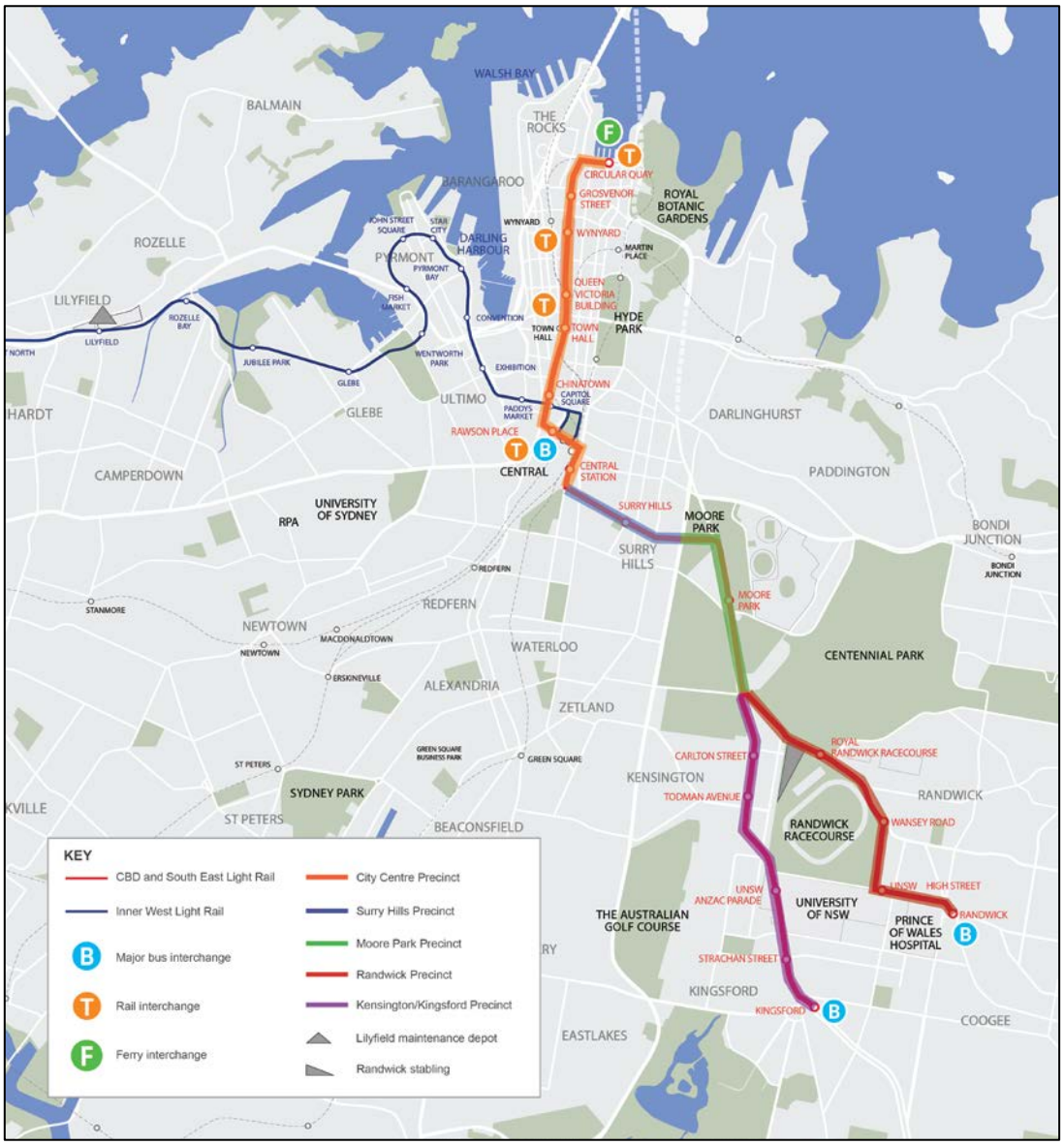

Figure 1: Project Route *(Source: TfNSW)*

2. CURRENT MODIFICATION

2.1 Description of Proposed Modifications

Transport for NSW (TfNSW) has submitted a modification request (SSI 6042 MOD 4) under section 115ZI of the *Environmental Planning and Assessment Act, 1979* (the Act) to modify the Minister's approval for the CSELR. The modification proposal evolved from further design investigation and ongoing consultation with stakeholders. The modification request proposes the following changes:

- provision of a new access lane from Arthur Street to provide access to affected properties on High Street (**Figure 2**);
- modifications to the High Street alignment including provision of track crossovers to the west of the relocated Randwick terminus stop, split alignment on approach to the new terminus location and movement of the alignment north of its approved location to accommodate the UNSW High Street stop safety and capacity changes; and to minimise electromagnetic interference/field (EMI/EMF) impacts to the Lowy Cancer Research Centre (**Figure 3**);
- relocation of the stop from High Cross Park to the eastern end of High Street, west of the intersection of High Street and Avoca Street (**Figure 4**);

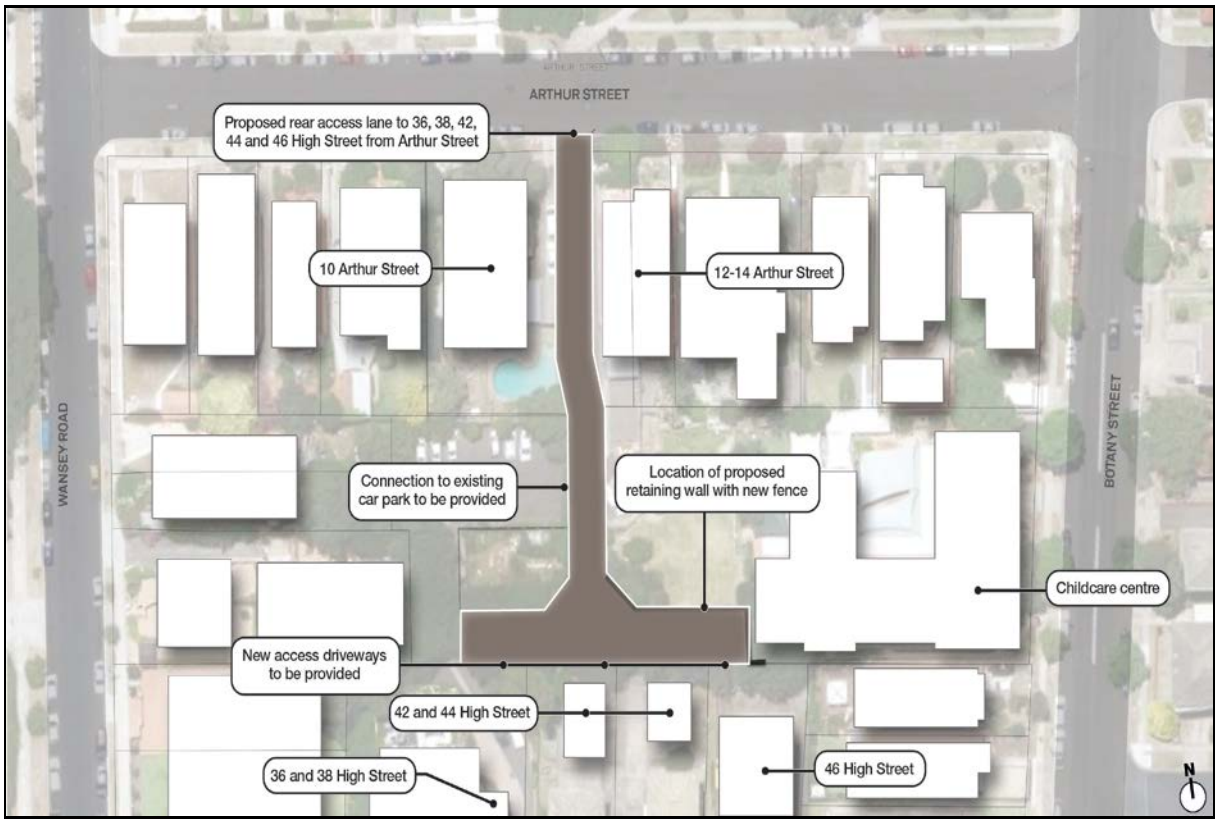

Figure 2: Proposed alternative access for affected High Street properties (*Source: TfNSW, 2016*)

