SICEEP PPP – Response to Transport for NSW Submission

Topic	Issue	Response
Parking	The proposal contains no specific provision for car share spaces within allocated parking that would assist in achieving the proposal's objective in reducing private vehicle dependency. There is one small mention of this including "preferential parking" (p.100) but no specific mention of actual number of spaces allocated to car share for either workers and/or residents. ***Provide details of measures to encourage sustainable transport measures	DHL is committed to providing up to 55 third-party operated Car Share spaces distributed through the SICEEP precinct (including the Public Realm) for use by residents, the public and exhibitors. This is a matter that is appropriately dealt with by condition of consent.
Parking	The Traffic and Transport Assessment makes general reference (p.100) to way-finding and signage. Given the scale of change in the site, significant investment of new way-finding and signage is required, on and off-site. It is noted that variable message signs would be used to provide information to drivers (p.103) but no commitment has been made to use such signs for pedestrians, which would be the dominant mode of arrival to the site.	Variable messaging signs utilising dynamic carparking information will be provided to drivers similar to that adopted for the Star Casino. The improvement of pedestrian access to and from existing and/or upgraded public transport nodes will be provided through interactive wayfinding and signage systems located throughout the Precinct. The detailed design of the wayfinding and signage systems is currently under development and will be completed in accordance with the SICEEP Wayfinding and Signage guidelines that are being prepared by INSW. All on-site way finding signage is to be delivered as part of the project, subject to final approval of detailed design by Sydney Harbour Foreshore Authority in accordance with the SICEEP Wayfinding and Signage Guidelines. Off-site way finding signage will be the responsibility of the Sydney Harbour Foreshore Authority (within the Darling Harbour Precinct). This is a matter appropriately dealt with by condition of consent.
Parking	The Traffic and Transport Assessment recommends improvements to existing pedestrian facilities through "coordination and pedestrian priority at signals and pathway enhancements." The proposal contains no such provision for such items that would provide benefit to pedestrians.	A new signalised pedestrian crossing on Darling Drive linking Tumbalong Place with the Light Rail Station is proposed to be installed, as shown on the architectural drawings. There is no intention to provide new traffic signals at other pedestrian crossings to serve the Core Facilities.

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		Pathway enhancements have been proposed via: • relocated pedestrian crossings on Darling Drive linking to enhanced east-west connections to the Exhibition and Convention light rail stops • provision of The Boulevard catering for the north-south pedestrian movements • a new bridge linking Quarry St to the new facilities • retention and upgrading of the Harris St Bridge connection • improvement of interactive wayfinding and signage These proposed pathway enhancements are all shown in the application documentation including the architectural drawings. Wayfinding signage is to be provided in accordance with the SICEEP Wayfinding and Signage Guidelines being prepared by INSW and subject to approval of detailed design by Sydney Harbour Foreshore Authority.
Parking	The proposal does not make specific provision for future public bus services that may directly serve the SICEEP. Provision has only been made for private bus zones (p.105). The proponent is requested to contact Transport for NSW regarding provision of future bus services to the SICEEP, especially as Transport for NSW is currently planning for changes to the CBD bus network post light rail completion.	DHL has consulted with Transport for NSW (City Transport Planning) on potential provisions for future bus transport services to the precinct. TfNSW confirmed a study is underway to investigate a Bus Servicing Strategy for the CBD, however TfNSW is unable to provide any further information until an announcement is made by government as to a preferred CBD Bus Plan in conjunction with the proposal for the George St Light Rail system. DHL is committed to undertaking further consultation with the NSW Bus and Coach Association to ensure any future requirements are considered.
Parking	The Traffic and Transport Assessment (p.103) refers to "provision of new cycling facilities" yet the proposal only commits to a new cycle path. There needs to be a firmer commitment to bicycle parking for visitor, employee and resident use, as well as end of trip facilities for employees and residents.	Proposed cycleways are shown on the Cycle Strategy Plan. The architectural drawings provided with the submission also outline the locations for proposed bike parking within the Exhibition Centre carpark and Public Realm. Lockers and end-of-trip facilities will also be provided in the Exhibition Centre Carpark. DHL also proposes to explore the viability of a bike hub to be located within the

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		Precinct. This community infrastructure may offer service for bicycle riders and those interested in learning more about cycling and cycleways in Sydney. It will provide end-of-trip facilities to cyclists, including secure bike storage and amenities, and will create a community place for cycling commuters and visitors in Sydney.
Construction Phase	The Traffic and Transport Assessment (p.96) states "Through consultation with relevant bus and taxi representatives procedures shall be established to ensure harmony of vehicle movements within the area." Whilst this is a procedure that forms part of a detailed construction management plan, it is unclear how such consultation would be facilitated as there are multiple taxi and coach operators. Transport for NSW recommends direct consultation with the NSW Taxi Council and the NSW Bus and Coach Association.	Initial consultation meetings have been held with the NSW Bus and Coach Association and the NSW Taxi Council. DHL is committed to undertaking further consultation during the design development phase to ensure any future requirements are considered prior to construction commencing, to ensure coordination with DHL's Construction Transport Management Plan.
Construction Phase	Whilst the timing of the removal of the monorail around the site is yet to be confirmed, it may coincide with construction activities for the SICEEP. The proponent is advised to liaise with Transport for NSW regarding any activities that may impact on the removal of the monorail.	INSW has been liaising with the Transport for NSW Monorail project team and measures are being undertaken to ensure the timing of the two projects are coordinated. The current advice indicates removal of the monorail in the associated area will be completed by December 2013.
Construction Phase	During the construction period, operation of light rail services should not be affected and pedestrian access to light rail stations within the vicinity of the site should be maintained.	Following thorough consultation with the TfNSW regarding existing shutdowns, maintenance periods and hours of operation, all efforts will be made to minimise any disruptions on light rail services during the construction period. Where there will be disruptions due to the construction of the Exhibition loading dock, DHL will work with the TfNSW to ensure that there is minimal impact on the light rail operations and that any disruption to pedestrian access to light rail stations is minimised. Where required, DHL will carry out these works out-of-hours subject to the approval of the relevant authorities. All works directly within the light rail corridor will be carried out by TfNSW.
Construction Phase	A Construction Transport Management Plan should be prepared in consultation with Transport for NSW prior to the commencement of construction to address transport and access issues.	Noted. This is a matter appropriately dealt with via condition of consent. A preliminary Construction Transport Management Plan was attached in the DA