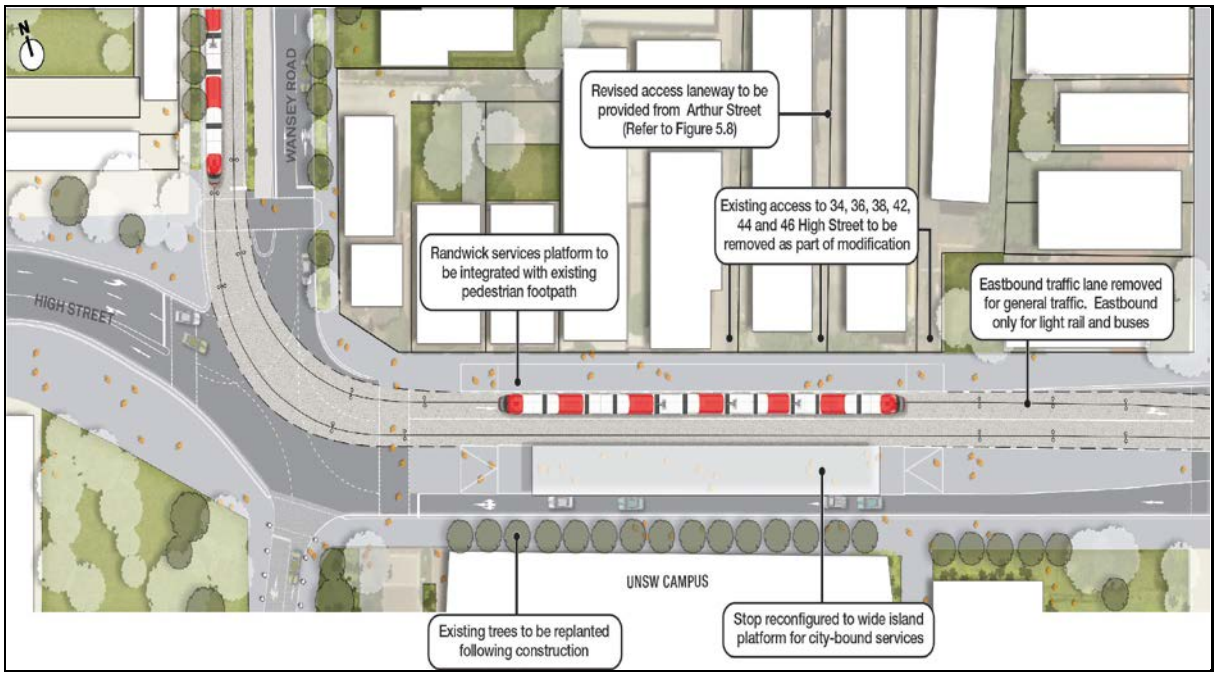

Figure 3: UNSW High Street stop reconfiguration (*Source: TfNSW 2016*)

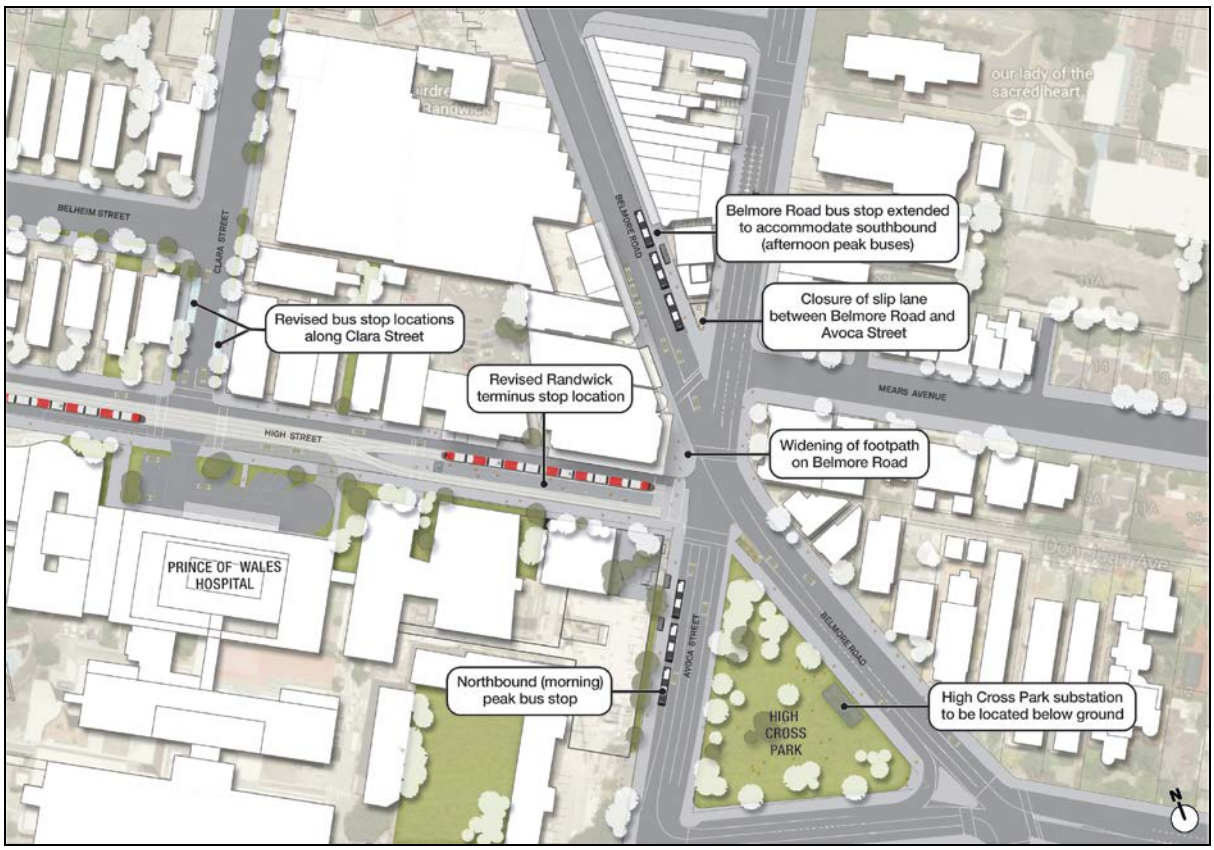

Figure 4: Revised Randwick Terminus Location (*Source: TfNSW, 2016*)

- changes to the local traffic network to accommodate the modification, including:
    - at the eastern end of High Street, between Clara Street and Avoca Street the westbound traffic lane would be removed. A single, eastbound traffic lane would be maintained for general traffic;
    - on High Street between Wansey Road and Botany Street the eastbound traffic lane would be removed. A single westbound traffic lane would be retained for general traffic;
    - minor changes to bus routes and bus stops, including extension of the afternoon southbound peak period bus stop along Belmore Road and a new northbound morning bus stop zone on the western side of Avoca Street (**Figure 4**);
    - signalised intersections at Arthur Street/ Botany Street and Arthur Street/Belmore Road;
    - conversion of the existing roundabout at the intersection of Barker Street and Botany Street to a signalised intersection;
- revised location and arrangement of the High Cross Park substation (**Figure 5**);
- to remove reference to avoiding direct impact to the curtilage of Wansey Cottage in condition B59 (**Figure 6**); and
- rectification of an inconsistency in relation to approval of out of hours works.

The Proponent has provided justification for each of the design modifications in **Table 3.1** of the Modification Report. An assessment of the proposed design modifications is provided in **Chapter 5** below.

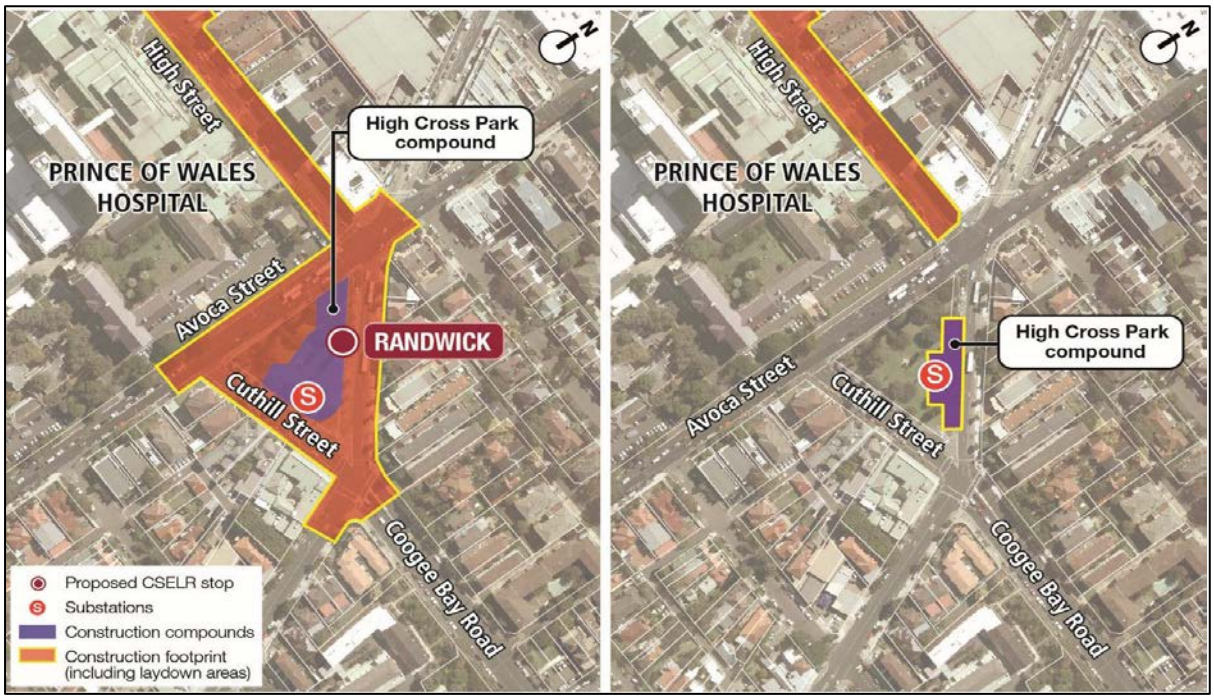

Figure 5: Approved (left) and Revised High Cross Park compound and substation location (right) (*Source: TfNSW, 2016*)

Figure 6: Location of Wansey Cottage (*Source: TfNSW, 2016*)

3. STATUTORY CONTEXT

3.1 Modification of the Minister's Approval

Pursuant to Section 115ZI of the Act, the Proponent is seeking formal approval from the Minister for Planning for the modification of SSI -6042 approval granted on 4 June 2014 and subsequently modified on 17 February 2015 (SSI-MOD 1); 17 March 2015 (SSI-6042 MOD 2) and 30 September 2015 (SSI-6042 MOD 3).

A Section 115ZI modification request is appropriate as the proposed modification is not consistent with the SSI approval, but does not represent a radical transformation of the project.

3.2 Delegated Authority

On 16 February 2015 the Minister for Planning delegated his powers and functions under Part 5.1 of the Act to senior executive officers in cases where:

- there are less than 25 public submissions in the nature of an objection;
- the relevant council has not made an objection; or
- a political donation disclosure statement has not been made.

This modification request received more than 25 public submissions in the nature of an objection and therefore does not meet the terms of the above delegation. The modification must therefore be determined by the Minister for Planning.

4. CONSULTATION

4.1 Modification of the Minister's Approval

Under Section 115ZL of the Act, the Secretary is required to make the modification request publicly available. The Department publicly exhibited the CSELR Modification 4 proposal from 27 November 2015 to 11 December 2015 (15 days) on the Department's website and at the following exhibition locations:

- Department of Planning & Environment, Information Centre;
- City of Sydney Council, Customer Service Centre;
- Randwick City Council, Customer Service Centre;
- Leichhardt Municipal Council, Customer Service Centre;
- Transport for NSW, Information Centre;
- Randwick TAFE; and
- Nature Conservation Council of NSW.

The Department also advertised the public exhibition in the Southern Courier on 24 November 2015, and notified State and local government authorities directly in writing.

The Department received 116 submissions during the exhibition period including four from public authorities. A summary of the issues raised in submissions received is provided below. The Department has considered the issues raised in the submissions in its assessment of the proposed modification, as detailed in **Chapter 5**.

4.2 Agency, Council and Educational Facilities Submissions

Ten submissions were received from government agencies, councils and educational facilities. This included:

- four submissions public authorities - none objected to the proposed modification and two raised no issues;
- submissions from Randwick City Council and Leichhardt Municipal Council. Leichhardt Council raised no issues;
- the University of New South Wales (UNSW) generally supports the proposed modification but provided further issues for comment; and
- the Foundation for Education and Training Limited (Creston and Kenvale Colleges) made a detailed submission. Creston and Kenvale Colleges also provided separate additional submissions.

The key issues raised in public authority and educational institution submissions are listed in **Table 2**.

Table 2: Key issues raised by public authorities or entities

Authority/Entity	*Key Issues Raised*
Randwick City Council	• does not support the restriction of property access on the north side of High Street between Avoca Street and Clara Street to light vehicles only; • requests consideration of pedestrian movements, particularly on Belmore Road pedestrian crossings, and on general traffic flow; • seeks clarification regarding the loss of parking spaces due to the modification; • requests consideration of dedicated cycle lanes along High Street; • concerned regarding impacts to High Cross Park from excavation for the substation; • requests the 7 trees to be removed in High Cross Park to be relocated; • supports a site specific Construction Noise and Vibration Impact Statement in relation to the new laneway off Clara Street; • recommends archival recording of Wansey Cottage; and • requests the undergrounding of overhead power lines along High Street.
OEH – Heritage Division	• recommends that the mitigation measures in the 'Wansey Cottage Heritage Report' prepared by GML Heritage be conditioned.
Department of Primary Industries	• dewatering of the underground substation and connection is likely to be required, and recommends that monitoring piezometers are established in advance.
UNSW	• supports changes to the UNSW light rail stop and associated traffic changes; • requests reconsideration of the signalisation of Gate 9 High Street; • recommends ongoing consultation with TfNSW on stop design, safety and service frequency and capacity; • concerned with the delay in the Safety Audits and Stop Access and Design plans, and the proposed cycle route interface at the intersection of Wansey Road and High Street; and • requested further consideration regarding the pedestrianisation of High Street.
Foundation for Education and Training Limited (Creston and Kenvale private colleges)	• objects to the proposed modification; • unacceptable impacts to its business function; • concerned they will bear substantial design costs to accommodate the Arthur street alternative access; • concerned with the potential security issues created by increased through-traffic from Arthur Street accessing the High Street stop and UNSW through their property; and • lack of consultation.

4.3 Public Submissions

A total of 106 submissions were received from the public, including a petition with 36 signatures from "Save Clara Street". Submissions were also received from Tigger's Childcare Parents' Committee and Keeping Randwick's Trees.

The key issues raised in public submissions are listed in **Table 3**.

Table 3: Key issues raised in public submissions

Issue	***Proportion of submissions (%)***
Access to public and private properties	75
Removal of trees at High Cross Park and Alison Road	70
Noise and vibration impacts to private property	66
Impact to, and the loss of open space	65
Impacts to Tiggers Childcare Centre, including loss of garden	64
Traffic concerns including impacts to High Street and Arthur Street	62
Air pollution in the High Street vicinity	59
Contamination impacts, including impacts to Tiggers Childcare Centre garden	56
Safety of pedestrians and security of Kenvale and Creston colleges	12
Loss of parking, including spaces at Kenvale and Creston colleges	8

The Department has considered these issues in its assessment of the proposal as provided in the following sections of the report.