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		submission. It will be reviewed and updated in consultation with TfNSW prior to commencement of construction. Section 3.6 in the Traffic and Transport Assessment Addendum Report (**Appendix M**) outlines truck routes and cumulative construction traffic impacts.
Construction Phase	An Operational Transport Management Plan shall be prepared in consultation with Transport for NSW prior to the commencement of operation to address transport and access issues associated with the operation of the facilities during special event and non-special event times.	Noted. SHFA currently has in place event operations, pedestrian and traffic management plans in place for all major events at Darling Harbour. These are developed in conjunction with all relevant authorities and relevant stakeholders such as the managers of the existing convention ,exhibition and entertainment facilities. These will be reviewed as required to take into account the construction impacts of the SICEEP project and the changed operational circumstances when the new facilities open in 2016/17. This is a matter appropriately dealt with via condition of consent.
Mixed Use Development at Haymarket	The road safety assessment should have included an assessment of cycling conditions including cyclist crash history.	Noted. This matter is related to The Haymarket Staged Development Application. Further information relating to existing cycling conditions and cyclist crash history is outlined in the updated Traffic Report prepared by Hyder (refer to **Appendix M**).
Metro Transport Sydney Offices	The proposed modifications to the Metro Transport Sydney Offices are supported by Transport for NSW 'in principle'. Notwithstanding this, further detailed designs must be submitted to Transport for NSW for review and approval prior to works commencing. Accordingly, it is recommended that the following condition be applied by DP&I as part of any planning consent for the SSD proposals. Condition:	Noted. This is a matter appropriately dealt with via condition of consent and DHL does not object to the condition as proposed by TfNSW. DHL will undertake consultation with TfNSW during preparation of the detailed designs.

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	Any proposed works to the Metro Transport Sydney Offices shall be developed in consultation with Transport for NSW. The Proponent must submit detailed designs and relevant management plans to Transport for NSW for approval at least one month prior to the commencement of relevant works affecting the Metro Transport Offices.	
Light Rail Infrastructure Interfaces **Noise and Vibration**	A detailed noise and vibration assessment should be undertaken to quantify the likely impacts from current and future light rail operations upon future sensitive receivers which will be part of the Haymarket development. This assessment should be prepared in accordance with the DP&I guideline 'Development near rail corridors and busy roads, 2008'.	Noted. This is a matter related to The Haymarket Staged Development Application and not to the current application. Notwithstanding, it is noted that the existing light rail operations between the Convention and Exhibition stops are not changing, with the exception of the minor platform extension works and as a result will not impact receivers.
Light Rail Infrastructure Interfaces **Transport & Access**	An assessment of the potential impacts on transport and access to the Light Rail stops will be required. This should take into account any opportunities to improve transport and access for current and future users during both construction and operation. Access to the stops during construction and operation for people with disabilities should also comply with the Disability Discrimination Act 1992 (Cath) and other applicable/relevant guidelines.	Following discussions with TfNSW it has been agreed that planning consent for amendments to the Light Rail Stops as a result of the SICEEP project will be obtained by TfNSW. As such, DHL will no longer seek approval for these works as part of this application.
Visual	It is noted that the assessments do not contain a visual assessment of potential impacts of the proposed light rail infrastructure improvements on future users of adjacent structures. In particular, the buildings and built form should promote the use of public transport infrastructure within the precinct through improved view corridors, permeability and signage to the Light Rail stops. Accordingly, it is recommended that the following condition be applied by DP&I as part of any planning consent for the SSD proposals: **Condition:** The proponent shall prepare and implement an Urban Design and Stop Access Plan for areas which interface with the Light Rail. The plan shall be prepared by an appropriately qualified person(s) and shall include but not necessarily be limited to the following:	Following discussions with TfNSW it has been agreed that planning consent for amendments to the Light Rail Stops as a result of the SICEEP project will be obtained by Transport for NSW. As such DHL will no longer seek approval for these works as part of this application. The recommended condition of approval is therefore not relevant to the proposed development. The urban design, enhanced connectivity and on-grade pedestrian access from SICEEP to the light rail stops have been addressed in the built form and landscape reports submitted with the DA.

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	(a) identification of design principles and standards based on: i. local environmental values; ii. urban design context; iii. sustainable design and maintenance (including consideration of anti-graffiti materials); iv. transport and land use integration and system functionality; v. passenger and community safety and security; vi. community amenity and privacy; and vii. relevant design standards and guidelines; (b) location and identification of existing and proposed landscaping through the use of indigenous and endemic species; (c) Design details of the built elements of the project, including: i. infrastructure measures identified in the pedestrian and cycle access reviews; ii. retaining walls, embankments, bridges, underpasses, substations and the like; iii. fencing, noise barriers, lighting, privacy screening; iv. signage (including wayfinding); v. stop infrastructure and passenger facilities; and vi. Measures to minimise the impact of these elements, particularly with respect to the impacts on adjoining residences, education facilities, open space and heritage items and landscapes. (d) consideration of relevant legislation such as the Disability Discrimination Act 1992 and design standards and policies, such as Water Sensitive Urban Design, Transport for NSW's Sustainable Design Guidelines, Crime Prevention Through Urban Design, Design Guidelines to avoid, minimise and improve the appearance of	