5. ASSESSMENT

The Department considers the key issues to be operational traffic and transport changes, and access changes to residents, tenants and businesses on High Street and Botany Street.

5.1. Local Traffic Network and Parking

Issues

A number of changes to the local traffic and bus network are required, primarily on High Street, to accommodate relocation of the UNSW High Street stop and Randwick terminus. The High Street changes include:

- at the eastern end between Clara Street and Avoca Street the westbound traffic lane would be removed to accommodate the new terminus location. A single, eastbound traffic lane would be maintained for general traffic;
- between Botany Street and Wansey Road the eastbound traffic lane would be removed to accommodate the reconfigured UNSW High Street stop. A single westbound traffic lane would be retained for general traffic;
- minor changes to bus routes and bus stops are also required:
  - relocation of the west bound bus stop adjacent the Randwick Children's Hospital around the corner to Clara Street; and
  - diversion of buses using High Street between Clara Street and Avoca Street to Clara Street and Arthur Street to access Belmore Road and Avoca Street.

TfNSW proposes an extension of the afternoon southbound peak period bus stop along Belmore Road and a new northbound morning bus stop zone on the western side of Avoca Street to accommodate buses, which will be located within close walking distance of the terminus. Three additional signalised intersections will be required to ensure the local traffic network maintains efficient traffic flow.

The approved project provided for two-way vehicle access through High Street, as it was identified as an important connection for cross regional bus and general traffic between Randwick and Anzac Parade. Accordingly, the traffic technical report for the modification predicts substantial localised trip delays and decreased intersection performance in comparison to the approved project, particularly in the morning and afternoon peaks on Arthur Street, Alison Road, Barker Street and Botany Street (and associated intersections) due to redistribution of traffic that would otherwise have accessed High Street.

Associated impacts to local amenity, including to property access, cycleways, parking and from traffic noise have been identified in the modification report. Signals proposed to moderate traffic impacts will require remodelling of intersections and streets, specifically on Arthur Street, where traffic impacts and loss of parking spaces will be greatest.

Changes to road and intersection design to accommodate the modifications will result in the net removal of 32 additional kerb side car parking spaces in addition to the 297 spaces lost in the Randwick precinct for the approved project. Four of these parking spaces will be lost on Clara Street adjacent to patient consulting rooms. Seven parking spaces will be lost from High Street between Clara Street and Avoca Street including four 1-hour spaces and three ¼ hour spaces.

Westbound afternoon peak flows along Alison Road (between Botany Street and Doncaster Avenue) would increase by more than 100 vehicles during operation in comparison to the approved project, although traffic flows along Anzac Parade and Alison Road are predicted to be generally consistent in comparison to the approved project in peak periods. This indicates that traffic performance of the broader network would not be substantially altered by the proposed changes on High Street however impacts are predicted to be potentially significant locally.

Most trips redistributed from High Street will divert to Arthur Street with a worst case scenario of a substantial increase in traffic volume compared to the approved project (108 vehicle movements to 514 vehicles in the PM Peak (4 to 6pm) between Belmore Road and Clara Street. Increases in average delay range from 13 seconds at the Arthur/Botany streets intersection to 40 seconds at the Arthur Street/Belmore Street intersection. Minor increases in delay are unlikely to be measurable elsewhere on Botany Street.

Construction traffic impacts would be reduced on the High Cross Park perimeter roads and intersections given the removal of the terminus from this location and the smaller construction compound footprint required as compared to that for the approved project.

Submissions

Submissions received during the exhibition period included objection to the removal of parking and increased traffic volumes to surrounding streets.

In its submission, Randwick City Council requested additional consultation over the introduction of new signalised intersections and the impacts to parking, and the impacts from increased traffic on Arthur Street including increased traffic noise.

Kenvale and Creston colleges expressed concern at the increased traffic volumes redirected to Arthur Street and the potential traffic safety risks this may pose, and objected to the loss of on-site parking on its premises due to the access road. UNSW requested details about traffic phasing with the introduction of several new signalised intersections.

Department's Consideration

Operational Traffic changes

The modification report identifies the requirement to signalise additional intersections to improve traffic flow and safety for vehicles, buses, cyclists and pedestrians. TfNSW proposes to introduce traffic signals at the intersections of Arthur Street and Botany Street, and Arthur Street and Belmore Road. In addition, the modification proposes to convert the existing roundabout at the intersection of Barker Street and Botany Street to a signalised intersection.

The approved project requires that a Network Management Plan be prepared in consultation with Councils, RMS and Reference Groups to identify future local and regional network traffic patterns and to activate appropriate management measures and contingencies where

required. The Network Management Plan is an iterative process that includes provision of modelling, signal phasing studies and further investigations to maximise efficiency of the wider traffic, light rail and bus operations within the Randwick precinct and for the project more broadly.

The Department considers that while appropriate management measures are available as part of the Network Management Plan, it is recommended that the intersections of Arthur and Botany Street, Arthur Street and Belmore Road, and Botany Street and Barker Streets are specifically added to the key intersections and roads requiring additional review. Apart from the inclusion of the signalised intersections within the Network Management Plan investigations, the Department is satisfied that no additional measures are required.

Traffic Noise

For construction, TfNSW has committed to undertaking further investigation of feasible and reasonable mitigation for properties along the entire length of Arthur Street and also Clara Street due to exceedance of the noise criterion for day time and a predicted relative increase of greater than 2 dB from increased traffic. The Department considers that the management and mitigation measures can be undertaken to lessen and avoid these impacts, as detailed by site-specific Construction Noise and Vibration Impact statements required by condition B5 of the approved project.

Noise levels attributable to operational stage traffic would increase by 2 to 3 dB above the approved project levels on local roads affected by the modification, whilst a 5 dB increase is expected on Arthur Street between Clara Street and Belmore Road. Mitigation strategies to address this increase will need to be considered in further detail. Conditions C11 and C13 of the approval require ongoing noise monitoring of impacted roads which experience significantly increased traffic volumes as a result of the SSI, and additional assessment, examination and implementation of mitigation measures to reduce traffic noise impacts where appropriate. TfNSW has not identified what mitigation measures would be considered.

Parking

The Department acknowledges the impact to businesses and residents from the loss of additional parking spaces, due mainly to the need to signalise intersections to improve traffic circulation. The approved project requires a comprehensive strategy to manage and offset lost parking spaces, to be developed in consultation with Councils and reference groups identified in the approval.

The Department considers that the parking spaces lost as a result of this modification are minor in the broader context of the project, and that an acceptable outcome will be achieved through the application of existing conditions of approval. These conditions include B29, the Parking Management and Offsets Strategy and C15, Operational Traffic, Transport and Access Performance Review, which will identify the provision of parking spaces; appropriate replacement parking for special kerbside uses; and strategies to address impacts and monitoring the effectiveness of measures implemented.

Conclusion

While some residual impacts have been identified, including loss of car parking spaces, additional noise impacts (including increased noise levels at receivers affected by the approved project and new receivers) and altered traffic and access arrangements, the Department considers that the changes to the road network are required to accommodate the proposed modifications.

The Department considers that the impacts to the local traffic network and local amenity are manageable through the application of existing conditions and with the addition of new conditions. The following sections provide consideration of the specific modifications

proposed and discuss the impacts and appropriate management and mitigation measures that should apply.

5.2. Randwick Terminus relocation

Issue

The proposed relocation of the Randwick terminus to the eastern end of High Street (**Figure 7**) is in response to concerns raised by Randwick City Council and other community members regarding pedestrian safety, access to the health precinct, loss of usable green space and loss of trees in High Cross Park. In its submission on the approved project, Randwick City Council objected to the use of High Cross Park as a transport interchange and submitted design plans for an alternate terminus location at the eastern end of High Street and adjacent to the Prince of Wales Hospital. Health Infrastructure also indicated a preference for a terminus in High Street. After detailed review of the design plans, the proponent has largely adopted those plans in this modification.