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	Shotcrete (RTA 2005), AS4282-1997 Control of the Obtrusive Effects of Outdoor Lighting and the relevant Agency and Council design standards; (e) Restoration of work sites and rehabilitation measures; and (f) Measures to maintain stops and landscaping works, including weed control, to the design standards established in the Plan, where necessary. The Plan is to be developed in consultation with Transport for NSW, RailCorp, Sydney Harbour Foreshore Authority and the City of Sydney, and submitted to the Director-General of DP&I for approval.	
Light Rail Infrastructure Interfaces: **Light Rail Operations**	Consultation with Transport for NSW and the Light Rail operator should be undertaken to ensure the ongoing reliability of light rail operations as a result of the SICEEP development.	DHL will undertake consultation with TfNSW and the Light Rail Operator to ensure light rail operations are taken into consideration for SICEEP.
Safety	Due to the proximity of the Light Rail corridor, the ongoing safety of both light rail users and future users of the precinct must be addressed through consultation with the Light Rail operator and Transport for NSW.	Following discussion with TfNSW it has been agreed that planning consent for amendments to the Light Rail Stops as a result of the SICEEP project will be obtained by Transport for NSW. As such DHL will no longer seek approval for these works in this application. However, where works impact the light rail corridor such as the loading dock construction, DHL will undertake consultation with TfNSW and the Light Rail Operator to ensure ongoing safety standards are met.
Light Rail Infrastructure Interfaces	Consultation with Transport for NSW should be ongoing throughout design development in order to accommodate light rail infrastructure requirements and ensure there is adequate capacity within the precinct to accommodate any future amplification of services, modification and/or expansion of the light	Following discussion with TfNSW it has been agreed that planning consent for amendments to the Light Rail Stops as a result of the SICEEP project will be obtained by Transport for NSW. As such DHL will no longer seek approval for these works in this application.

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Light Rail Infrastructure Requirements	rail network. Accordingly, it is recommended that the following condition be applied by DP&I as part of any planning consent for the SSD proposals. Condition: [applicable to SSD- 5752] Consultation with Transport for NSW shall be ongoing throughout the detailed design and construction of the project to ensure potential/light rail impacts in terms of noise, visual, transport, access and safety impacts, and the potential impacts on current and future light rail infrastructure and operations are satisfactorily considered. Detailed designs and management plans must be submitted to Transport for NSW for approval prior to the commencement of any works. Any proposed works impacting on the light rail infrastructure will need to be undertaken by a rail accredited contractor and will need to undergo the appropriate design review process, in consultation with Transport for NSW.	This requirement can be appropriately dealt with through a condition of consent for works in proximity to light rail infrastructure.
Exhibition Stop	Transport for NSW generally supports the proposed connectivity improvements to the Light Rail Exhibition stop. However, the information provided does not contain sufficient detail (e.g. concept plans) identifying the extent and location of the proposed improvements, or the interface of these elements with existing Light Rail infrastructure. To ensure the proposed improvements are compatible with the Light Rail infrastructure and operational requirements, consultation with Transport for NSW during design development will be essential. The proponent will be required to submit detailed design plans for any works within, or in proximity to the Light Rail corridor to the relevant design authority for review and approval prior to the commencement of works. Similarly, all corresponding construction activities may only be carried out by a rail accredited contractor.	Following discussion with TfNSW it has been agreed that planning consent for amendments to the Light Rail Stops as a result of the SICEEP project will be obtained by Transport for NSW. As such DHL will no longer seek approval for these works in this application. This requirement can be appropriately dealt with through a condition of consent for works in proximity to light rail infrastructure. This requirement can be appropriately dealt with through a condition of consent.

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	Accordingly, it is recommended that the following condition be applied by DP&I as part of any planning consent for the SSD proposals. **Condition**: Any proposed works within, or in proximity to the Light Rail corridor, or related to the Light Rail stops shall be developed in consultation with Transport for NSW Detailed designs and management plans must be submitted to Transport for NSW for approval at least one month prior to the commencement of relevant works. The proponent must also submit detailed design documentation to the relevant design authority for review and approval prior to the commencement of works. Documentation is to be submitted to the relevant design authority at least one month prior to the commencement of relevant works, or earlier if required by the relevant design authority.	
Cumulative Impacts	Further detailed assessment is required in relation to the potential cumulative construction impacts of the following major transport infrastructure projects: • CBD & South East Light Rail Project • Inner West Light Rail Extension • Monorail Removal Project • Wynyard Walk Project The cumulative construction impacts should be addressed as part of a Construction Environmental Management Plan to be developed in consultation with Transport for NSW. The potential operational impacts with regards to current and future light rail infrastructure requirements should be addressed through a collaborative design process between the proponent, Transport for NSW (as operator of Light Rail) and RailCorp (as the land owner).	Construction works for the Inner West Light Rail Extension and the Monorail Removal Project are not anticipated to coincide with construction works in the associated area. The Traffic and Transport Assessment Addendum Report prepared by Hyder (refer to **Appendix M**) includes information relating to construction routes for the SICEEP development, programme and other concurrent projects including: • Global Switch (First Stage); • UTS Chau Chak; and • Wynyard Walk An assessment of cumulative construction traffic impacts of SICEEP with concurrent adjacent projects has been undertaken by Hyder and it has been determined that no significant impact will arise .

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		It is noted no information is currently available on the CBD & South East Light Rail Project. INSW has been liaising with the TfNSW Monorail project team and measures are being undertaken to ensure the timing of the two projects are being coordinated. The current advice indicates removal of the monorail in the associated area will be completed by December 2013.
Traffic Analysis	The Aim Model Calibration and Validation is only based around GEH criteria. The calibration and validation ignores other criteria (as indicated within RMS's Traffic Modelling Guidelines) such as travel times and queue lengths. In addition, for simulation models, the guideline recommends detailed analysis of critical movements to ensure they do affect modelled outcomes. Therefore, Hyder will be required to demonstrate to the satisfaction of the RMS that the base Aim sun traffic model has been suitably calibrated and validated against all agreed key criteria within RMS's Traffic Modelling Guidelines- RMS 13.184. This document can be downloaded at the following link: http://home.rta.nsw.gov.au/doingbusinesswithus/downloads/technicalmanuals/technical manuals_dl1.html For one of the GEH criteria (Links with difference in flow within 15% for flows between 700 and 1700vph) -The target required is 85%. Yet on the Friday PM peak they only reach 64%. The report then explains the following: "Large traffic flow difference is observed at Goulburn Street I Sussex Street and Sussex Street I Hay Street due to upstream and downstream congestion. However, it does not impact on the study area". This would be acceptable to RMS on the proviso that Hyder can clearly demonstrate that their model reflects conditions outside the study area, if such impacts are felt within the study area.	Hyder previously calibrated AIMSUN traffic model using the October 2012 counts. Further model calibration and validation has now been undertaken using new traffic data collected in June 2013. The June 2013 traffic data included travel time, intersection turning movement counts and queue length at key intersections. The AIMSUN model has been calibrated and validated according to the RMS's Traffic Modelling Guidelines (RMS 13.184). Detailed model calibration and validation results were documented in Technical Note 1 and included as an Appendix A with this submission. The traffic model has been further refined considering additional traffic data collected in June 2013. At RMS request, Darling Drive /Ultimo Road intersection has been added to existing model. Further calibration improvements are achieved to roads and intersections within the model study area particularly at Harbour St/Day St, Harbour St/Liverpool St and Goulburn St/George St intersections. The additional traffic data (travel time, intersection movements, and queue length) in conjunction with further calibration refinements have improved overall model performance particularly in the GEH statistics. Regarding GEH criteria, Table 3-1 in Technical Note 1 showed that Friday PM peak model achieved 88%. This meets the targets of 85%. With GEH of 88% determined from Technical Note 1, the model satisfies targets. In the previous traffic model a reference was made to Goulburn Street/Sussex Street and Sussex Street/Hay Street intersections. Both intersections are located within the study area boundary (see Figure 3).

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		The left turn out of Sussex Street (southbound) into Goulburn St is being obstructed by existing congestion observed at downstream intersection at George St /Goulburn St. Similarly the right turn traffic out of Sussex (southbound) does not clear up in each cycle time due to congestion from upstream intersection at Harbour St/Goulburn St. The revised June 2013 model reflects existing traffic conditions of road and intersections contained within the model boundary showed by dotted line in Figure 3. In general, the traffic model does not reflect conditions outside the study area except to those roads and intersections shown in Figure 3. Goulburn Street/Sussex Street and Sussex Street/Hay Street intersections have always been included in the study area boundary. Traffic impact at these two intersections is not influenced by any other nearby intersections located outside the study area.
Traffic Analysis	The proposal will now force vehicles leaving both the proposed Haymarket carpark (400 spaces) and Theatre carpark (107 spaces) to travel southbound towards Ultimo Road. Yet, there is no traffic analysis (either Aim sun or SIDRA) conducted for the intersection of Darling Drive and Ultimo Road. However, the report concludes in the section titled (Next Steps) that "Detailed assessment of the Darling Drive I Ultimo Road intersection is to be carried out as part of the relevant DA submissions". This should be done now as the changes caused by this current application would affect this intersection.	Hyder has extended the AIMSUN model to incorporate the full length of Darling Drive. The model was extended from Quay Street to the Ultimo Road intersection. The Darling Drive/Ultimo Road intersection has been assessed for existing traffic conditions. The model shows a Level of Service (LoS) B for 2013 traffic conditions which is considered to be acceptable. With the proposed SICEEP development traffic, the model predicts LoS C for Darling Drive/Ultimo Road intersection which is considered to be acceptable.
Traffic Analysis	Traffic distribution is as follows: 60% arrive/depart from the north via Darling Drive north; 10% arrive/depart from the east via Goulburn Street and George Street; 15% arrive from south via Darling Drive south; 25% depart to south via Darling Drive south; 10% arrive from north via Harbour Street north; 15% depart to the north via Harbour Street north; 5% arrive from east via George Street and Hay Street. The report states: "This traffic distribution follows the	In assessing the proposed SICEEP development, Hyder has made the following traffic distribution assumptions: 1. Trip distribution within the PPP component of the SICEEP was based on actual traffic counts (June 2013)

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	observed directional flows taken from Hyder's Sydney Strategic Model". Strategic models are for strategic modelling, not detailed distribution at a very local level. Therefore, Traffic Analysis Traffic Analysis traffic distribution should be determined through survey data of patrons attending functions at this precinct or other observations.	2. Trip distribution in the Haymarket Precinct (Mix-use Development) was based on combined actual traffic counts and 2006 journey-to-work (JTW) distribution obtained from Bureau of Transport Statistic (BTS). Strategic traffic model was not used for this study. The reference to the strategic model was only made regarding the journey to work distribution.
Traffic Analysis	In Appendix C, detailed SIDRA outputs for the "Future Intersection Performance" have not been included within the report. RMS would appreciate receiving such information for review.	The previous SIDRA modelling has been superseded by the AIMSUN modelling results.
Traffic Analysis	The Aimsun intersection analysis identifies intersection operational issues at a number of intersections yet no clear recommendations (re: feasible road infrastructure improvements) are provided on how to minimise the problem at the key intersection of Harbour Street I Liverpool Street. This shall be satisfactorily examined and addressed by the proponent.	Traffic modelling suggested that currently there is a capacity problem at the intersection of Harbour Street/Liverpool Street. The existing AIMSUN model showed poor level of service (LoS F and E) for left turn movement out of Liverpool Street southbound to Harbour Street. The poor level of service was forecast for both Friday and Saturday PM peak hour. With the addition of the proposed development traffic, the existing capacity problem would remain particularly for this left turn movement, with Los F (Saturday) and LoS E (Friday).
Traffic Analysis	With regard to the sensitivity analysis undertaken for George Street Light Rail the report states that "An indicative model run was carried out using Hyder's Sydney Strategic Model to determine the likely impact on traffic flow on the surrounding network. The model indicated the shift of vehicle movements onto Harbour Street and increasing Harbour Street traffic volume by 10%". The analysis was conducted for the following two intersections using SIDRA: • Harbour Street / Pier Street / Goulburn Street • Harbour Street / Liverpool Street This should have been done using Aimsun as the above intersections are affected by queue spillback and the SIDRA analysis would not have taken this into account. In addition, the sensitivity analysis should also model and consider other nearby potential closures I changes to the local street system,	A sensitivity analysis was not required by the DGRs. A baseline assessment allowing for 10% growth was undertaken following a request by Transport for NSW. This assessment was undertaken using the available information regarding this proposal contained in *Sydney's Light Rail Future*. Due to the limited information available on the George Street Light Rail, SIDRA was adopted as a guide only to develop the sensitivity analysis. However, AimSun modelling has since been undertaken for the revised scheme with the modified access arrangements for the proposed Theatre on Darling Drive. The results of the modelling are detailed in the Addendum to the Traffic Report prepared by Hyder (refer to **Appendix M**). The 10% traffic increase on Harbour Street as a result of LRT would further impact LoS for two intersections at Harbour Street/Goulburn Street and Harbour