The Department supports the revised design and relocation of the terminus and the collaborative approach adopted by Council and TfNSW in seeking an outcome that helps meet community expectations and limits impacts to High Cross Park. Benefits that will be realised through the modification include:

- retention of the community values and social amenity of High Cross Park;
- retention of approximately 33 trees and green space;
- retention of 20 short term parking spaces; and
- improvements to operational noise impacts for seven properties bordering the park.

Despite the benefits, there are a number of other impacts that require consideration and mitigation. These include:

- an increase in airborne noise at the Prince of Wales Hospital buildings adjacent to the new Randwick terminus platform location;
- traffic and parking impacts as discussed above;
- impacts of underground location of the electricity substation to potential archaeological remains of a World War 2 air raid trench;
- closure of the southbound slip lane from Belmore Road to Avoca Street;
- additional space for morning and afternoon peak bus services is required on Avoca Street and Belmore Road;
- additional pedestrian walk times between bus and light rail;
- restricted access for heavy vehicles to High Street between Botany and Clara Streets; and
- no westbound vehicle access to High Street from Belmore Road/Avoca Street.

The changed stop location will necessitate revised vehicle access to the Prince of Wales Hospital, including a revised public drop off zone on the southern side of High Street.

Submissions

No submissions raised concerns regarding the relocation of the Randwick terminus to High Street. Randwick City Council stated overall support for the key modifications but raised concern about restricting the eastern end of High Street to light vehicles only and heritage impacts to an air raid trench and tree loss in High Cross Park. A large number of public submissions raised concerns regarding tree removal in High Cross Park and across the project more broadly.

Figure 7: Revised terminus location at the eastern end of High Street (*Source: TfNSW, 2016*)

Department's Consideration

Terminus Relocation

The Director General's report for the approved project noted that a High Street stop/interchange option would have significant benefits, including excellent accessibility to the Prince of Wales Hospital and minimal disruption to High Cross Park. Conversely, it was recognised that a High Street interchange would mean that the significant number of bus commuters originating in the south-east would need to move off the bus, traverse High Cross Park and cross Avoca Street to continue the journey into the city on the light rail. The function of an interchange is to make transfer between modes as seamless and efficient as possible and therefore this was considered a sub-optimal solution at the time.

TfNSW has highlighted a range of additional benefits that would be realised with the proposed modification compared to the approved project including:

- more efficient operation due to reduced route length and avoiding crossing of Avoca Street;
- improved safety of customers both in terms of fewer pedestrian road crossings and increased casual surveillance; and
- better integration with the health precinct and town centre.

The Department recognises that the proposed modification provides numerous benefits as outlined above. With relocation and extension of the bus stops to Avoca Street and Belmore Road, issues raised regarding crossing of Avoca Street to transfer to the light rail have been appropriately addressed as well as realising the benefits of excellent accessibility and minimal impact on High Cross Park.

Impacts to High Cross Park

Randwick City Council objected to an aboveground substation in High Cross Park and requested if the substation location could not be changed, then the substation should be placed underground.

Whilst TfNSW proposes to relocate the terminus to High Street, the substation will be relocated and placed underground in High Cross Park. This is consistent with the requirement of condition B27f)ii) of the original approval.

Relocation of the drivers' amenity facility to the western side of Avoca Street adjacent to the terminus and moving the substation below ground would reduce identified visual impacts on

High Cross Park, however it is likely that archaeological remains associated with World War II air raid trenches will still be impacted. The extent of any underground resource has not been established.

The substation footprint of 16 metres by 9 metres (and 8-9 metres underground) indicates that any location within High Cross Park would likely affect any potential underground archaeological resource, irrespective of its location. The Department acknowledges TfNSW's commitment to optimise the final location of the substation to address this potential impact.

TfNSW advised that options to relocate the substation out of High Cross Park were considered but were not suitable due to access and maintenance; existing underground resources; or and proximity to residences. TfNSW also stated that there is insufficient area within the corridor to locate the substation as access for maintenance needs to be provided at all times and therefore it cannot be located beneath the rail alignment.

TfNSW has committed to consultation with relevant stakeholders and implementing excavation, salvage and archival recording of any archaeological resource to document the impacts from construction. This process as outlined in the Heritage Management Plan for the project includes implementing:

- a testing program to determine the location, integrity, nature and extent of archaeological resources;
- a research framework and methodology for the investigation, salvage excavation and/or conservation of potential archaeological resources; and
- supervision by an excavation director that meets the Heritage Council of NSW requirements for directing archaeological investigations.

The Department accepts that a local heritage item is potentially at risk of damage, but that the suite of existing conditions in the Minister's approval provides a suitable framework to ensure that the heritage values of any archaeological resource are appropriately recorded; the overall heritage significance and community amenity of the park will be preserved; and that the strong community and Council preference to minimise impacts to the park is achieved.

The approved project also identified that 33 trees in High Cross Park would need to be removed, including trees listed on Randwick City Council's significant tree register. Relocation of the terminus and the reduced construction footprint in High Cross Park has reduced the number of trees to be removed to seven along Belmore Road. An additional two trees on High Street not approved in the original project will need to be removed to accommodate the relocated terminus. This is in addition to the trees proposed to be removed along High Street as part of the approved project.

The Department supports the reduced impacts on High Cross Park which can be achieved with relocation of the terminus. This will minimise impacts to registered significant trees within the park, maintain its open space function and general heritage values and more closely align with Randwick City Council and the community's desires. Further, the Department is satisfied that TfNSW has developed a robust process to determine the need to remove trees. This process includes:

- visual tree assessments with inputs from the design, landscape architect, and construction teams and the independent arborist;
- preparation of an impact assessment and consultation with the urban design reference group established under the Minister's Approval, relevant councils and the Centennial Parklands and Moore Park Trust; and
- consideration of all options to amend the project where a tree has been identified for removal, including realignment, relocation of services, redesign or relocation of ancillary components (such as substations, fencing etc.) and reduction of standard offsets to underground services.

Operational Noise

The proposed modification to the Randwick terminus is likely to increase airborne noise impacts at the Prince of Wales Hospital due to a reduced setback (from 9 metres to approximately 5 metres). The 1 hour maximum noise level trigger (35 $L_{Aeq(1\ hour)}$ internal) would be exceeded for any hospital wards facing High Street, however the goal is significantly higher (60 $L_{Aeq(1hour)}$ external) for other uses within the building and this would be met.

Condition C1 of the Minister's approval requires TfNSW to design and operate the service with the objective of not exceeding the light rail noise trigger levels as outlined in the *Rail Infrastructure Noise Guideline* (EPA, 2012). Where there is likely to be an exceedance of the goal, TfNSW has committed to further investigations in consultation with the hospital to identify appropriate mitigation. Health Infrastructure has indicated that internal reconfiguration of its buildings could be made such that no wards are located on the High Street frontage. Despite this, it remains the responsibility of the proponent to mitigate any impacts and to cover the costs of any measures to ensure that the goals are met. Following commencement of light rail operations, existing conditions in the Minister's approval require TfNSW to monitor operational noise and demonstrate that the relevant conditions and compliance with guidelines and objectives have been satisfied.

Ground-borne noise goals are not expected to be exceeded due to low operating speeds at the terminus; however condition conditions C3 and C4 of the existing approval are considered appropriate to manage expected impacts and provide a suitable process to manage any unexpected impacts. These conditions establish ground-borne noise limits for the evening and night periods; and require confirmation to the Secretary's satisfaction that the noise specifications assumed have been achieved, respectively.