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	which include changed traffic conditions in Thomas Street between Hay Street and Ultimo Road (i.e. reduction from two lanes to one lane southbound). Details of these changes can be obtained from City of Sydney Council.	Street/Liverpool Street. These two intersections on Harbour Street would continue to operate at poor level of service and require upgrading irrespective of the SICEEP development. The impact of LRT on the remaining four intersections assessed was found to be marginal.
Other Traffic and Road Safety Issues	The proposal intends to reduce parts of Darling Drive (southbound) to one lane per direction. The plans highlight a number of changes which will add to the traffic delays for southbound vehicles which include the following: • Currently if the entry capacity into the Exhibition Centre car park is temporarily exceeded, there is the opportunity for vehicles to queue out into the kerbside lane along Darling Drive. However, under the proposed changes, such a scenario will result in the full blockage of southbound traffic along Darling Drive. • Pedestrian demands to cross the proposed marked foot crossing across Darling Drive (located between the Exhibition Centre and the Theatre) will increase significantly. The increased pedestrian crossing volumes will further delay southbound traffic.	A detailed micro-simulation model was undertaken for Darling Drive to further investigate the likely impacts that the multiple access points and pedestrian crossing impacts may have on through traffic. In the southbound direction, the scheme includes minor changes (from existing) in the access and pedestrian crossing locations. The modelling suggests that there will be a minimal impact in average travel speeds during the (critical) Saturday PM peak: • The modelling suggests a minor decrease in average speed, from 34.9 km/h (existing) to 31.2 km/h in the southbound direction. The northbound average speed on Darling Drive (20.2 km/h) is within the range of speed being observed for existing condition (between 14 km/h and 35 km/h).; and • The northbound traffic performance on Darling Drive is influenced by the "southern zebra crossing", located around 100 metres to the north of Pier Street (see previous Figure 2-1). The modelling analysis has found that a two staged zebra crossing on Darling Drive would work for up to 250 pedestrian volumes in one hour. The model does not suggest queue on Darling Drive with Pier Street roundabout. Should pedestrian volumes at "southern zebra crossing" exceeds above 250, the modelling has identified the need for signalisation of this crossing. The results of the modelling are detailed in the Addendum to the Traffic Report prepared by Hyder (refer to **Appendix M**).
Other Traffic and Road	In addition, concerns are raised in relation to traffic growth along Darling Drive (i.e. 5-10 years post development) and mid-block flows associated with Friday	Hyder has undertaken previous traffic studies within and around Darling Drive over recent years which indicate traffic levels have not significantly grown. As a

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Safety Issues	I Saturday PM peak hours plus concurrent Theatre event/concert traffic conditions. The proponent must demonstrate to the satisfaction of RMS/Council that the mid-block capacity of Darling Drive (within the areas of the proposed reduction to one lane) will not be exceeded, and that Darling Drive will not become blocked as a result of the issues raised above.	result Hyder consider that there will be minimal growth within the next 5-10 years and this view has been supported by the City Of Sydney. The results outlined in the previous item relate to the DA Scheme. Further modelling was undertaken for the revised Theatre access scheme. The Theatre access scheme has assumed signalisation of the southern pedestrian crossing on Darling Drive. Under the revised Theatre access scheme, the traffic model shows instances where traffic queue extends to the nearby roundabout with Pier Street for a brief period of time. However, the queue dissipates quickly and does not obstruct Darling Drive with Pier Street roundabout. The relocation of Theatre car park access off Darling Drive would increase northbound traffic on Darling Drive by 10% compared to the DA scheme. This would have potential to marginally impact the northbound travel speed on Darling Drive. Model forecasts average travel speed at 17 km/h in the northbound direction. The northbound average speed on Darling Drive with revised Theatre access (17 km/h) is still within the range of speed being observed for existing condition (between 14 km/h and 35 km/h).
Other Traffic and Road Safety Issues	The report states: "North of the Darling Drive/Pier Street roundabout the dual lane two-way segregated cycle-way will be provided along the western side of Darling Drive, until it meets the proposed scramble crossing in the northern sector by the ICC and Hotel". Before RMS will consider this matter further, the proponent will need to submit detailed information to RMS for review which details the need for this crossing along with details demonstrating that warrants can be met.	SHFA is the Roads Authority for this area of Darling Drive. Cyclists travelling southbound on the one-way cycle way north of the SICEEP development boundary are required to cross Darling Drive at the crossing to join the dual lane segregated cycle-way on the western side of Darling Drive. The dual cycleway cannot be extended further north due to the grade and width changes of Darling Drive as it approaches the Murray St intersection. The road also separates to provide loading dock access to the Harbourside Shopping Centre.