Pedestrian and Delivery Access

It is likely that there will be increased pedestrian activity across Belmore Road between the light rail and the southbound bus stop on Belmore Road which could exceed the capacity of the existing pedestrian island. TfNSW proposes to remove the left turn slip lane from Belmore Road southbound to Avoca Street to address potential spill onto the roadway, thereby improving pedestrian safety. Notwithstanding, the left hand turn from Belmore Road to Avoca Street will remain so no traffic impact should result from the slip lane removal. The Department considers this an appropriate response to address pedestrian safety without imposing significant impact on traffic movements through further investigation of business requirements and consultation with affected businesses.

Access to businesses at the eastern end of High Street will only be from the west, however access to driveways for deliveries will not be affected. High Street, between Clara and Avoca Streets would be restricted to light vehicles as space restrictions and ground level differences would prevent access for larger vehicles. It is noted that there are approximately four driveways to properties on the northern side of High Street. Of these, three currently have height limited driveways which would prevent access by heavy vehicles. Nonetheless, TfNSW has committed to working with the owners of these properties through development of local access plans, required by the existing condition B24 which provides a framework for issues such as this to be resolved.

The Department acknowledges that the design process is an iterative one which will evolve and will undergo further refinement as the Stop Access and Design Plans and Local Access Plans are developed for each stop. These Plans are a requirement of the Minister's approval and must be developed in consultation with community, businesses and major landholders to ensure successful integration between the public domain and transport infrastructure. The objective of this framework is to provide a satisfactory outcome for affected businesses and other stakeholders and is considered appropriate to address the issues arising from the proposed modification.

Conclusion

The Department considers that the High Street terminus would retain the functionality of the High Cross Park terminus option from the approved project and that it closely aligns with the community and council vision for the area. The proposal also provides for improved urban integration between the Randwick health and retail precincts compared to the approved project. The Department agrees that the change of terminus location will provide a number of benefits over the approved project, including reduced traffic impacts at the Avoca Street and Belmore Road intersection; beneficial visual and landscape character outcome as a result of reduced impacts and loss of fewer trees in High Cross Park; and the benefits realised from retaining the historical significance of the park.

Despite the above, the Department acknowledges that the modification would result in impacts to bus stop locations, pedestrian movements, potential underground heritage and access, but that the existing conditions outlined in the Minister's Approval are applicable to these issues and provide an appropriate resolution and management framework.

5.3. UNSW High Street Stop Reconfiguration

Issues

TfNSW proposes to modify the stop from a single platform to a split platform and moving the alignment toward the northern side of High Street by approximately five metres. This will require removal of the eastbound traffic lane between Wansey Road and Botany Street (refer **Figure 3**). An artist's impression of the stop is provided in **Figure 8**.

Figure 8: Indicative visual perspective (looking west) of the modified UNSW High Street stop arrangement along High Street (*Source: TfNSW, 2016*)

TfNSW states that the modification is required to improve stop capacity and safety; and to reduce EMI/EMF to sensitive medical equipment at UNSW from light rail operations. Both of these issues were considered in the Director-General's report for the original application. The changes will permanently remove vehicular access to six properties from High Street.

Additional noise and vibration impacts are also expected, largely due to a decrease in distance from the light rail to the affected receivers and redistribution of traffic. The modification report identifies:

- construction and operation noise impacts for residential receivers on Arthur Street and High Street, including an educational facility (Creston and Kenvale private colleges) and Tiggers child care centre; and
- noise impacts to approximately five properties along the northern side of High Street between Wansey Road and Botany Street due to the change in the alignment at this location.

Submissions

A number of submissions received raised concerns regarding pedestrian and cyclist access and safety, property access changes for High Street properties, and increased volumes of traffic on surrounding streets due to changes to this stop location.

Kenvale and Creston colleges raised concern regarding impacts to current access and operation, security, loss of parking and pedestrian thoroughfare. Submissions also raised concerns with the changed road conditions and traffic volume increases proposed for Arthur Street and Botany Street particularly as the approved project identified these roads as the preferred alternative cycleway linking to the Wansey Road shared path. The submissions suggested that the diversion of vehicular traffic to Arthur Street in particular would make this option potentially unsafe. The modification proposes to discourage use of westbound cyclists on High Street as the modified stop design would be incompatible for light rail and cyclist co-use on this street.

Department's Consideration

Justification for Changes to Stop

TfNSW has justified changes to the High Street stop on a decrease in EMF impacts to the Lowy Cancer Research Facility and an informal increase in stop platform capacity provided by the footpath which would integrate seamlessly with the northern footpath.

Electro-magnetic Fields

The UNSW and Health Infrastructure raised the issue of EMF impacts and vibration on sensitive equipment (e.g. magnetic resonance imaging (MRI) machines and electron microscopes) in the Lowy Cancer Research Facility and other facilities in their submissions on the approved project. At the time, the Department was generally satisfied with the proposed approach to managing EMF and the Minister's conditions establish a clear framework to further identify and confirm potential impacts and sensitive receivers, and to identify EMF reduction strategies in areas near relevant UNSW and NSW Health assets.

The proposed modification to the stop at this location will increase the offset distance between the light rail catenary and sensitive medical equipment located at the Lowy Cancer Research Facility by 6.6 metres in comparison to the approved project. Distance is understood to be the key factor in determining the effects of EMF as illustrated below in **Figure 9**. Whilst the roadway will move closer to the facility and vehicle generated EMF will reduce the benefit, overall a reduction in EMF interference will be realised.

To further minimise electromagnetic interference to sensitive receivers in accordance with condition B18 along High Street, the power system proposes to make all overhead wire poles a feeder pole. This system will enable the overhead wire to be energised in shorter sections only when the light rail vehicle is passing and will be switched off as soon as it has passed. This system would be in place for the length of High Street from Wansey Road to the terminus. This will further reduce EMF when there is no light rail vehicle outside the facility.

The Department is satisfied that the proposed stop relocation would reduce the impacts of EMF on the Lowy Centre compared to the approved project; and that the anticipated reduction would be to levels that would minimise impact to sensitive equipment.