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		The crossing cannot be relocated north of the Convention roundabout due space limitations for a safe crossing. DHL considers that cyclists crossing at the designated crossing opposite Harbourside Place is the most appropriate solution.
Other Traffic and Road Safety Issues	The proposed marked foot crossing across Darling Drive (located between the Exhibition Centre and the Theatre) crosses multiple lanes of traffic along Darling Drive. To address pedestrian safety and to comply with RMS requirements, consideration shall be given to providing signals at this crossing location.	An existing pedestrian crossing connects the eastern side of Darling Drive to the light rail stop and crosses two lanes of traffic. The existing crossing is proposed to be moved slightly north. DHL propose to convert the existing pedestrian crossing to a signalised crossing in order to comply with RMS standards as outlined in the Transport and Traffic Assessment Addendum Report prepared by Hyder (refer to **Appendix M**).
Other Traffic and Road Safety Issues	RMS also requires further information relating to the at-grade pedestrian/cyclist crossings along Darling Drive and whether grade separation of such movements was investigated for feasibility.	SHFA is the roads authority for Darling Drive. Connectivity within and surrounding the site at-grade is the deliberate intent of the proposal. There are significant amenity advantages provided by ensuring active streets and footpaths through the provision of at grade pedestrian / cyclist crossing. Furthermore at grade access reduces issues relating to CPTED within the public realm. Grade separated movements are not proposed for these reasons.
Other Traffic and Road Safety Issues	With regard to the cumulative impacts from surrounding construction sites the report states: "It is noted that construction at the Barangaroo site has the option to transport by sea transport via Darling Harbour". Hyder is advised that sea transport for construction at the Barangaroo site is no longer feasible, which will therefore result in increased road based construction traffic impacts. The report should be mindful of this change and suitably demonstrate to the satisfaction of Council/RMS that cumulative traffic impacts from surrounding construction sites will not detrimentally impact key roads within and around the Sydney CBD.	DHL has provided a description and diagram of proposed traffic routes for construction based traffic impacts and a programme outlining key construction projects and potential cumulative impacts in the vicinity of SICEEP. The comments regarding sea transport for Barangaroo were provided as an option only and were not part of the formal traffic analysis which included road use for construction impacts. Furthermore, Barangaroo has adopted an on-site concrete batching plant which also contributes to a reduction of traffic movements related to the project.
Other Traffic	The report does pick up on the fact that there are quite a number of crashes at	DHL has sought information from RMS on this matter and carried out a road

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and Road Safety Issues	the Darling Drive, Pier Street roundabout. No mention is made in the report about how to improve or address this. However, the report does mention the need for a more detailed road safety audit to determine future measures (with regard to pedestrian safety on Darling Drive and also pedestrian safety along Harbour Street). Therefore, it is recommended that the proposed road safety audit will also need to examine this intersection in more detail and recommend any suitable ameliorative measures to improve road safety.	safety audit. A Road Safety Audit was undertaken for the proposed design and the findings are outlined in Technical Note 4, attached as Appendix D in the traffic and Transport Assessment Addendum Report. The Designer's responses to the Audit to address the issues are outlined in Technical Note 5, attached as Appendix E to the Addendum Report. This information is outlined in the attached in the Transport and Traffic Assessment Addendum Report prepared by Hyder (refer to **Appendix M).**
Other Traffic and Road Safety Issues	The report recommends road infrastructure improvements at Goulburn Street incorporating a westbound right turning bay extension at the intersection with Harbour Street. However, the proponent will need to have a closer look at this proposed improvement as there appears to be difficulties in lengthening this bay. There might be scope to provide a triple right turn from Goulburn Street into Harbour Street northbound. This should be examined further in consultation with the RMS.	The Hyder report finds that the LoS provided at the Pier Street/Harbour Street/Goulburn Street intersection will be unchanged or improved for all turning movements as a result of improved coordination of signals. Whilst the Hyder Transport and Traffic Impact Assessment identifies existing limited capacity for right turn movements from Goulburn Street into Harbour Street as a potential issue requiring attention, it notes that traffic travelling from Goulburn Street north onto Harbour Street is not associated with the SICEEP proposal. As such there is no relationship between SICEEP and any road infrastructure improvements required for this turning movement and therefore no remedial works are proposed as part of the development.
Other Traffic and Road Safety Issues	The previous Mott MacDonald report prepared for Infrastructure NSW (which is Appendicised to the Hyder Report) makes the following key statements with regard to Goulburn I Pier Street I Harbour Street: "This intersection is currently underperforming during major events and is in need of an ameliorative treatment. There are currently three turning lanes from Pier Street into Harbour Street... Three lanes are insufficient to provide an acceptable level of service or saturation level for this movement. However, relocation of the Sydney Entertainment Centre which would redirect a significant pedestrian travel path across this intersection. In turn, this will further deteriorate the intersection's performance. The intersection will need to	The Mott MacDonald Report outlined the "base line" traffic conditions that have been modified and updated by Hyder to suit the proposed masterplan, including the addition of the carparks as new travel zones The Mott MacDonald modelling was premised on a different Reference Design and future traffic demand and their results cannot be compared with the Hyder modelling which is based on the proposed SICEEP masterplan as lodged with the DA Hyder's modelling results indicate that the Goulbourn Street/Harbour Street/ Pier Street intersection is already operating at capacity with the left turn movement