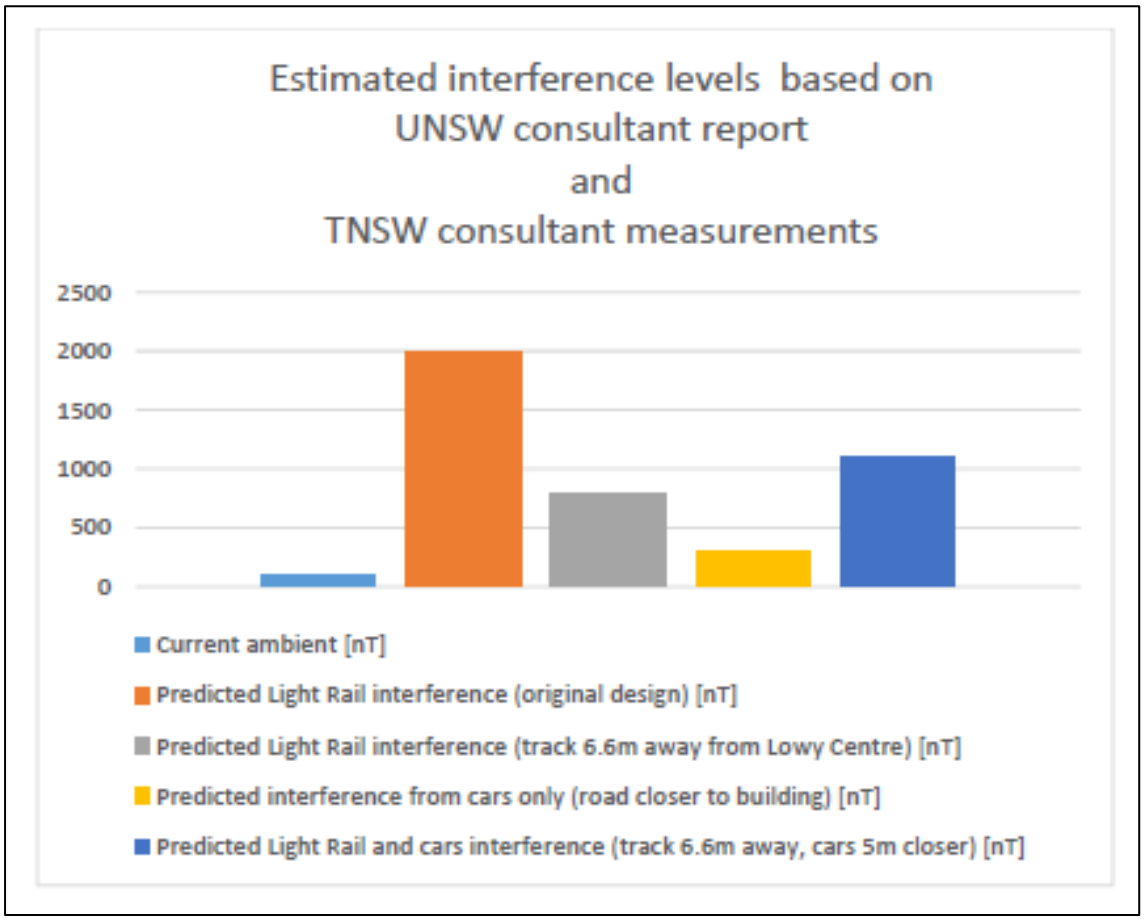

Figure 9: EMF Interference at UNSW High Street stop (*Source: TfNSW, 2016*). Note nT=nanoTesla, where a Tesla is the unit of measurement of magnetic field strength

Stop Capacity

The UNSW is a major trip generator for the project. In its submissions on the EIS and Preferred Project Report, UNSW identified platform capacity as a key concern at this location. At that time, UNSW argued that the platforms did not provide adequate space for passengers resulting in safety issues for users. TfNSW argued that the proposed platforms were sufficient for the anticipated passenger demand over time. Notwithstanding, TfNSW acknowledges that the modification to a split platform would provide an increase in stop capacity. UNSW considers that this configuration would:

- provide additional capacity that more efficiently caters for peak demand; and
- alleviate safety concerns for passengers disembarking and waiting in the centre of the road, but remain concerned that the platform configuration capacity has not been quantified.

The reconfigured stop platform provides additional informal stop capacity, addressing a key concern of the original project for this high volume stop. This would improve the safety and capacity for light rail users accessing the university compared to the approved stop scenario. Further the movement of the stop at this location is appropriate and justified, taking into consideration issues raised by key stakeholders on the approved project to further reduce its impact.

Notwithstanding, a number of existing conditions of the Minister's approval remain relevant to these issues, including:

- conditions B17 and B18 which require ongoing consideration of EMI to further identify and confirm potential impacts and sensitive receivers and development of strategies to reduce the EMF impacts of the project; and

- the preparation of Stop Access Design Plans which include a requirement for safety audits to ensure that appropriate platform sizes will accommodate anticipated passenger demand; extensive consultation; and input from relevant stakeholders.

Property Access and Land Use

Alternative access to affected residents on High Street is proposed via Arthur Street to the rear of the properties, through creation of a public laneway on UNSW-owned land (**Figure 2**). The existing private laneway from Arthur Street would be widened to approximately six metres, leading to an eight metre wide 'hammerhead' cul-de-sac along the rear boundaries of the affected properties. It is understood that TfNSW will seek to have this dedicated as a public access. This area currently houses an informal extension to Tiggers childcare centre, with a vegetable garden, playhouse, chicken coop and grass which would be lost or severed by the proposed access.

Affected properties on High Street include Kenvale and Creston colleges, a hospitality teaching college and women's residential college respectively; and three residential unit blocks, two of which share a driveway. One of the unit blocks is owned by the University of New South Wales.

Key concerns raised by the colleges related to access for deliveries, parking, and security and privacy. Both raised the commercial implications to them of the modification for any changes to security, supplier access and wayfinding. The colleges would also lose six car parking spaces and experience increased night time noise exposure during operation compared with the approved project.

The kitchen for Creston College (the residential college) is located on the High Street frontage and accepts food deliveries along a narrow service lane to an entrance on the western façade. Removal of vehicle access on High Street is likely to necessitate a change in operation. Kenvale's commercial kitchen and function areas are located at the rear of the block adjacent to its car parking area and its administrative facility off High Street.

Whilst the Department is sympathetic to the impacts to the colleges' current operations, it is considered that the access issues can largely be addressed through design considerations and other measures. Accessing the entrance to the Creston College kitchen from the rear of the site is currently restricted by the narrow access which is at least partially blocked by external services such as air conditioning units and hot water heaters. It is considered that a suitable access path could be provided through the rear garden and along the rear western boundary of the building with relocation of these units.

The Department notes that there will be some loss of parking with the revised access arrangements but it is the responsibility of TfNSW to compensate the colleges for any loss which results from the modified access. In recognition of this, it is understood that TfNSW is discussing possible access to additional land should this be required to offset parking losses and provide appropriate areas for vehicle manoeuvring.

To mitigate the uncertainty around future costs and access arrangements for the colleges, the Department recommends that a condition be imposed to address the relocation of services, security gates and wayfinding, the final layout of the Arthur Street access and any replacement of lost parking spaces be developed with Kenvale and Creston colleges and to their satisfaction with all costs to be covered by the proponent.

A large number of submissions objected to severance of the garden used by Tiggers childcare centre. TfNSW has advised that the garden area, including a chook shed, cubby house, amphitheatre and grassed area, is outside of the child care licenced area. It is understood that Tiggers, a UNSW owned and operated facility and tenant, has had long term, informal use of this area. Should the proposal go ahead then these areas would be

severed from the main child care operations and the proposed alternate access for High Street properties would provide safety challenges for groups of young children crossing the laneway.

TfNSW has committed to replacing the garden amenity and that investigations would include consideration of appropriate vegetation, relocation of the shed, playhouse structure and vegetable garden. The final use and layout for this area of land would be determined through consultation with the UNSW which is included in a new recommended condition of approval. The Department acknowledges that further consideration is required to finalise a design solution but has included this recommended condition to provide certainty and a timeframe in which the facilities will be replaced.

TfNSW has advised that it does not intend to create an environment via the laneway that would encourage use by pedestrians to access the light rail. The dimensions of the lane will not allow a footpath to be provided and TfNSW has committed to providing appropriate security to the affected properties such that transient use would be difficult. The Minister's approval currently includes conditions B26 and B51 which relate to stop access and security. The Department considers that these conditions provide an appropriate framework to develop and negotiate detailed security arrangements.

Noise and Vibration

During construction, noise levels to sensitive receivers are expected to increase as a result of the High Street stop changes, however noise and vibration from the operation of the laneway will not exceed trigger levels for childcare facilities. Safeguards in place for the approved project would also apply to construction of the access laneway, which the Department considers provides a robust framework to ensure that construction noise is managed to comply with relevant guidelines and performance objectives.

The expected construction time for the laneway is less than three months. During this time, concrete pouring has been identified as the highest noise generating activity with maximum noise levels in the order of 95 dBA, more than 40 dBA above the applicable noise management level. UNSW has stated that it considers the construction hours allowed by condition B2 and B7 inappropriate for activity near a child care centre given the potential noise and vibration impacts and potential safety risks to staff and children. The hours during the week when the childcare centre operates are consistent with the recommended standard hours for construction as identified in the *Interim Construction Noise Guideline* (DECC, 2009) (the guideline) with the exception of a 6.00 am start which is outside the hours of operation for the centre.

The guideline identifies child care centres as a noise sensitive business and recommends that project specific noise levels are determined which is consistent with the approach adopted in the Minister's approval. This requires project specific noise management levels to be determined and mitigation measures outlined in a construction noise management plan to limit noise impacts to those identified levels. Notwithstanding, the Department recommends that TfNSW ensure that the operational needs of the centre are considered such that high noise generating activities, including impulse or tonal noise are undertaken outside of designated sleep periods at the child care centre wherever possible.