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	be redesigned with a view to increase the capacity of the left turn from Pier Street into Harbour Street as well as increasing the storage capacity of the islands (for pedestrians)". The Hyder report does not make any clear comments about this matter and/or how to address these issues. This issue must be addressed by the proponent.	from Pier Street to Harbour Street already requiring treatment, and notes that improved signal coordination and timings can provide the required improvements to the performance of this intersection to address issues associated with SICEEP weekday-PM event traffic. The one way loop road at Exhibition Place directs traffic southbound and away from the Pier Street/Goulburn Street/Harbour Street intersection would significantly improve operational performance of adjacent intersections Pedestrian travel is not expected to be redirected to this intersection because of the provision of The Boulevard. It is anticipated that the major pedestrian flows are associated with the movements between the precinct and Central Station or Town Hall.
Other Traffic and Road Safety Issues	The report for the Haymarket Precinct examined the potential for queue spillback from the Goulburn Street, Pier Street, and Harbour Street intersection back to the proposed Haymarket Precinct egress driveways onto Harbour Street. However, the methodology used to analyse this is incorrect due to the fact that it didn't take into account that queue spillback occurs during the peak periods from downstream intersections along Harbour Street back to the Goulburn Street, Pier Street, Harbour Street intersection. The proponent must re-examine this matter and provide satisfactory evidence that the proposed Haymarket Precinct egress driveways onto Harbour Street will not be affected by queue spillback from the Goulburn Street/Pier Street/Harbour Street intersection	This matter is relevant to The Haymarket Staged DA and will be addressed with future Stage 2 development applications and detailed design for the Haymarket Precinct.
Construction Traffic Management Plan	Individual Traffic Management Plans (TMP) shall be prepared for each construction site in consultation with RMS, Transport Management Centre (TMC), Council and other agencies, prior to the commencement of substantial construction on each site. The TMPs would be forwarded to RMS I TMC for review and approval. Where Council is the Roads Authority approval of the TMP shall be sought from Council, in consultation with the RMSITMC. All TMPs shall be certified by the Contractor's Traffic Manager and subject to	This will be developed prior to construction commencement and issued to the relevant consent authority. This is a matter appropriately dealt with via condition of consent.

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	road safety audits by the Contractor. The TMPs must include, but not be limited to the following: a. An introduction to the construction phasing and brief narrative on proposed work b. A description of the Construction Activities for all areas affected by the Plan and integration with the adjacent work areas c. A description of existing traffic conditions, including length, direction and type of road (regional, local road function etc.), important access points, brief description of current AM, business and PM peak traffic volumes, a description of number and type of lanes applying to both weekdays and weekends and a description of parking/loading zones applying to both weekdays and weekends d. Details of Construction Program e. Constraints affecting construction, including: Working hours impact on utilities such as traffic signal controllers, TCS posts, smart poles, traffic signal roadway duct, stormwater and other utilities f. Results of traffic modelling, results of bus travel time surveys etc. as required Traffic Construction Impacts, including • Any restriction of access and any intermittent stoppage to traffic • Any affects on specific road users, in particular buses. • Impact on pedestrians and cyclists and access to properties and use of barricades and advisory signs, as necessary, to warn and guide pedestrians around the construction site, and redirection to alternative pedestrian crossing points	

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	• Traffic impacts, including changes to traffic signal phasing • Construction site traffic generation and access, including spoil access routes, type of truck to be used, consideration of geometry and manoeuvring requirements on the route, separate routes for contaminated spoil removal. In principle priority will be given to the use of State or Council roads (may require separate Haulage Management Plan) • Impact on bus operations • Impact on other public transport h. Traffic control construction program, including: Provision of traffic barriers • Alteration to lane lines • Minimum lane widths • Alterations to pedestrian crossings • Security fencing • Night time delineation such as flashing lanterns, line marking incorporating glass beads, raised reflective pavement markers, lighting • Provision of signposting - directional, advisory, regulatory i. Details of advertising and communication, including radio, newspaper and letterbox distribution. j. Use of Variable Message Signs under TMC control k. Request to use any VMS under TMC control I. Notification of Authorities, including Police, STA and Council The applicant must meet all costs in regards to the provision of any	

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	supplementary staff or technical services provided by Transport Management Centre (TMC).	
Construction Traffic Management Plan	A Road Occupancy Licence (ROL) must be obtained from the TMC for any activity likely to impact on the operational efficiency of the (state) road network. The ROL allows the applicant to use a specified road space at approved times, provided certain conditions are met. Proponents must allow a minimum of 10 working days for processing from date of receipt. Traffic Control Plans are to accompany each ROL application.	DHL does not expect that works will have impacts on the operational efficiency of the State road network and therefore no ROL is likely to be required. Where required, DHL will obtain the necessary approvals / permits for these works.
Construction Traffic Management Plan	Prior to the issue of any construction certificate(s), the proponent will need to provide details to the satisfaction of Council regarding a suitable off-site truck marshalling yard, for waiting vehicles in order to facilitate bump-in/bump-out to events.	An off-site marshalling yard is not contemplated as part of this DA.
Event Management Plan	Prior to the issue of any occupation certificate, the proponent must prepare an Event Management Plan and Traffic and Pedestrian Management Plan in consultation with RMS, TMC, Council, Transport Agencies, NSW Police, and CBD Parking Operators. These plans must be forwarded to RMS, TMC, Council and Transport for NSW for approval. The plans should be prepared to address the following matters: a. Maximising public transport use. b. Traffic and crowd management. c. Safe and efficient access to and from the venue. d. Minimising disruption to public transport prior to and after events. e. Enhancing access to car parking, minimising traffic congestion at the end of events. f. Uninhibited access for emergency vehicles. g. Efficient access/egress for heavy vehicles.	SHFA advises it has in place event, pedestrian and traffic management plans in place for all major events at Darling Harbour. These are developed in conjunction with all relevant authorities and relevant stakeholders such as the managers of the existing convention, exhibition and entertainment facilities. These will be reviewed as required to take into account the construction impacts of the SICEEP project and the changed operational circumstances prior to the issuing of an Occupation Certification. This is a matter appropriately dealt with via condition of consent. DHL will consult the relevant agencies as part of this process.

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	h. Establishing processes I procedures for individual Event Management Plans.	
Construction Traffic Management Plan	Transport for NSW supports and recommends that the proponent implement the following Travel Behaviour Change initiatives, as mentioned within the Transport and Traffic Assessment report: • Tickets with subsidised public transport. • Preferential parking for car share operations I reduced parking fees. • Way-finding, signage and infrastructure providing real time information on travel operations. End trip facilities (i.e. bicycle facilities, lockers, showers, change rooms, etc.). • Green Travel Plan implementation. Incentives for public transport users. • Car park design I Dynamic Parking signage (VMS) - illustrating parking availability In addition, to further facilitate the effective management of traffic around the Precinct, the proponent (in consultation with RMS, TMC and Council) will also be required to install VMS on key roads I streets in approach to the site along with CCTV at agreed locations. This must be implemented prior to any occupation certificate.	The Addendum to the Traffic Report prepared by Hyder (**Appendix M**) continues to support the implementation of travel behaviour change initiatives throughout the SICEEP precinct. Variable messaging signs utilising dynamic carparking information will be provided to drivers similar to that adopted for the Star Casino. The improvement of pedestrian access to and from existing and/or upgraded public transport nodes will be provided through interactive wayfinding and signage systems located throughout the Precinct. The detailed design of the wayfinding and signage systems is currently under development and will be completed in accordance with the SICEEP Wayfinding and Signage guidelines that are being prepared by INSW. All on-site way finding signage is to be delivered as part of the project, subject to final approval of detailed design by Sydney Harbour Foreshore Authority in accordance with the SICEEP Wayfinding and Signage Guidelines. Off-site way finding signage will be the responsibility of the Sydney Harbour Foreshore Authority (within the Darling Harbour Precinct). This is a matter appropriately dealt with by condition of consent.
Construction Traffic Management Plan	The layout of the proposed car parking areas associated with the subject development (including, driveways, grades, turn paths, sight distance requirements, aisle widths, aisle lengths, and parking bay dimensions) should be in accordance with AS 2890. 1- 2004 and AS 2890.2-2002 for heavy vehicle usage.	Carparks have been designed in accordance with AS 2890. 1- 2004 and AS 2890.2-2002. The existing Exhibition carpark is being retained for use and has limited head height and bay widths. This currently limits access for some disabled vehicles but access will be improved and will be no worse than existing conditions. Where full head height compliance cannot be provided disabled parking will be provided in

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		the Theatre carpark which, as a new building, has greater opportunity for improved head heights and bay widths.
Construction Traffic Management Plan	The proponent must ensure that the car park entries I exits are designed in such a manner as to ensure that the future queuing areas and capacity requirements comply with Appendix D of AS2890. 1-2004 and that right turn bays along Darling Drive are of a sufficient length to ensure that there is no queuing out of the bay into the adjacent through lane.	Carpark entries/exits have been designed in accordance with AS 2890. 1- 2004. Modelling has been undertaken to confirm the adequate length of queuing bays.
Construction Traffic Management Plan	RMS Sydney Asset requirements: a) Any excavation adjacent to RMS infrastructure will need to comply with RMS Technical direction GTD 20121011. b) If any new structures or footings are proposed near or adjacent to the existing deep raked piles associated with the Western Distributor piers, then RMS approval and consultation must be obtained prior to any construction commencing. c) No permanent infrastructure is to be constructed by the proponent within at least two metres of the surface of any part of the Authority's structures. d) The Development must permit 24 hour inspection and maintenance access to the Authority's bridge structure without any cost to the Authority. e) Proposal(s) for any modification of RMS structure(s) require RMS prior approval. In this regard, detail proposal(s) need to be submitted for RMS approval at least six weeks prior to construction commencing. f) Wherever there may be limited clearance between the roof of the proposal and the Western Distributor viaduct, the roof area under the viaduct will need to be designed as a work platform so that it can carry men and	DHL confirms the following: a) Noted – no basement excavations are proposed b) Noted – DHL will undertake consultation with RMS during detail design and appropriate approvals will be obtained if required. c) The Exhibition loading dock has been moved south outside the 2 metre zone. The existing roof of the Parkside Convention Centre is marginally within the 2 metres noted. While the majority of new structures are proposed to be constructed outside of the 2 metre zone, there is some minor intrusion for the Exhibition Centre within the 2 metre zone as noted on the attached plans. The new Bayside Convention Centre also ties into the existing Parkside building and encroaches within the 2m zone under the Western Distributor flyovers. HASSELL + Populous has prepared a series of drawings, outlining which works are within 2m of the RMS structures and seeking approval for these incursions. These drawings are appended to this Table. In relation to the access to existing Western Distributor columns within the existing Parkside building, DHL will consult with RMS if there are any changes to

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	material during inspection maintenance works.	existing access arrangements. DHL will consult with RMS to discuss these matters. d) Based on existing arrangements, DHL proposes a minimum 48hr notice for general maintenance access. Where emergency access is required, 24hr notice is agreed. e) Noted f) There are areas of existing roof structure that encroach significantly into the 2m zone. It is not practical to provide a work platform due to restricted clear working heights as outlined in the attached drawings
Construction Traffic Management Plan	Proposed civil works to the Western Distributor viaduct, changes at the signalised intersections of Pyrmont Bridge Road/Darling Drive/Murray Street, Goulburn Street/Pier Street/Harbour Street, Darling Drive/New Laneway at Hay Street (TCS #2836) and potential new signalised crossings along Darling Drive shall be designed in accordance with Austroads's with RMS supplements, RMS' Traffic Signal Design Manual other Australian Codes of Practice. Design plans shall be prepared by a suitably qualified practitioner and submitted to RMS for consideration and approval prior to commencement of any road works.	All works for which consent is sought will be undertaken in accordance with Austroads (with RMS supplements), RMS' Traffic Signal Design Manual and other Australian Codes of Practice.
Construction Traffic Management Plan	The proponent will be required to enter into a Works Authorisation Deed (WAD) for the abovementioned traffic signal and civil works. The Works Authorisation Deed (WAD) will need to be executed prior to RMS' assessment of the detailed design plans.	It is intended to provide a new signalised pedestrian crossing for SSD – 5752 at Tumbalong Place and the Exhibition Light Rail Stop. As RMS is not the roads authority on Darling Drive a WAD will be provided only for the traffic signal and not for Darling Drive civil works.
Construction Traffic Management Plan	The proponent shall be responsible for all public utility adjustment/relocation works, necessitated by the above work and as required by the various public utility authorities and/or their agents.	Noted
Construction	All works/regulatory signage associated with the proposed development are to	Noted.

Topic	Issue	Response
Traffic Management Plan	be at no cost to the RMS.	It is not proposed to provide RMS type variable message signs on Darling Drive. Dynamic carpark signage will be provided, as noted above.