For the operation phase, airborne noise levels of up to 1.5 dB above noise modelled for the approved project could be expected at High Street properties adjacent the stop. Despite a 2 dB reduction at the Lowy Centre, the noise trigger levels for an educational building will still be exceeded.

The scenario considered for operational traffic noise impacts using the new access lane from Arthur Street assumed that all residents leave or arrive during the same hour.

Notwithstanding, noise levels experienced at 10 and 14 Arthur Street (either side of the upgraded access) would be below the relevant day time goal.

Cycleways
The Department acknowledges the impacts to cycleway connectivity as a result of the proposed modification. Cyclists are likely to use Arthur Street as an alternate route given the reduced accessibility through High Street. Randwick Council has requested further consideration of the proposed changes and integration with upgrades to existing cycleways noting that Council proposes to upgrade the cycleway from Wansey Road south to Anzac Parade along Alison Road.

TfNSW has committed to further investigating bicycle route alternatives to High Street including connections to the Wansey Road shared path using Waratah Avenue and Writtle Park. Existing conditions of approval would apply, including the preparation, in consultation with Randwick City Council, and implementation of the Pedestrian and Cyclist Network and Facilities Strategy required by condition B33 of the approval. The Department is satisfied that an appropriate outcome for cyclists will be achieved by this framework and that no additional conditions are required.

Conclusion
The revised design would provide passengers with additional space, safety and convenience, which would provide an improved passenger experience over the approved project at the UNSW High Street Stop.

The benefits of the relocation of the UNSW High Street stop would, on balance outweigh the short-term impacts and further reduce some long-term or operational impacts such as impacts to electromagnetic fields and stop capacity. In addition, the proposed relocation provides for future opportunities identified by Randwick City Council and the UNSW to pedestrianise High Street between Botany Street and Wansey Road should this be pursued.

5.4. Wansey Cottage

Issue
Wansey Cottage is a small cottage constructed in 1910 and located near the intersection of Wansey Road and Alison Road, within the north-east corner of the Randwick Racecourse Heritage Conservation Area (**Figure 6**). The conservation area is listed in the Randwick Local Environmental Plan and identified as an element of moderate heritage significance. Randwick Council's significance assessment for the Randwick Racecourse Heritage Conservation Area identifies that the racecourse and many stables and workers' cottages in the area demonstrate the development of the local racing industry and its local importance. Wansey Cottage is not identified as a singular item of particular heritage significance. The heritage report (GML Heritage, 2015) indicates that the cottage is historically associated with the continuing provision of on-site staff accommodation and that function is a major contributor to its heritage value.

The EIS for the approved project identified adverse impacts to the cottage from the location of the Alison Road light rail stop, specifically from a retaining wall structure required to support the light rail tracks, the cycleway and the stop approximately 0.5 metres to the north-west of the cottage. The Minister's approval includes a requirement that TfNSW protect this curtilage and noted further commitment to investigate applicable protection measures during detailed design.

Further significant constraints to the construction methodology of the light rail at this location found that impacts to the cottage would be unavoidable without significant redesign of the light rail alignment. Four options, including six sub-options considered.

Three options were considered not feasible as they did not meet relevant design standards or project objectives, such as minimum lane requirements and footpath widths. All feasible options, of which there were five, required demolition, partial demolition or impacts to the curtilage of the cottage. Only one option (relocating the retaining wall to the north) would comply with the approval requirement to not affect the curtilage however it would not meet the requirements to maintain two lanes in each direction on Alison Road.

Submissions

Two community submissions objected to the demolition of Wansey Cottage. In its submission, the Heritage Council recommends that Randwick City Council should be consulted as the consent authority for activities related to items listed on the Local Environmental Plan, and considers that the conditions of approval and the recommendations in the Heritage technical report provide an adequate framework for managing impacts to local heritage. Randwick City Council did not make any objection to demolition of the cottage.

Consideration

The Department agrees that operation of the light rail in close proximity would significantly affect its use as a residence and hence its heritage value to the racecourse precinct. TfNSW has concluded that the only reasonable option was to demolish the cottage in its entirety. In coming to that decision TfNSW has committed to mitigation measures in addition to the conditions of approval that apply, including:

- integration of the Wansey Cottage interpretation plan within the Wansey Road/Alison Road stop; and
- salvage and recycling of building elements of heritage significance suitable for the repair of other heritage items, including roof tiles, joinery (windows, doors, architraves, skirting) and any other fabric where practical.

TfNSW has committed to consulting directly with Randwick City Council regarding the demolition of Wansey Cottage in line with the requirements of the Construction Heritage Management Plan (condition B89(e)) which will be prepared in consultation with the Heritage Council of NSW and OEH. Notwithstanding, and as suggested by the Heritage Council in its submission, the Department recommends including a condition putting into effect the recommendations of the GML report which are consistent with TfNSW's commitments above. Further, condition B61 of the approval requires archival and photographic recording of items directly impacted by the proposal.

Conclusion

The Department considers that whilst demolition of the cottage would add to cumulative heritage impacts within the Racecourse Precinct, an appropriate mitigation and management framework would minimise impacts to the overall heritage value of the Randwick Racecourse Heritage Conservation Area.

5.5. Out of Hours Approvals

TfNSW seeks to amend condition B89 (b)(xi) of the approval, to correct an inconsistency with the approval process for out-of-hours applications outlined by condition B4. Condition B4 provides a range of circumstances whereby work can be undertaken outside of specified construction hours. Condition B89 (b) includes requirements for the Construction Noise and Vibration Management Plan, with section (xi) of that plan referring "high risk" out-of-hours works to the Secretary for approval. TfNSW considers that there is an inconsistency between these two conditions as condition B89 (b)(xi) specifies a requirement for out of hours approvals through a protocol consistent with B4 should an Environment Protection Licence apply to the project.

TfNSW has since advised that its contractors have been issued with an EPL for the project, which includes provisions for the Environment Protection Authority to approve out-of-hours works. The Department is satisfied that the proposed change to the condition does not alter the Proponent's obligation to the community to provide appropriate measures to manage noise and vibration impacts from construction of the project. The change removes inconsistency for out-of-hours works approval from the consent and removes duplication from the approvals process.

6. CONCLUSION AND RECOMMENDATIONS

The proposed modification to the approved project has been made in response to further design collaboration with stakeholders, including the community, council and UNSW to identify improved benefits to the project and the community.

Overall, the residual impacts from this modification proposal are justified on the basis of an improved project and community outcome. The High Street stop relocation would improve platform capacity and boarding efficiency which would provide an enhanced commuter experience and increased safety for users of the light rail. The Randwick terminus relocation away from High Cross Park provides a significant improvement to the amenity of the Randwick area with the preservation of an important community place at High Cross Park.

While there will be additional impacts from these changes when compared to the approved project, the Department is satisfied these can be managed with revised and additional mitigation. Additional conditions have been included or amended to ensure private landowners, such as Kenvale and Creston colleges and Tiggers child care centre are not unduly impacted by the access changes on High Street and Arthur Street.

The Department considers that the residual impacts of other modifications can be managed with existing, amended or new conditions of approval, management and mitigation measures. The proposed changes would comply with the objects of the *Environmental Planning and Assessment Act 1979* and the principles of Ecologically Sustainable Development.

Endorsed by

Karen Jones 13.4.16
Director
Transport Assessments

David Gainsford 13/4/16
Executive Director
Priority Projects Assessments

APPENDIX A MODIFICATION REQUEST

See the Department's website at:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7412

APPENDIX B SUBMISSIONS

See the Department's website at

http://majorprojects.planning.nsw.gov.au/?action=list_submissions&job_id=7412&title=Website%20Submissions&type=2

APPENDIX C RESPONSE TO SUBMISSIONS

See the Department's website at

https://majorprojects.affinitylive.com/public/48bacf286e9b7b559cb40765be950673/CSELR%20Modification%204%20Submission%20Report.pdf

APPENDIX D RECOMMENDED MODIFYING INSTRUMENT